OCOEE CITY COMMISSION
Ocoee Commission Chambers
1 N. Bluford Avenue
Ocoee, Florida

February 6, 2024 **AGENDA** **6:15 PM**

REGULAR CITY COMMISSION MEETING

- **CALL TO ORDER**

  Invocation

  Pledge of Allegiance

  Roll Call and Determination of Quorum

- **PRESENTATIONS AND PROCLAMATIONS**

  2024 Black History Month Proclamation

- **STAFF REPORTS AND AGENDA REVIEW**

- **PUBLIC COMMENTS**

- **CONSENT AGENDA**

  Matters listed under the consent agenda are considered to be routine and will be acted upon by one motion. There will be no separate discussion of these items unless discussion is desired by a member of the commission, in which case the Mayor will instruct the City Clerk to remove that item from the Consent Agenda and such item will be considered separately.

  1. Approval of Minutes from the Regular City Commission Meeting held January 16, 2024. **(City Clerk Sibbitt)**
  2. Approval of Fee Proposal for Final Design and Engineering Services for RFQ #21-003 South Bluford Avenue Streetscape from Geneva Street to Delaware Street. (**Deputy Development Services Director/CRA Administrator Corless**)
  3. Approval to Award Invitation to Bid (ITB) #24-004 Asphalt Paving Projects for Fiscal Year 2024. **(Procurement Manager Tolbert)**
  4. Approval to Reject the Sole Bid Received for ITB #24-001 Ocoee WWTF Electrical Upgrade and Expansion (ARPA Federal Grant Funded Project). **(Procurement Manager Tolbert)**
  5. Approval of Clarke Road Widening Property Purchase Agreement. **(Public Works Director Krug)**
  6. Approval of Contracted Sidewalk Repairs Utilizing Existing City of Kissimmee Contract with APEC LLC. **(Public Works Director Krug)**

- **FIRST READING OF ORDINANCE**

- **SECOND READING OF ORDINANCE – PUBLIC HEARING**

- **PUBLIC HEARING**

- **REGULAR AGENDA**

  7. HRDB 2024 Initiatives Presented by HRDB Board Member Kellie Beck. **(Support Services Director Gaines)**

- **COMMENTS FROM COMMISSIONERS**
  (Limit to Five Minutes)

- **ADJOURNMENT**

Notice: In accordance with Florida Statutes 286.0105: Any person who desires to appeal any decision at this meeting will need a record of the proceedings and for this purpose may need to ensure that a verbatim record of the proceedings is made which includes the testimony and evidence upon which the appeal is based. Also, in accordance with Florida Statute 286.26: Persons with disabilities needing assistance to participate in any of these proceedings should contact the office of the City Clerk, 1 N. Bluford Avenue, Ocoee, FL 34761, (407) 905 -3105 48 hours in advance of the meeting.

Proclamation

WHEREAS, *Black History Month is celebrated annually in February across the United States; it serves as a celebration of African American achievements and the crucial role they had in U.S History as well as time to recognize the severe adversity generations of Black Americans had to overcome to achieve legitimate citizenship in our society; and*

WHEREAS, *in 1926, Dr. Carter G. Woodson and the Association for the Study of African American Life and History (ASALH) sponsored a national Negro History Week, choosing the second week of February to coincide with the birthdays of Abraham Lincoln and Frederick Douglass; by the late 1960s, the weeklong celebration evolved into Black History Month calling our attention to the continued need to battle racism and build a society that lives up to its democratic ideals;*

WHEREAS, *the City of Ocoee continues to work toward becoming an inclusive community in which all residents are respected and recognized for their contributions and potential contributions to our community; and*

WHEREAS, *the City of Ocoee established the Human Relations Diversity Board comprised of residents who volunteer to bring cultural awareness throughout our community. Since its inception 19 years ago, the HRDB has worked to promote understanding, respect, goodwill, and equality among all citizens and businesses of the City of Ocoee; and*

WHEREAS, *the City of Ocoee is proud to host its 19th Annual Black History Month Essay Contest. The essay contest is open to 5th grade students attending Ocoee schools. The winners will receive prizes and be recognized at an Ocoee City Commission Meeting; and*

WHEREAS, *Residents can tune in to Ocoee TV Channel 493 during the month of February to watch programs that highlight significant people and events from African American history. Citizens may also visit City Hall to see a Black History Month display with biographical portraits of notable African Americans.*

NOW, THEREFORE, BE IT RESOLVED, THE CITY COMMISSION OF THE CITY OF OCOEE *does hereby declare the month of February 2024 as*

Black History Month

The city shall celebrate the vibrant culture and achievements that African Americans have contributed to our country; this month, and throughout the year, we urge our residents to celebrate that heritage and continue to fight for equality and opportunity for all.

IN WITNESS WHEREOF, *I have hereunto set my hand and caused the Seal of the City of Ocoee, Florida to be affixed this 6th day of February, 2024.*

Rusty Johnson, Mayor

OCOEE CITY COMMISSION
Ocoee Commission Chambers
1 N. Bluford Avenue
Ocoee, Florida

January 16, 2024 **MINUTES** **6:15 PM**

REGULAR CITY COMMISSION MEETING

- **STATE OF THE CITY - 5:45 PM – Video Presentation**

- **CALL TO ORDER 6:19 PM**

Mayor Johnson called the regular session to order at 6:19 PM in the Commission Chambers of City Hall. The invocation was led by **Commissioner Hart,** followed by the Pledge of Allegiance to the Flag led by **Commissioner Firstner**. **City Clerk Sibbitt** called the roll and declared a quorum present.
Present: Mayor Johnson, Commissioner Kennedy, Commissioner Wilsen, Commissioner Firstner, Commissioner Hart
Also Present: City Manager Frank, City Attorney Geller, City Clerk Sibbitt

- **PRESENTATIONS AND PROCLAMATIONS 6:20 PM**

Ocoee Village Consortium Update on Lakewood Avenue – **Development Services Director Rumer** updated the City Commission on the project and introduced Steve Saha, an engineer with Poulos & Bennett, who was hired to get the project moving forward. **Steve Saha** updated the City Commission on Lakewood Avenue and the issues they are working to resolve. **Mayor Johnson** shared his frustration with the timeframe and with the contractors not following through with the work. He also voiced that he receives numerous calls from citizens about the closed road; he stated that he does not want the City to issue any permits for this development until the paving is done and the road is open. **Commissioner Kennedy** shared, as the Commissioner of that district, he also receives numerous calls and this is the number one issue in his district. He asked Mr. Saha how many years of experience he has with these types of projects and what has happened since July of 2022 when he was brought on that has caused this project to not be completed. **Mr. Saha** addressed the Commissioner's questions and stated that the road will be open soon. **Commissioner Firstner** inquired about the warranty surety bond. **Development Services Director Rumer** addressed his question. **Commissioner Hart** expressed safety concerns as he has witnessed cars cutting through and there is a high school in the area.

- **STAFF REPORTS AND AGENDA REVIEW** - None

- **PUBLIC COMMENTS 6:42 PM**

The following persons addressed the City Commission:

- **Thomas Lowrie**, *Ocoee Resident*, expressed his personal thanks to the Mayor, Commissioners, and staff, for their support of Challenge 22 back in November. Beginning this year, the American Legion will not have any direct control over Challenge 22; they became an LLC and formed a 501(c)3, so any contributions from the public will become tax deductible.

- **Sue Lowrie**, *President of the Woman's Club of Ocoee* and *Ocoee Resident*, asked the City Commission if they would like the Woman's Club to facilitate a political forum, for the candidates running for Commissioner of District 4, in the upcoming March 19, 2024, election. **Mayor Johnson** responded that this was previously approved and conveyed to her to get with the City Clerk to provide event information.

- **Cheryl King**, *Ocoee Resident*, expressed her concerns with District 4, and emphasized that she perceives a lack of tangible benefits from her tax contributions. She also expressed her dissatisfaction with the Planning Department and their method of communication with the community, prior to the start of development. **Mayor Johnson** responded to her comments and concerns.

- **Cathy Sills**, *Ocoee Resident*, thanked the City for the addition of sewer in downtown Ocoee as it will help many residents and commercial tenants; however, there are many costs involved in switching from septic to sewer, which will cause major financial impacts on the residents and commercial tenants and potentially cause some of the businesses to close down. She requested aid to assist those being affected. **City Manager Frank** stated that the City can come up with an assessment program.

- **Jim Moyer**, Ocoee Resident, congratulated the City on another great Dr. Martin Luther King, Jr. Holiday event. He also gave information on January being the 14th Annual National Slavery and Human Trafficking Prevention Month and encouraged residents to do their own research, as well.

- **CONSENT AGENDA** 7:01 PM

Consent Agenda Motion

Motion: Move to adopt the Consent Agenda Item #1-12.

Moved by Commissioner Wilsen, seconded by Commissioner Kennedy; Motion carried 5-0.

1. Approval of Minutes from the Regular City Commission Meeting held December 5, 2023. **(City Clerk Sibbitt)**
2. Approval of Educational Affiliation Agreements**. (Deputy Fire Chief Van Camp)**
3. Approval of Police Department Body-Worn Camera Expansion. **(Deputy Police Chief McKinstry)**
4. Approval of a Five -Year Warranty Surety and Maintenance, Materials, and Workmanship Agreement for Ocoee Village Center Townhomes. **(Development Engineer Keaton)**
5. Approval of Resolution Relating to Naming a Tract of Land in the Ocoee Crown Point PUD as Public Right-of-Way and Naming the Right-of-Way as Ocoee Crown Point Parkway. **(Development Services Director Rumer)**

6. Approval of Resolution Relating to the City of Ocoee's Pending Legislation to Qualify for Affordable Housing Projects Under the Live Local Act. **(Development Services Director Rumer)**
7. Approval of Change Order No. 1 to Ocoee Action Sports Park Phase 3. **(Parks and Recreation Director Johnson)**
8. Approval to Award Invitation to Bid (ITB) #24-002 W. Oakland Ave Reconstruction. **(Procurement Manager Tolbert)**
9. Approval of 2023-2024 Budget Vehicle and Equipment Purchases. **(Public Works Director Krüg)**
10. Approval of Resolution Relating to the Acquisition by Eminent Domain of Property. **(Public Works Director Krüg)**
11. Approval of Florida Central Railroad Projects Proposal. **(Public Works Director Krüg)**
12. Approval of Code Enforcement Agreement with Town of Windermere with 5% Adjustment to Cover the City of Ocoee's Costs. **(Support Services Director Gaines)**

- **FIRST READING OF ORDINANCE** – None

- **SECOND READING OF ORDINANCE – PUBLIC HEARING 7:04 PM**

13. Palm Drive - Chinapen Property Small-Scale Comprehensive Plan Amendment from Low-Density Residential to Commercial & Rezoning from R-1A to C-2 - CPA-2023-002 & RZ-23-09-09. **(Zoning Manager Whitfield)**

Zoning Manager Whitfield presented a brief overview of the subject property, which is located in Commission District 3 on the north side of Palm Drive approximately 160 feet west of the Pine Street and Palm Drive intersection, and contains approximately 1.65 acres, and is assigned parcel ID number 18-22-28-0000-00-109. She explained that the applicant currently does not have a proposed use and only seeks to amend the FLUM designation and rezone the property to allow for commercial development in the future. The property is currently vacant with no unique environmentally sensitive features.

The subject property is located within Sub-Area A of the Business Center Character Area of the State Road (SR) 429 Overlay District. The property owner's request to convert the property to Commercial with a C-2 zoning district is consistent with the intent of the Business Center Character Area to provide opportunities for office and retail uses in Sub-Area A.

City Attorney Geller read the title of the Ordinances.

The Public hearing was opened. As no speaker forms were received, the public hearing was closed.

Comprehensive Plan Amendment Ordinance:
Motion: Move to adopt Ordinance No. 2024-01, Chinapen Property at 601 Palm Drive Small-Scale Comprehensive Plan Amendment from Low Density Residential to Commercial, CPA-2023-002, subject to staff's recommendation; Moved by Commissioner Firstner, Seconded by Commissioner Kennedy; Motion carried unanimously.

Rezoning Ordinance:
Motion: Move to adopt Ordinance No. 2024-02, Chinapen Property at 601 Palm Drive Rezoning from R-1A (Low Density Residential) to C-2 (Community Commercial District), assigned parcel ID number 18-22-28-0000-00-109 (RZ-23-09-09), subject to staff's recommendation; Moved by Commissioner Firstner, Seconded by Commissioner Hart; Motion carried unanimously.

- **PUBLIC HEARING 7:09 PM**

14. 16 Floral Street - Wright Property Variance - VR-23-03. **(Zoning Manager Whitfield)**

Zoning Manager Whitfield presented a brief overview of the variance request for the property located at 16 Floral Street. The applicant is requesting approval of one (1) variance from Section 5-14A and corresponding Table 5-2 as follows:
1) 17.7-foot (representing a 69%) reduction of the minimum front building setback from 25 feet to 7.7 feet along the west property line to accommodate an attached garage for a single-family home on a corner lot. The subject property is a corner lot with roadway right-of-way (ROW) frontage along the north (Floral Street) and west (South Cumberland Avenue). The primary entrance of the residence is along the north. Per Section 5-4G, Article V, LDC, "on a corner lot", the applicable front yard setback shall apply to both street frontages. Consequently, both the north and west property line are considered a front yard and, as such, are subject to the required front yard setback of 25 feet.

According to Chapter 4-9 A., the variance application/applicant must demonstrate:

1. Special conditions and circumstances exist that are peculiar to the land, structures or required subdivision improvements involved and are not applicable to other lands, structures or required subdivision improvements;
2. That a literal interpretation of the provisions of these regulations would deprive the applicant of rights commonly enjoyed by other properties with similar conditions;
3. That the special conditions and circumstances do not result from the actions of the applicant; and
4. That the granting of the variance requested will not confer of the applicant any special privilege that is denied by these regulations to other lands, structures or required subdivision improvements under similar conditions.

Staff provided testimony that the variance demonstrates satisfaction with the four (4) review criteria and supports the request.

The Public hearing was opened. As no speaker forms were received, the public hearing was closed.

Commissioner Kennedy asked that supporting documents presented also be included in future packets, and further inquired about the drain field location for this property and if the sewer installation in front of the property still affects the variance request. **Zoning Manager Whitfield** addressed his questions.

Motion: Move for Approval of the 16 Floral Street – Wright Property – Variance Request, based on factual interpretation of the code requirements, as presented by staff, and public testimony related; Moved by Commissioner Wilsen, Seconded by Commissioner Firstner; motion carried unanimously.

- **REGULAR AGENDA** – None

- **COMMENTS FROM COMMISSIONERS 7:18PM**

Commissioner Hart – Commented on the following:
1) Recognized the HRDB for a job well done and stated that they have the City Commission's full support.
2) Commented on the success of the Jolly Jamboree and is looking forward to next year's event.
3) Gave kudos to the Community Events team for doing a great job and displaying success after success with each event. He commented on how great the MLK event was and he is looking forward to the upcoming Mardi Gras event.
4) Reminded residents of the upcoming election and encouraged the residents to get out and vote March 19, 2024.

Commissioner Firstner – Commented on the following:
1) Shared he was pleased with the State of the City address, it was a very professional presentation.
2) Thanked all staff and the Ocoee Youth Council that participated in the Dr. Martin Luther King, Jr. festivities. City staff executed it flawlessly, and for the 16th consecutive year, it has been a great event to attend without any issues.

Commissioner Wilsen – Commented on the following:
1) Shared that all the previous events have been great and there are more events forthcoming. She announced that on February 3rd HAPCO will host a jazz music event at the Lakeshore Center, February 9th will be the Mardi Gras Festival, March 9th the Spring into Conservation event will be held at Unity Park, and April 6th is the Shred-It event being held at the Police Department.
2) Announced if you use online banking to pay your water bill, please update the City Hall address as City Hall has moved. The new address is 1 N. Bluford Avenue.
3) Shared that a resident of Sleepy Harbor has asked for this neighborhood to become a golf cart friendly neighborhood, so that they can legally drive their golf cart. She asked that the City Manager and staff address this request. **Mayor Johnson** advised that the resident would not be able to cross over Orlando Avenue because of the speed limit.

4) Noted that Gordon Applegate is no longer a member of the Parks and Recreation Board; however, he is one of the City's longest running volunteers and was appointed 34 years ago on January 16, 1990. She requested the City re-name a street where City Hall relocated from, after Mr. Applegate. **Consensus of the City Commission was to have staff look into renaming the street, as suggested by Commissioner Wilsen.**
5) Conveyed that they all get comments regarding the Christmas lights, so she has been looking at some ways they can change it, and with the City Commission's support will do more in-depth research to bring back suggestions for them to discuss.
6) Voiced that the City has done a great job, and she takes offense to negative comments toward the City in regard to tax dollars because the residents get wonderful services from City staff. She encouraged residents to read their tax bills properly and become educated on who and how much they are paying taxes to.

Commissioner Kennedy – Commented on the following:
1) Endorsed each of the Commissioner's comments. He shared it is great to live in Ocoee; the Mayor and staff are doing a great job.
2) Inquired about the court transcript. **City Attorney Geller** advised that it was ordered, and he will follow up on it.
3) Requested an update on the tree policy and tree problem. **City Manager Frank** stated that he would check with staff and provide an update.
4) Requested an update on the Heart Save Stations. **City Manager Frank** stated that it was budgeted to put in four (4), but staff is also working on getting a $20,000 grant.
5) Asked for an update on the Vision Zero Program and the concerns he voiced on how it came to be. **City Manager Frank** informed him that the Vision Zero is a program under Metro Plan in which the City participates, as we are a member of Metro Plan. City staff thought it would be worth sharing information on this program as it is centered around pedestrian and traffic safety. **Commissioner Kennedy** voiced that he felt the City Commission should be adopting a vision for traffic solutions if traffic is an issue in the City, versus participating in a program.
6) Inquired if the City Manager is considering retirement and if he entered the DROP. **City Manager Frank** confirmed that he has entered the DROP. **Commissioner Kennedy** asked if the City Commission needed to authorize attorney funds for him to work on a contract for a successor designee. **City Manager Frank** shared he did not believe that was needed. **Mayor Johnson** shared that the City Manager and the City Attorney should be able to work out what is needed, then they can bring it back to present to the City Commission. **Commissioner Kennedy** congratulated the City Manager on his success over the last 20 years.

Mayor Johnson – Commented on the following:
1) Shared that the City Manager has accomplished amazing things during his 20-year tenure with the City, and asked the City Manager to highlight some of his accomplishments. He went on to express his love for Ocoee and his frustration when citizens complain and make negative comments about the City.
2) Announced the HAPCO Jazz event on Saturday, February 3, 2024, from 6-9 PM at Ocoee Lakefront Park.

3) Announced Friday, February 9th, there will be a Mardi Gras 2nd Line Walk at Unity Park, followed by a Block Party in downtown, hosted by the Parks and Recreation Department in partnership with the Ocoee Music Festival. Local artists and vendors will be on McKey Street from 6-9 PM.
4) Announced the General Election will be held on Tuesday, March 19, 2024.

- **ADJOURNMENT 7:55PM**

APPROVED:

Attest: **City of Ocoee**

_____ _____
Melanie Sibbitt, City Clerk **Rusty Johnson, Mayor**

STAFF REPORT

Meeting Date: February 6, 2024
Item #: 2

Contact Name: Ginger Corless
Contact Number: Ext. 1028

Department Director: Ginger Corless
City Manager: Robert Frank

Subject: Approval of Fee Proposal for Final Design and Engineering Services for RFQ #21-003 South Bluford Avenue Streetscape from Geneva Street to Delaware Street. (Deputy Development Services Director/CRA Administrator Corless)

Background Summary:

In 2021 CPH Consulting LLC was awarded RFQ #21-003 for the design and engineering services for S. Bluford Avenue Streetscape and in 2022 they completed the preliminary engineering for the full corridor from Old Winter Garden Road to Delaware Street. In 2023, a change order was executed to move forward with the final design and engineering for the CRA portion from Old Winter Garden to Geneva Street, with the intent of bringing a proposal for the remaining segment before the City Commission at a later time. CPH prepared a scope and fee proposal for the remaining City segment from Geneva Street to Delaware Street and Public Works now has the funds available to move forward with the final design.

Issue:

Should the Honorable Mayor and City Commissioners approve the CPH fee proposal for final design and egineering services for S. Bluford Avenue, from Geneva Street to Delaware Street?

Recommendations:

Staff recommends the Honorable Mayor and City Commissioners approve the CPH fee proposal for final design and engineering services for S. Bluford Avenue from Geneva Street to Delaware Street and authorize the Mayor, City Clerk, and staff to execute the required contract documents. Staff also recommends the City Manager be authorized to approve change orders for the final engineering phase up to the limit of his purchasing authority for each change order, and up to the budgeted amount for this project for all change orders.

Attachments:

1. Fee Proposal
2. RFQ #21-003 Change Order 2

Financial Impacts:

The Public Works department has budgeted $1,000,000 in their Bluford Gateway Streetscape Job (number P000404) and will fund this final engineering phase from GL 317-541-10-6302.

Type of Item: Consent

500 West Fulton Street
Sanford, FL 32771
Phone: 407.322.6841
Fax: 407.330.0639

CITY OF OCOEE
S. BLUFORD AVENUE COMPLETE STREET PROJECT PHASE 2
FINAL DESIGN
SCOPE OF SERVICES
December 7, 2023

PROJECT DESCRIPTION

The City of Ocoee (hereafter referred to as the "CITY") desires to provide complete street enhancements along the S. Bluford Avenue corridor from Geneva Street to Delaware Street. In addition, utility improvements within the corridor will also be made as part of this project. The proposed improvements will generally follow the previously prepared corridor study and concepts, with modifications as coordinated with the CITY throughout the design process. Improvements along the corridor may include the following elements: 10-12' wide multi-use path, improved pedestrian crossings, a connection to the roundabout at the S. Bluford Ave. and Geneva St. intersection, landscape/hardscape improvements, street and pedestrian level lighting, undergrounding overhead utilities, and other CITY Utility improvements.

TASK 1 – PROJECT ADMINISTRATION

CPH will provide general project management, including, but not limited to communication and coordination with the CITY, preparation of meeting materials and documentation, preparing project billing, preparing invoice report, and tracking project budget and schedule, and attend project meetings. CPH anticipates two (2) meetings for the project. Should the number of meetings exceed the total in those two tasks, the additional meetings will be addressed as extra work.

TASK 2 – SURVEYING SERVICES

All surveying and mapping services will be performed per Rule Chapter 5J-17 of the Florida Administrative Code in compliance with the Standards of Practice of Surveying and Mapping of the State of Florida.

Boundary Surveys (3 Parcels): CPH will perform 3 Boundary Surveys to include the below Parcel Identification Numbers per the Orange County Property Appraiser. The Boundary Surveys work shall include:

- Obtain Title Search Reports for the three (3) parcels (by AGSC – please refer to the proposal as submitted by AGSC)
- Review of each of the Title Search Reports and depict exceptions on each survey.
- Prepare three (3) individual signed and sealed Boundary Surveys.

19-22-28-1562-00-020	19-22-28-1562-00-010
17-22-28-6144-04-320	

TASK 3 – ROADWAY DESIGN SERVICES

This work effort includes the design needed to provide plans for the project with sufficient information to allow for permitting, bidding, and constructing the project. CPH will design the roadway improvements in accordance with the applicable CITY, FDOT, MUTCD, and ADA design criteria.

Final Roadway Design Services

This work effort includes the design needed to provide plans for the project with sufficient information to allow for permitting, bidding, and constructing the project. The design of the project includes plans for the reconstruction of roadways, stormwater modifications, and streetscape improvements. These plans are for the use of the CITY to bid and build the project, and ensure the project is built as designed and to specifications.

Based upon the preliminary plans, which the CITY reviewed and accepted at the conclusion of the Preliminary Design contract, CPH will continue with the preparation of the 60%, 90%, and 100% (Final) plans. The Final Design will include the reconstruction techniques for the roadway, horizontal and vertical alignments revisions, and proper cross-section analysis to ensure proper vehicular and ADA connections to existing grade within the CITY's right-of-way and to maintain proper drainage. No traffic analysis or signal design is included within this scope of services.

CPH will design the roadway surface and storm sewer surface hydraulics within the corridor per the FDOT Drainage Manual criteria for Spread adding additional inlets as needed, connecting to the existing drainage conveyance system.

CPH will prepare Traffic Control Plans (Maintenance of Traffic) for the roadway and utility construction. CPH will coordinate with the CITY to prepare the appropriate MOT and/or detour plans.

CPH will prepare the construction plan sheets, notes and details to include sheets necessary to convey the intent and scope of the project for the purposes of construction. The anticipated plan sheets will include the following:

1. Key Sheet
2. Summary of Pay Items
3. General Notes
4. Typical Sections
5. Project Layout Sheet
6. Roadway Plan and Profile Sheets
7. Roadway Cross Sections
8. Miscellaneous Details
9. Signing and Pavement Marking Plans
10. Traffic Control Plan (MOT)
11. SWPPP and Erosion Control Sheets

CPH will utilize FDOT Specifications for the roadway construction, incorporating Supplemental Specifications for any revisions or items proposed in the plans not included in the FDOT Specs. The CITY will be responsible for providing the necessary Front End Documents. CPH will also prepare updated OPCC's for each Plan Phase submittal (60%, 90%, and Final). CPH will

provide a breakdown of the quantities per customary construction units and pay items necessary to construct the project.

Based on the CITY's review of each submittal phase, CPH will address comments, and move forward with preparing the subsequent submittal. If significant revisions to the plans are requested resulting in a change of the previously agreed upon design, the requested revisions will be addressed as additional services.

TASK 4 – LANDSCAPE DESIGN SERVICES

Final Landscape Design

Based on the CITY's review of the 30% Plans, CPH will prepare 60% Landscape Plans at a reasonable scale to clearly detail the proposed construction required to meet CITY and ADA criteria. At this submittal CPH will also prepare an irrigation plan for an automatic irrigation system that responds to the requirements of the landscape design and CITY's design criteria. This drawing will be a construction document and include a materials list, watering schedule, irrigation details and general notes regarding implementation requirements. The 60% Landscape Construction Plans will consist of the following sheets:

Tree Protection and Mitigation Plan
Landscape Plan View Sheets
Landscape Details and Notes
Hardscape Plan View Sheets
Hardscape Details and Notes
Irrigation Plans
Irrigation Notes and Details

Based on the CITY's 60% Submittal review, CPH will prepare 90%, and Final Bidding Documents (100%) and Technical Specifications.

TASK 5 – PERMITTING SERVICES

Permitting is anticipated with the St Johns River Water Management District (SJRWMD). Given the nature of the improvements, CPH assumes that the project can qualify for a Determination of Permit Exemption from the SJRWMD because it involves the addition or upgrade of pedestrian facilities, turn lanes, etc., which are currently exempted under Florida statute.

Upon completion and CITY review of the 60% Plans, CPH will prepare and submit the plans for the appropriate permits to SJRWMD and FDOT. CPH will address comments provided by the permitting agencies that pertain to the required design standards. Any modifications requested that are not code or design standards issues, modifications requested by the permitting agencies that require significant plan revisions (as agreed upon by the CITY and CPH) or require scope of services not included herein, will be addressed as additional services. Any other permits that may arise during the design or review process, and not outlined above, will be handled as an additional service. Permitting and/or application fees will be the responsibility of the CITY. If the SJRMWD determines that additional permitting is required and that they will not issue the Determination of Permit Exemption, this will be addressed as additional work.

TASK 6 – UTILITY COORDINATION

CPH will perform the utility coordination for the proposed project. CPH will coordinate with Duke Energy to relocate and/or underground the overhead power CPH will coordinate with the CITY and other private utilities and propose a design that minimizes conflict. CPH will furnish plans of the 90% plan stages to the identified utilities owners, requesting Red, Green, Brown (RGB's) for review and confirmation of utility locations. CPH will work diligently to design the proposed improvements so as not to conflict with the existing utilities. However, due to the nature of the work, there may arise such conflicts with existing utilities which are unavoidable and CPH will work with the CITY to see that the utility owners relocate their facilities to alleviate the conflict. However, CPH is not responsible for the design or cost of the relocated private utilities.

TASK 7 – DUKE ENERGY LIGHTING COORDINATION

CPH will coordinate with Duke Energy to replace the existing street lighting along the project corridor. CPH will provide 90% plans to Duke Energy for their use in preparing their lighting plans. CPH will also attend one (1) Duke Energy Lighting coordination meeting in order to assist in synchronizing the lighting plans with the other improvements. CPH will not be providing any lighting plans, including any conduit layouts, pole placements, or photometric analyses, as part of this scope. Should these be requested by the CITY, they will be addressed as additional work.

TASK 8 – GEOTECHNICAL and PHASE 1 CONTAMINATION SERVICES

CPH will utilize Geotechnical and Environmental Consultants, Inc. (GEC) (as a sub-consultant) to perform the geotechnical exploration. Please refer to the proposal as submittal by GEC.

TASK 9 – Final Utility Design Services

Based on the CITY's review of the 30% Plans, CPH will prepare 60% Utility Plans at a reasonable scale to clearly detail the proposed construction required to meet CITY criteria. As discussed, this plan will include all elements identified within the CITY portions of the Bluford Ave. project, specifically that the existing water main is to be completely removed and replaced. These plans shall be prepared using colored linework to denote both existing and proposed utilities.

CPH will prepare the construction plan sheets, notes and details to include sheets necessary to convey the intent and scope of the project for the purposes of construction. The 60% Utility Construction Plans will consist of the following sheets:

Utility General Notes
Utility Plan and Profile Sheets
Utility Details

CPH will utilize CITY of Ocoee Specifications for the utility construction, incorporating Supplemental Specifications for any revisions or items proposed in the plans not included in the CITY Specs. The CITY will be responsible for providing the necessary Front End Documents.

CPH will also prepare updated OPCC's for each Plan Phase submittal (60%, 90%, and Final). CPH will provide a breakdown of the quantities per customary construction units and pay items necessary to construct the project.

Based on the CITY's 60% Submittal review, CPH will prepare 90%, and Final Bidding Documents (100%) and Technical Specifications. In addition, after the acceptance of the 90% Plans, CPH shall conduct the FDEP permitting for the project and include them as part of the Final (100%) submittal.

If significant revisions to the plans are requested resulting in a change of the previously agreed upon design, the requested revisions will be addressed as additional services.

TASK 10 – Utility Locates Geneva Street to Delaware Street.

CPH will utilize Barnes, Ferland, and Associates, Inc. (BFA) (as a sub-consultant) to perform up to 22 soft digs (as needed) for the utility design for the CITY Portion. Please refer to the proposal as submitted by BFA.

SERVICES NOT INCLUDED

The following services are not provided as part of this Scope of Services and will require an amendment if requested:

1. Environmental Services
2. Post Design Services
3. Lighting Design or Plans, including Photometric Analysis
4. Construction Engineering and Inspection Services
5. Permits or authorization not specifically mentioned in this Scope of Services
6. Any other issues not specifically described in this proposal

COMPENSATION

Labor

CPH will perform the Scope of Services contained in this Agreement as identified on each task on a lump-sum basis, as identified in the corresponding task of the Scope of Services. The following is the breakdown of fees for each task.

Part 2 - CITY Portion

Task	Task Description	Billing Method	Fee
1.	Project Administration	Lump Sum	$3,460.00
2.	Surveying Services	Lump Sum	$18,085.00
3.	Final Roadway Design	Lump Sum	$146,850.00
4.	Final Landscape Design	Lump Sum	$21,480.00
5.	Permitting	Lump Sum	$1,790.00
6.	Utility Coordination	Lump Sum	$1,295.00
7.	Duke Energy Lighting Coordination	Lump Sum	$1,295.00
8.	Geotechnical Services	Lump Sum	$8,274.00
9.	Final Utility Plans	Lump Sum	$118,470.00
10.	Utility Locates (22)	Lump Sum	$20,588.93
	GRAND TOTAL	**Lump Sum**	**$341,587.93**

It is understood that fees for the subject project, including but not limited to, application fees, impact fees, review fees, etc., will be paid directly by the CITY.

CONSULTANT will submit invoices on a monthly basis to the CITY for payment. Lump Sum tasks will be billed as percent complete. In addition to the labor compensation outlined above, CPH shall be reimbursed directly for project specific expenditures such as, but not limited to travel, printing and reprographics, meals, postage, and phone usage. Reimbursable expenses will be billed at their actual cost, without increase.

City of Ocoee - S. Bluford Avenue Streetscape Phase II

Geneva Street to Delaware St.

Task	FINAL DESIGN - ROADWAY/ STREETSCAPE	SUMMARY TASK MAN HOURS	SUMMARY TASK COST	Sr. Project Manager		Project Manager		Project Engineer		Sr. Project Designer		Design Tech		Prin Landscape Architect		Landscape Architect	
				$ 235.00		$ 180.00		$ 140.00		$ 145.00		$ 105.00		$ 260.00		$ 135.00	
				MAN HOURS	EXTENDED COST	MAN HOURS	EXTENDED COST	MAN HOURS	EXTENDED COST	MAN HOURS	EXTENDED COST	MAN HOURS	EXTENDED COST	MAN HOURS	EXTENDED COST	MAN HOURS	EXTENDED COST
1.0	Project Administration	20	$ 3,460.00	4	$ 940.00	12	$ 2,160.00		$ -		$ -		$ -		$ -		$ -
2.0	Boundary Survey (3 Parcels)	118	$ 16,060.00		$ -		$ -		$ -		$ -		$ -		$ -		$ -
	Title Search Reports (Sub) ($675 per Each) (3)		$ 2,025.00	Refer to Proposal from ASGC													
3.0	Final Roadway Design	1062	$ 146,850.00	36	$ 8,460.00	108	$ 19,440.00	224	$ 31,360.00	374	$ 54,230.00	304	$ 31,920.00		$ -		$ -
4.0	Final Landscape Design	160	$ 21,480.00		$ -		$ -		$ -		$ -	40	$ 4,200.00	24	$ 6,240.00	32	$ 4,320.00
5.0	Permitting	12	$ 1,790.00	2	$ 470.00	4	$ 720.00		$ -		$ -	4	$ 420.00		$ -		$ -
6.0	Utility Coordination	10	$ 1,295.00	1	$ 235.00	1	$ 180.00	2	$ 280.00		$ -	4	$ 420.00		$ -		$ -
7.0	Duke Energy Lighting Coordination	10	$ 1,295.00	1	$ 235.00	1	$ 180.00	2	$ 280.00		$ -	4	$ 420.00		$ -		$ -
8.0	Geotechnical Services (SUB)		$ 8,274.00	Refer to Proposal from GEC													
9.0	Final Utility Plans	849	$ 118,470.00	30	$ 7,050.00	72	$ 12,960.00	96	$ 13,440.00	420	$ 60,900.00	222	$ 23,310.00		$ -		$ -
10.0	Utility Locates (22)		$ 20,588.93	Refer to Proposal from BFA													
		0	$ -		$ -	0	$ -		$ -		$ -		$ -		$ -		$ -
		2241	**$ 341,587.93**	**74**	**$ 17,390.00**	**198**	**$ 35,640.00**	**324**	**$ 45,360.00**	**794**	**$ 115,130.00**	**578**	**$ 60,690.00**	**24**	**$ 6,240.00**	**32**	**$ 4,320.00**

CPH, INC.

Landscape Designer		Principal Surveyor		Sr. Professional Surveyor		Field Crew Coordinator		Survey Party Chief		Survey Instrament Man		GPS (1 Man)		Survey PM/CADD		Administrative		Reimbursable Expenses	TOTALS	
$ 105.00		$ 260.00		$ 160.00		$ 125.00		$ 100.00		$ 90.00		$ 165.00		$ 135.00		$ 90.00				
MAN HOURS	EXTENDED COST	MAN HOURS	EXTENDED COST	MAN HOURS	EXTENDED COST	MAN HOURS	EXTENDED COST	MAN HOURS	EXTENDED COST	MAN HOURS	EXTENDED COST	MAN HOURS	EXTENDED COST	MAN HOURS	EXTENDED COST	MAN HOURS	EXTENDED COST	COST	TOTAL MAN HOURS	TASK COST
	$ -		$ -		$ -		$ -		$ -		$ -		$ -		$ -	4	$ 360.00		20	$ 3,460.00
	$ -	8	$ 2,080.00	20	$ 3,200.00	12	$ 1,500.00	16	$ 1,600.00	16	$ 1,440.00	16	$ 2,640.00	20	$ 2,700.00	10	$ 900.00		118	$ 16,060.00
																				$ 2,025.00
	$ -		$ -		$ -		$ -		$ -		$ -		$ -		$ -	16	$ 1,440.00		1062	$ 146,850.00
64	$ 6,720.00		$ -		$ -		$ -		$ -		$ -		$ -		$ -		$ -		160	$ 21,480.00
	$ -		$ -		$ -		$ -		$ -		$ -		$ -		$ -	2	$ 180.00		12	$ 1,790.00
	$ -		$ -		$ -		$ -		$ -		$ -		$ -		$ -	2	$ 180.00		10	$ 1,295.00
	$ -		$ -		$ -		$ -		$ -		$ -		$ -		$ -	2	$ 180.00		10	$ 1,295.00
																				$ 8,274.00
	$ -		$ -		$ -		$ -		$ -		$ -		$ -		$ -	9	$ 810.00		849	$ 118,470.00
																				$ 20,588.93
	$ -		$ -		$ -		$ -		$ -		$ -		$ -		$ -		$ -			
64	**$ 6,720.00**	**8**	**$ 2,080.00**	**20**	**$ 3,200.00**	**12**	**$ 1,500.00**	**16**	**$ 1,600.00**	**16**	**$ 1,440.00**	**16**	**$ 2,640.00**	**20**	**$ 2,700.00**	**45**	**$ 4,050.00**	**$ -**	**2241**	**$ 341,587.93**

AMERICAN GOVERNMENT SERVICES CORPORATION

Nichole Lunsford
CPH, LLC
500 W. Fulton St
Sanford, FL 32771
407-322-6841 Ext 3176
Nlunsford@cphcorp.com

March 6, 2023

RE: Ocoee
Orange County, Florida.

Dear Ms. Lunsford:

Please accept this letter as confirmation that we can provide Title Search Reports for Title Services. In accordance with your request, I am pleased to submit the following price proposal for the following:

Reports to be provided in the form specified at a rate of:

- EPR Searches $ 675.00 **per parcel**
- Updates, upon request $ 100.00 per parcel

Total estimate is for the 3 parcels:
$2,025.00 Estimate does not include update(s).

To be completed 45 working days or less or by the date requested by client. Includes 1 pdf or CD.

Our services are provided on a per parcel basis; therefore do not require a quote on an hourly or any other rate basis. DOT Title Research Reports are per report and are charged at per parcel rate. These charges are customary and ordinary.

This is to certify that the billing rates contained herein is our normal rates for such services and that the method used to arrive at the rates are the same as for both public and private sector clients. If inflationary increases are requested, this further certifies that proposed increases are consistent with billing rate increases over the past two years.

I appreciate the opportunity to work with you on this exciting project. If you have any further questions or need additional information, please don't hesitate to contact me at (813) 933-3355, ext 236.

Sincerely,
Tammy Mehl
Senior Vice President
3812 West Linebaugh Avenue
Tampa, Florida 33618
Phone: (813) 933-3355 ext 236
Fax: (813) 594-0471 Cell: (813) 334-7467
tmehl@agsres.com

Geotechnical and Environmental Consultants, Inc.

February 28, 2023

CPH Corporation
500 West Fulton Street
Sanford, FL 32771

Attention: Mr. Kurt Luman, Jr., P.E.

Subject: Proposal for Geotechnical Services
SOUTH BLUFORD AVENUE COMPLETE STREETS – CITY SEGMENT
Geneva Street to Delaware Street
Ocoee, Florida
GEC Proposal No. 10527G1

Dear Mr. Luman:

Geotechnical and Environmental Consultants, Inc. (GEC) is pleased to provide this proposal for the above-referenced project. This proposal was requested by email on February 28, 2023 and our scope of services is based on the project information and scope of services provided by you. The purpose of this investigation is to explore soil and groundwater conditions along the alignment and use the information obtained to provide geotechnical engineering recommendations for site preparation, and design and construction of the roadway improvements.

The project includes roadway realignment and widening and new sewer from Geneva Street 50 to Delaware Street (approximately 2,220 lf). This segment is presented as Attachment 1.

Geotechnical Scope of Services

Based on our review of the scope of services, our scope of services is as follows:

- Stake boring locations at the site.
- Clear utilities at the boring locations.

- Mobilize drilling equipment and crew.
- Perform 9 auger borings to a depth of 5 feet and 3 auger borings to a depth of 15 feet below grade. Borings will be performed on approximate 200-foot intervals.
- Obtain and conduct 2 Limerock Bearing Ratio (LBR) samples.
- Perform routine laboratory soil classification tests to aid in visual soil classification.
- Issue a geotechnical engineering report signed and sealed by a Geotechnical Engineer licensed in Florida that will address the following topics:
    - Subsurface conditions at the boring locations
    - Measured and estimated seasonal high groundwater depths
    - Site preparation
    - Fill selection, placement and compaction
    - Document pavement conditions
    - Roadway pavement subgrade design

Fee and Schedule

Our fee to provide the described scope of services is a Not-to-Exceed Amount of $8,274.00. Please refer to Attachment 2 for a specific breakdown of the estimated fees.

Our schedule to complete the work will be about 5 to 6 weeks from your written notice to proceed. If requested, verbal recommendations can be provided after the field work is completed. Our schedule is highly dependent on Sunshine 811 and the utility providers/locators clearing the soil boring locations within the allotted 48 hour time frame.

Limitations

This proposal is subject to the following limitations: 1) The site will be accessible to the drilling equipment assumed above. If other types of drilling equipment become necessary due to site and/or weather conditions, appropriate adjustments to the actual fees will be necessary, and 2) we assume no responsibility for damage to underground utilities and/or structures that are not located by the owner or Sunshine State One-Call.

Attachment 2

Geotechnical Scope of Services and Cost

SOUTH BLUFORD AVENUE COMPLETE STREET

City Segment - Geneva Street to Delaware Street

Ocoee, Florida

GEC Proposal No. 10527G1

	Quantity	Units	Unit Rate	Cost
Field Services				
Mobilization of Truck Mount Drill Rig and Crew	1	ls	$600.00	$600.00
Engineering Technician (Site Recon, Boring/Core Layout, Utility Clearance, WT's)	6	hr	$75.00	$450.00
Roadway Auger Borings (1/200 lf) City Segment (9 @ 5', 3 @ 15')	90	ft	$12.00	$1,080.00
Support Truck	1	day	$160.00	$160.00
Traffic Signs	2	day	$50.00	$100.00
Drill Rig and Crew	1	hr	$220.00	$220.00
GPS Unit for Boring and Core Locations	1	day	$100.00	$100.00
			Field Subtotal	**$2,710.00**
Laboratory Testing				
Grain Size Analysis	5	ea	$72.00	$360.00
Organic Content	2	ea	$50.00	$100.00
Atterberg Limits	2	ea	$125.00	$250.00
Natural Moisture Content	4	ea	$17.00	$68.00
Corrosion Series	2	ea	$238.00	$476.00
LBR Tests	2	ea	$360.00	$720.00
			Laboratory Subtotal	**$1,974.00**
Engineering Analysis & Report				
Senior Professional	4	hr	$250.00	$1,000.00
Project Engineer	12	hr	$150.00	$1,800.00
CADD Draftsman	5	hr	$110.00	$550.00
Secretary	3	hr	$80.00	$240.00
			Engineering Subtotal	**$3,590.00**
			NOT-TO-EXCEED FEE	**$8,274.00**

December 6, 2022 BFA Project No. 2023-13.2

Mr. Kurt R. Luman, Jr., P.E.
Vice President/Associate
Transportation Division Director
CPH

Subject: City of Ocoee S. Bluford Avenue Streetscape Project
Potable Water, Reclaimed Water and Sanitary Sewer Relocations and Improvements
Revised Scope and Fee Proposal for Engineering Services

Dear Kurt:

Attached for your review is BFA's scope and fee proposal for Task 2 to provide surveying and SUE services in support of the S. Bluford Avenue Streetscape Project and for the design of potable water, reclaimed water and sanitary sewer relocations and improvements related to the S. Bluford Avenue Streetscape Project.

We appreciate the opportunity to assist CPH and the City of Ocoee on this important project. If you have any questions or comments regarding this proposal, please contact me.

Sincerely,

Will E. Thomas, PE
President

Attachments

1230 Hillcrest Street, Suite 100 • Orlando, Florida 32803
Office (407) 896-8608 • Fax (407) 896-1822

Exhibit A

SCOPE OF SERVICES

CITY OF OCOEE S. BLUFORD AVENUE STREETSCAPE PROJECT PROPOSAL FOR POTABLE WATER, RECLAIMED WATER AND SANITARY SEWER RELOCATIONS AND IMPROVEMENTS

This presents BFA Environmental Consultants' proposal for providing survey and SUE services related to the City of Ocoee's **S. Bluford Avenue Streetscape Project.** This proposal includes the proposed scope, fee, and all work and services needed to successfully complete this project. The procedures and design requirements shall be performed in accordance with the City of Ocoee's Engineering Standards Manual.

PROJECT DESCRIPTION AND PURPOSE

As a subconsultant to CPH, BFA will be performing survey and SUE services for potable water, reclaimed water and sanitary sewer relocations and improvements in conjunction with the proposed roadway and streetscape improvements designed by CPH.

SCOPE OF SERVICES

Task 2.0 – Subsurface Utility Engineering (SUE) Soft Digs for Utilities Department

To aid in the design of CITY water, reclaimed water and sanitary sewer relocations and improvements, BFA will perform up to 22 soft digs at utility tie-in points and at critical crossings throughout the project corridor. The soft digs will be performed with vacuum excavation equipment and will determine the horizontal and vertical location, the size, type and material of each utility uncovered. It is assumed these soft digs will be performed following the 60% utility relocation and improvement design. It is assumed that 10 of these soft digs will be performed in existing asphalt or concrete pavement and 12 will be performed outside of pavements. BFA will survey the vertical and horizontal location of each of these soft digs and include the survey file in the utility relocations and improvements plans. BFA will utilize the horizontal and vertical control established by CPH in their topographic survey for the horizontal and vertical verification.

PROPOSED FEE

BFA proposes to complete the services described above based on a total lump sum fee of **$20,588.93**. A complete description of the proposed fee providing man-hour and fee information for each task is provided in **Exhibit B**.

BFA will submit invoices monthly to CPH for payment. Lump Sum tasks will be billed as percent complete. In addition to the labor compensation outlined above, BFA shall be reimbursed directly for project specific expenditures such as, but not limited to permit application fees, travel, printing and reprographics and postage. Reimbursable expenses will be billed at their actual cost, without increase.

EXHIBIT B

CITY OF OCOEE
S. BLUFORD AVENUE STREETSCAPE PROJECT
POTABLE WATER, RECLAIMED WATER AND SANITARY SEWER RELOCATIONS AND IMPROVEMENTS

BFA Survey Labor Costs

December 6, 2022 | Multiplier: 2.99

TASK	Sr. Surveyor and Mapper		Survey Technician		2 Person Survey Crew		Utility Coordinator		3 Person SUE Crew		2 Person SUE Crew		BFA Labor Totals	
	Hourly Rate	$50.75	Hourly Rate	$33.65	Hourly Rate	$53.00	Hourly Rate	$33.50	Hourly Rate	$66.66	Hourly Rate	$53.55		
	Billing Rate	$151.74	Billing Rate	$100.61	Billing Rate	$158.47	Billing Rate	$100.17	Billing Rate	$199.31	Billing Rate	$160.10		
	Hours	Costs	Hours	Costs	Hours	Costs	Hours	Costs	Hours	Costs	Hours	Costs	Hours	Costs
Task 2.0 - SUE Soft Digs for Utilities Department	3	$455.23	12	$1,207.36	8	$1,267.76	16	$1,602.64	42	$8,371.16	48	$7,684.78	129	$20,588.93
Total	3	$455.23	12	$1,207.36	8	$1,267.76	16	$1,602.64	42	$8,371.16	48	$7,684.78	129	$20,588.93

Bluford_Fee_Analysis_11-29-2022.xlsx12/6/2022

CITY OF OCOEE
1 N. Bluford Ave.
Ocoee, Florida 34761

This Change Order Requires Action by the City Commission

RFQ #21-003 DESIGN & ENGINEERING FOR S. BLUFORD AVE STREETSCAPE
CHANGE ORDER NO. 2

DATE: 01/23/24 PURCHASE ORDER: 1428155

The following changes are hereby made to the CONTRACT DOCUMENTS.

Original CONTRACT PRICE	$290.952.59
Current CONTRACT PRICE ADJUSTED by previous CHANGE ORDERS	$1,031,741.23
Net Increase (Decrease) Resulting from this CHANGE ORDER	**$341,587.93**
The current CONTRACT PRICE including this CHANGE ORDER	**$1,373,329.16**
Original CONTRACT COMPLETION DATE:	N/A
Current CONTRACT COMPLETION DATE adjusted by previous CHANGE ORDERS	N/A
Net Increase Resulting from this CHANGE ORDER	**N/A**
Current CONTRACT COMPLETION DATE including this CHANGE ORDER	**N/A**

CHANGES ORDERED:

I. REQUIRED CHANGES

This change order will cause an increase of $341,587.93 to the contract price.

II. JUSTIFICATION

CPH Consulting LLC, is currently working on completing the final engineering documents for the section between Old Winter Garden Road and Geneva Street. This change order will cover the costs to complete the final engineering for the remaining portion from Geneva Street to Delaware Street.

III. NARRATIVE OF NEGOTIATIONS

In March of 2023, staff coordinated with CPH Consulting who provided separate costs for a CRA portion (Old Winter Garden Road to Geneva Street) and a City portion (Geneva Street to Delaware Street) of the project. A change order was executed to proceed with the CRA portion with the intent to bring back the remaining City portion at a later time when funding was available. Now that funding is available in the Fiscal Year 2024 budget, staff seeks to complete the final engineering for the full corridor as originally intended.

IV. PAYMENT

The Public Works department will fund this change order from GL 317-541-10-6302, Job No. P000404.

V. APPROVAL AND CHANGE AUTHORIZATION

The original project and funding allocation was established by issuance of a CITY purchase order, subject to the terms and conditions contained in the CITY's solicitation, Project Manual, Drawings, Specifications, and/or the CONTRACTOR's service and price proposal, which collectively form the terms of an agreement between the CITY and the CONTRACTOR for the performance of the Work. This proposed change to the agreement requires approval by the City Commission under the CITY's Purchasing Rules and Regulations and is consistent with any prior action by the City Commission to award the Work to the CONTRACTOR. It is expressly understood and agreed that the approval of the Change Order shall have no effect on the original agreement other than matters expressly provided herein.

CONTRACTOR acknowledges, by its execution and acceptance of this Change Order, that the adjustments in contract price and time shown hereon constitute full and complete compensation and satisfaction for all costs and modifications of performance time incurred by the CONTRACTOR as a result of this Change Order. No other claim for increased costs of performance or modifications of time will be granted by the CITY for the Work covered by this Change Order. The CONTRACTOR hereby waives and releases any further claims for cost or time against the CITY arising from or relating to the matters or Work set forth or contemplated by this Change Order.

[Balance of this page was left blank intentionally]

RECOMMENDED BY:

CITY OF OCOEE, FLORIDA

By: _____
Signature

Date: 1-23-2024

Title: PUBLIC WORKS DIRECTOR

ACCEPTED BY:

CPH Consulting, LLC

By: _____
Signature

Date: 1-30-2024

Title: Transportation Division Director

APPROVED BY:

CITY OF OCOEE, FLORIDA

By: _____
Rusty Johnson, Mayor

Date: _____

Attest: _____
Melanie Sibbitt, City Clerk

FOR USE AND RELIANCE ONLY BY THE CITY OF OCOEE, APPROVED AS TO FORM AND LEGALITY THIS _____ DAY OF _____, 20___

By: _____
City Attorney

APPROVED BY THE CITY OF OCOEE COMMISSION IN A MEETING HELD ON _____, 20___ UNDER AGENDA ITEM NO. _____.

STAFF REPORT

Meeting Date: February 6, 2024
Item #: 3

Contact Name: Joyce Tolbert, Olena Stokych
Contact Number: Ext. 1516, Ext. 1521

Department Director: Rebecca Roberts
City Manager: Robert Frank

Subject: Approval to Award Invitation to Bid (ITB) #24-004 Asphalt Paving Projects for Fiscal Year 2024. (Procurement Manager Tolbert)

Background Summary: The City of Ocoee, Florida (City) solicited bids from qualified contractors to furnish labor, supervision, materials, equipment, supplies and incidentals for the Asphalt Paving Projects for Fiscal Year 2024 for the milling and resurfacing for sections of Old Winter Garden (Maguire to Bluford), Old Winter Garden (Blackwood to Hempel), Clarke Road (Silver Star to Ad Mims), Lakewood Hills Subdivision, Marsden St/ Sullivan Ave, Moore Road, Tiger Minor South Parking Lot, Action Park Parking Lot and Ocoee Cemetery Drive (Add Alternate) in the City of Ocoee.

The ITB was publicly advertised on December 17, 2023, and opened on January 16, 2024. There were a total of four (4) bids received ranging from $2,455,032.46 to $2,636,681.20. All bids are available in the Finance Department for review. The Public Works and Finance Departments reviewed the bids received and all were considered responsive. Staff recommends awarding the bid to Ranger Construction Industries, Inc., which came in $272,967.54 below the estimated budget amount, per the attached recommendation from Milen Womack, City Engineer.

The following table is a listing of the bids received:

	Bidder	Total Bid
1.	**Ranger Construction Industries, Inc.**	**$2,455,032.46**
2.	Middlesex Paving, LLC.	$2,478,461.00
3.	Superior Asphalt, Inc.	$2,629,656.50
4.	Hubbard Construction Company	$2,636,681.20

Issue:
Should the Honorable Mayor and City Commissioners award the bid for Asphalt Paving Projects for FY 2024 to Ranger Construction Industries, Inc., as recommended by the City Engineer?

Recommendations:
Staff recommends the Honorable Mayor and City Commissioners award Asphalt Paving Projects for FY 2024 to

Ranger Construction Industries, Inc. for the amount of $2,455,032.46, including the Add Alternate, and authorize the Mayor, City Clerk, and Staff to execute the required contract documents once the required bonds and insurance are received. Staff also recommends the City Manager be authorized to approve change orders to this contract up to the limit of his purchasing authority for each change order, and up to the budgeted amount for this project for all change orders.

Attachments:

1. Memo Award Recommendation ITB #24-004 Asphalt Paving Projects FY 2024
2. Bid Tabulation ITB #24-004 Asphalt Paving Projects FY 2024
3. Ranger Construction Industries, Inc. - Proposal ITB #24-004 Asphalt Paving Projects FY 2024
4. Middlesex - Proposal ITB #24-004 Asphalt Paving Projects FY 2024
5. Addendum #1 - REVISED Bid Form and Plans ITB #24-004 Asphalt Paving Projects FY 2024
6. ITB #24-004 Asphalt Paving Projects FY 2024 Solicitation

Financial Impacts:

There is $2,728,000.00 available in the Public Works streets operations department for paving improvements and Parks and Recreation cemetery road resurfacing, with $502.10 funded from the Ocoee cemetery beautification project.

Type of Item: Consent

Mayor
Rusty Johnson

Commissioners
Scott R Kennedy
District 1

Rosemary Wilsen
District 2

Richard Firstner
District 3

Ages Hart
District 4

City Manager
Robert D. Frank

MEMORANDUM

Date: January 25, 2023

To: Olena Stokych, Purchasing Agent

From: Milen Womack, City Engineer

RE: Contract Award Recommendation.
ITB No. 24-004 Asphalt Paving Projects for FY 2024

Public Works recommends award of the Asphalt Paving Projects for FY 2024, ITB No. 24-004, to Ranger Construction Industries, Inc., headquartered in West Palm Beach with offices in Winter Garden, for the low bid of $ 2,455,032.46. The City received four (4) qualified bids from interested contractors ranging from $2.45 million to $2.63 million. All four of the bid prices were within 8% of each other. Ranger Construction Industries, Inc. has been in business since the 1970s and has successfully completed previous projects for the City, most recently the repaving for the Fullers Cross Intersection Improvements. The contract is adequately funded through the Public Works Department asphalt resurfacing budget.

ITB #24-004
ASPHALT PAVING PROJECTS FOR FY 2024
BID TABULATION
01/16/24 2:00 P.M.

BID TABULATION		Hubbard Construction Company		Middlesex Paving, LLC.		Ranger Construction Industries, Inc.		Superior Asphalt, Inc.	
Acknowleged Addendum #1				✓		✓			
Bid Security (Bid Bond)				Bid Bond		Bid Bond			
Company Verification/License Check				Active		Active			
Required Forms				✓		✓			
DESCRIPTION	**QTY.**	**UNIT PRICE**	**TOTAL PRICE**	**UNIT PRICE**	**TOTAL PRICE**	**UNIT PRICE**	**TOTAL PRICE**	**UNIT PRICE**	**TOTAL PRICE**
OLD WINTER GARDEN (MAGUIRE TO BLUFORD) MILLING AND RESURFACING									
Mobilization/Demobilization & General Construction Requirements & Restoration (5% of Base Bid plus add alternates)	1	$55,500.00	$55,500.00	$18,500.00	$18,500.00	$9,500.00	$9,500.00	$23,000.00	$23,000.00
1.5" Milling (Max.)	17,027	$3.65	$62,148.55	$4.50	$76,621.50	$3.50	$59,594.50	$4.95	$84,283.65
1.5" Resurface Type FC-12.5 Asphalt Paving	17,027	$16.40	$279,242.80	$17.50	$297,972.50	$17.80	$303,080.60	$16.90	$287,756.30
Traffic Signal Loop System Restoration	1	$3,459.00	$3,459.00	$15,000.00	$15,000.00	$11,400.00	$11,400.00	$50,185.00	$50,185.00
Temporary Striping and Thermoplastic Final Striping	1	$45,030.00	$45,030.00	$35,000.00	$35,000.00	$36,800.00	$36,800.00	$42,460.00	$42,460.00
SUB-TOTAL			$445,380.35		$443,094.00		$420,375.10		$487,684.95
OLD WINTER GARDEN (BLACKWOOD TO HEMPEL) MILLING AND RESURFACING									
Mobilization/Demobilization & General Construction Requirements & Restoration (5% of Base Bid plus add alternates)	1	$64,200.00	$64,200.00	$18,500.00	$18,500.00	$9,800.00	$9,800.00	$29,000.00	$29,000.00
1.5" Milling (Max.)	19,624	$3.75	$73,590.00	$4.50	$88,308.00	$3.02	$59,264.48	$5.00	$98,120.00
1.5" Resurface Type FC-12.5 Asphalt Paving	19,624	$16.55	$324,777.20	$17.50	$343,420.00	$18.10	$355,194.40	$17.60	$345,382.40
Traffic Signal Loop System Restoration	1	$26,830.00	$26,830.00	$24,000.00	$24,000.00	$18,100.00	$18,100.00	$69,325.00	$69,325.00
Temporary Striping and Thermoplastic Final Striping	1	$51,500.00	$51,500.00	$38,000.00	$38,000.00	$27,400.00	$27,400.00	$39,755.00	$39,755.00
SUB-TOTAL			$540,897.20		$512,228.00		$469,758.88		$581,582.40
CLARKE RD (SILVER STAR TO AD MIMS) (1" FC 9.5, 1.5"SP 9.5)									
Mobilization/Demobilization & General Construction Requirements & Restoration (5% of Base Bid plus add alternates)	1	$125,255.00	$125,255.00	$35,610.00	$35,610.00	$24,400.00	$24,400.00	$57,000.00	$57,000.00
2" Milling (Max.)	34,706	$3.40	$118,000.40	$5.00	$173,530.00	$3.07	$106,547.42	$4.30	$149,235.80
1" Resurface Type SP- 9.5 Asphalt Paving	34,706	$11.25	$390,442.50	$11.50	$399,119.00	$11.60	$402,589.60	$10.70	$371,354.20
1" Resurface Type FC-9.5 Asphalt Paving	34,706	$12.30	$426,883.80	$13.00	$451,178.00	$13.96	$484,495.76	$11.90	$413,001.40
Traffic Signal Loop System Restoration	1	$32,670.00	$32,670.00	$24,000.00	$24,000.00	$17,000.00	$17,000.00	$82,475.00	$82,475.00
Temporary Striping and Thermoplastic Final Striping	1	$87,600.00	$87,600.00	$75,000.00	$75,000.00	$90,800.00	$90,800.00	$81,450.00	$81,450.00
SUB-TOTAL			$1,180,851.70		$1,158,437.00		$1,125,832.78		$1,154,516.40
LAKEWOOD HILLS SUBDIVISION (STARKE LAKE CIR, ALASKA DR, HAWAII DR)									
Mobilization/Demobilization & General Construction Requirements & Restoration (5% of Base Bid plus add alternates)	1	$22,310.00	$22,310.00	$1,500.00	$1,500.00	$7,500.00	$7,500.00	$6,500.00	$6,500.00
1.25" Milling (Max.)	7,520	$1.85	$13,912.00	$3.50	$26,320.00	$3.15	$23,688.00	$4.20	$31,584.00
1.25" Resurface Type SP-9.5 Asphalt Paving (Revised)	7,520	$12.65	$95,128.00	$12.00	$90,240.00	$13.45	$101,144.00	$13.35	$100,392.00
Temporary Striping and Thermoplastic Final Striping (6 stop bars)	1	$4,912.00	$4,912.00	$1,500.00	$1,500.00	$4,170.00	$4,170.00	$2,800.00	$2,800.00
SUB-TOTAL			$136,262.00		$119,560.00		$136,502.00		$141,276.00
MARSDEN ST / SULLIVAN AVE									
Mobilization/Demobilization & General Construction Requirements & Restoration (5% of Base Bid plus add alternates)	1	$9,380.00	$9,380.00	$2,800.00	$2,800.00	$4,570.00	$4,570.00	$3,300.00	$3,300.00
1.25" Milling (Max.)	3,408	$3.50	$11,928.00	$3.50	$11,928.00	$3.50	$11,928.00	$4.55	$15,506.40
1.25" Resurface Type SP-9.5 Asphalt Paving (Revised)	3,408	$13.20	$44,985.60	$12.00	$40,896.00	$13.55	$46,178.40	$13.30	$45,326.40
Temporary Striping and Thermoplastic Final Striping (2 stop bars)	1	$2,949.00	$2,949.00	$5,000.00	$5,000.00	$3,570.00	$3,570.00	$2,710.00	$2,710.00
SUB-TOTAL			$69,242.60		$60,624.00		$66,246.40		$66,842.80
MOORE ROAD (EASTERN MOST 300 FT To 7th Ave)									
Mobilization/Demobilization & General Construction Requirements & Restoration (5% of Base Bid plus add alternates)	1	$4,691.00	$4,691.00	$1,500.00	$1,500.00	$1,900.00	$1,900.00	$2,100.00	$2,100.00
1.5" Milling (Max.)	1,280	$7.80	$9,984.00	$6.50	$8,320.00	$8.35	$10,688.00	$7.50	$9,600.00
1.5" Resurface Type SP-12.5 Asphalt Paving	1,280	$18.80	$24,064.00	$15.50	$19,840.00	$21.65	$27,712.00	$22.75	$29,120.00
Temporary Striping and Thermoplastic Final Striping	1	$15,450.00	$15,450.00	$5,000.00	$5,000.00	$6,440.00	$6,440.00	$6,000.00	$6,000.00
SUB-TOTAL			$54,189.00		$34,660.00		$46,740.00		$46,820.00
TIGER MINOR SOUTH PARKING LOT									
Mobilization/Demobilization & General Construction Requirements & Restoration (5% of Base Bid plus add alternates)	1	$6,550.00	$6,550.00	$1,500.00	$1,500.00	$2,720.00	$2,720.00	$2,300.00	$2,300.00
1" Milling (Max.)	1,945	$5.55	$10,794.75	$6.50	$12,642.50	$5.50	$10,697.50	$7.85	$15,268.25
1.5" Resurface Type SP-12.5 Asphalt Paving	1,945	$16.45	$31,995.25	$15.50	$30,147.50	$18.90	$36,760.50	$13.25	$25,771.25
Temporary Striping and Thermoplastic Final Striping	1	$3,430.00	$3,430.00	$3,500.00	$3,500.00	$5,390.00	$5,390.00	$3,915.00	$3,915.00
SUB-TOTAL			$52,770.00		$47,790.00		$55,568.00		$47,254.50

ITB #24-004
ASPHALT PAVING PROJECTS FOR FY 2024
BID TABULATION
01/16/24 2:00 P.M.

BID TABULATION		Hubbard Construction Company		Middlesex Paving, LLC.		Ranger Construction Industries, Inc.		Superior Asphalt, Inc.	
ACTION PARK PARKING LOT									
Mobilization/Demobilization & General Construction Requirements & Restoration (5% of Base Bid plus add alternates)	1	$4,691.00	$4,691.00	$1,682.00	$1,682.00	$9,600.00	$9,600.00	$1,725.00	$1,725.00
1" Milling (Max.) (2' strip along curb)	78	$122.90	$9,586.20	$70.00	$5,460.00	$93.90	$7,324.20	$64.60	$5,038.80
1" Overlay Type SP 9.5 Asphalt Paving	1,805	$14.45	$26,082.25	$15.00	$27,075.00	$16.60	$29,963.00	$12.75	$23,013.75
Temporary Striping and Thermoplastic Final Striping	1	$5,930.00	$5,930.00	$5,000.00	$5,000.00	$8,620.00	$8,620.00	$5,540.00	$5,540.00
SUB-TOTAL			$46,289.45		$39,217.00		$55,507.20		$35,317.55
OCOEE CEMETERY DRIVE (ADD ALTERNATE)									
Mobilization/Demobilization & General Construction Requirements & Restoration (5% of Base Bid plus add alternates)	1	$15,980.00	$15,980.00	$16,000.00	$16,000.00	$12,400.00	$12,400.00	$3,000.00	$3,000.00
1.25" Milling (Max.)	1,642	$7.90	$12,971.80	$3.50	$5,747.00	$5.85	$9,605.70	$8.30	$13,628.60
1.25" Resurface Type SP-9.5 Asphalt Paving (Revised)	1,642	$24.05	$39,490.10	$12.00	$19,704.00	$17.20	$28,242.40	$18.65	$30,623.30
Stamped Asphalt (Brick Pattern - Red)	130	$269.40	$35,022.00	$130.00	$16,900.00	$154.80	$20,124.00	$122.00	$15,860.00
Asphalt Berm (9" W x 6" H)	300	$24.45	$7,335.00	$15.00	$4,500.00	$27.10	$8,130.00	$17.50	$5,250.00
SUB-TOTAL			$110,798.90		$62,851.00		$78,502.10		$68,361.90
TOTAL BASE BID WITHOUT ADD ALTERNATE			$2,525,882.30		$2,415,610.00		$2,376,530.36		$2,561,294.60
TOTAL BID WITH ADD ALTERNATE			$2,636,681.20		$2,478,461.00		$2,455,032.46		$2,629,656.50
			4		**2**		**1**		**3**

*License check, submitted forms & references verified only on lowest two firms.
*Bidders listed in alphabetical order
*Yellow highlighted amounts represent discrepancies on the Bid Form
*Missing forms are considered a minor irregularity.

CITY OF OCOEE
INVITATION TO BID #ITB 24-004
ASPHALT PAVING PROJECTS FOR FY 2024

INTENT:

Sealed bids for Bid **#ITB 24-004** will be received by the City of Ocoee, hereinafter called "City" or "Owner," by any person, firm, corporation or agency submitting a bid for the work proposed, hereinafter called "Bidder", "Respondent", "Contractor", or "Offeror".

The proposed Contract will be for the labor, supervision, materials, equipment, supplies and incidentals for the Asphalt Paving Projects for FY 2024 for sections of Old Winter Garden (Maguire to Bluford), Old Winter Garden (Blackwood to Hempel), Clarke Road (Silver Star to Ad Mims), Lakewood Hills Subdivision, Marsden St/ Sullivan Ave, Moore Road, Tiger Minor South Parking Lot, Action Park Parking Lot and Ocoee Cemetery Drive (Add Alternate), in the City of Ocoee, as listed under the "Scope of Work/Bid Form" sections of this Invitation to Bid.

BIDDING INSTRUCTIONS:

A. Each Bidder shall furnish the information required on the bid form supplied and each accompanying sheet thereof on which an entry is made. Bids submitted on any other format shall be disqualified. Please check your prices before submission of bid, as no changes will be allowed after bid opening. Bids must be typewritten or handwritten using ink. Do not use pencil. No erasures are permitted. Mistakes may be crossed out and the correction typed adjacent and must be initialed and dated by the person signing the bid. Bid documents must be signed by a legally responsible representative, officer, or employee and should be properly witnessed and attested. All bids should also include the name and business address of any person, firm, or corporation interested in the bid, either as a principal, member of a firm, or general partner. If the Bidder is a corporation, the bid should include the name and business address of each officer, director, and holder of 10% or more of the stock of such corporation.

B. The City will receive questions regarding this ITB through the Bonfire Platform or through written inquiries directed to Olena Stokych, Purchasing Analyst at ostokych@ocoee.org. Deadline for receipt of written inquiries will be **January 9, 2024 at 2:00 p.m., local time.** Any clarifications/changes will be made by way of written addenda only, issued by the Finance Department/Purchasing. Bidders should not contact City staff, with the exception of the Procurement Manager, or other City consultants for information regarding this ITB before the Bid award date. Any contact with any other member of City Staff, City Commission, or its agents during the solicitation, award, and protest period may be grounds for disqualification.

C. Prospective Bidders may secure a free copy of the documents required for submitting a Bid through the Bonfire platform by accessing the City's published solicitation page at https://ocoee.bonfirehub.com. Please visit https://www.ocoee.org/323/Purchasing for more information. Prospective Bidders will be provided with all information regarding this ITB, addenda, and changes to the project requirements through the Bonfire platform; there is no charge to use the Bonfire platform. Partial sets of the documents required for submitting a Bid will not be issued.

The City is **ONLY** accepting electronic solicitation responses online through the City's Bonfire platform at https://ocoee.bonfirehub.com. This link can also be accessed through the City's website at

https://www.ocoee.org/323/Purchasing under the ***Current Open Solicitations*** menu. All Bid submissions for this ITB **MUST** be submitted through the Bonfire Platform. Bid submissions received in any other format will not be accepted; no paper, fax, or e-mailed submissions will be accepted. There is no charge for bidders to use the Bonfire e-procurement platform. Bonfire platform's minimum system requirements: Microsoft Edge, Google Chrome, Safari, or Mozilla Firefox. JavaScript and browser cookies must be enabled.

Registration with Bonfire is free and is required prior to submitting a bid. You will be required to register once you click the "PREPARE YOUR SUBMISSION" in the solicitation file. It is suggested your company register no later than 24 hours in advance of the bid submission deadline to ensure proper registration. Should your company need assistance with registering, please contact the Bonfire Support Desk by emailing support@gobonfire.com. Support by email is provided Monday to Friday from 8:00 a.m. – 8:00 p.m. EST/EDT.

Upon completing the registration with Bonfire, bidders will be able to submit a bid securely, any time before the bid submission deadline, at https://ocoee.bonfirehub.com by clicking the "PREPARE YOUR SUBMISSION" under the solicitation. An instructional video is provided for an overview of the submission process. Once the bid has been submitted, the Bidder will receive a date/time stamp confirmation within the Bonfire platform and an email confirmation of the bid submission. Bids submitted on the Bonfire Platform will remain locked and inaccessible by City staff until the bid deadline. **Bidders are encouraged to allow ample time to upload and submit their Bid as the system will automatically lock responses upon the bid deadline.** A virtual public bid opening will be held on the date and time indicated below. Details on how to access the virtual bid opening will be located on the City's website at https://www.ocoee.org/959/Public-Bid-Meetings. The actual contract award will be made by the Ocoee City Commission at a later date. Please be aware that all City Commission meetings are duly noticed public meetings and all documents submitted to the City as a part of a bid constitute public records under Florida law.

D. Bidders shall submit one (1) complete electronic copy, preferably in a single file, of their Bid on the Bonfire Platform. Bids must be received and by Bonfire no later than **2:00 p.m., local time, on January 16, 2024.** Any attempt to submit a bid after the bid deadline will not be accepted under any circumstances. Any uncertainty regarding the time a bid is received will be resolved against the Bidder. It shall be the sole responsibility of the Bidder to have the bid **uploaded and submitted** on the Bonfire Platform prior to the due date and time.

File Uploads – Submission materials should be prepared in the file formats listed under Requested Information for this opportunity in the Bonfire Platform. The maximum upload file size is 1000 MB. Documents should not be embedded within uploaded files, as the embedded files will not be accessible or evaluated. All electronic files uploaded must be in a common format accessible by software programs the City uses. Those common formats are generally described as Microsoft Word (.doc or .docx), Microsoft Excel (.xls or .xlsx), Microsoft Power Point (.ppt or pptx), or Adobe Portable Document Format (.pdf). Respondents will not secure, password protect or lock uploaded files; the City must be able to open and view the contents of the file. Respondents will not disable or restrict the ability of the City to print the contents of an uploaded file. Scanned documents or images must be of sufficient quality, no less than 150 dpi, to allow for reading or interpreting the words, drawings, images or sketches. The City may disqualify any Submittal Response that does not meet the criteria stated in this paragraph.

E. All Bidders shall thoroughly examine and become familiar with the bid package and carefully note the items which must be submitted with the bid, such as:

x a) Bid Security in the form of a Cashier's or Certified check or Bid Bond;
x b) Addenda acknowledgement, if applicable;

x c) List of References/Experience;
x d) List of Subcontractors/Temporary Worker Agencies;
x e) Equipment Listing;
x f) Summary of Litigation;
x g) Bid Form
x h) Conflict of Interest Disclosure Form
x i) Drug free workplace form
x j) Company information/signature sheet
x k) Contractor E-Verify Affidavit
x l) Any other information specifically called for in these Bid Documents.

F. **Submission of a bid shall constitute an acknowledgment that the Bidder has complied with Paragraph E.** The failure or neglect of a Bidder to receive or examine a bid document shall in no way relieve it from any obligations under its bid or the contract. No claim for additional compensation that is based upon a lack of knowledge or understanding of any of the Contract Documents or the scope of work will be allowed. All items quoted shall be in compliance with the bid documents/scope of work.

G. A Pre-Bid Conference has not been scheduled for this project.

H. Any response by the City to a request by a prospective Bidder for clarification or correction will be made in the Bonfire ITB file or in the form of a written addendum, which will be distributed via Bonfire not later than twenty-four (24) hours before bid opening. It shall be the responsibility of each Bidder to obtain a copy of all issued Addenda. The City reserves the right to issue Addenda concerning date and time of bid opening at any time up to the date and time set for bid opening. **In case any Bidder fails to acknowledge receipt of any such Addendum, its bid will nevertheless be construed as though the Addendum had been received and acknowledged. Submission of a bid will constitute acknowledgment of the receipt of the Bid Documents and all Addenda**. Only interpretations or corrections provided by written Addenda shall be binding on the City. Bidders are cautioned that any other source by which a Bidder receives information concerning, explaining, or interpreting the Bid Documents shall not bind the City.

I. Any of the following causes may be considered as sufficient for the disqualification of a Bidder and the rejection of its bid:
   a) Submission of more than one (1) bid for the same work by an individual, firm, partnership or corporation under the same or different name. For purposes of this subparagraph, firms, partnerships or corporations under common control may be considered to be the same entity;
   b) Evidence of collusion between or among Bidders;
   c) Being in arrears on any of its existing contracts with the City or in litigation with the City or having defaulted on a previous contract with the City;
   d) Poor, defective, or otherwise unsatisfactory performance of work for the City or any other party on prior projects that, in the City's judgment and sole discretion, raises doubts as to Bidder's ability to properly perform the work; or
   e) Any other cause which, in the City's judgment and sole discretion, is sufficient to justify disqualification of Bidder or the rejection of its bid.

J. **CONVICTED VENDOR LIST (PUBLIC ENTITY CRIME).** A person or affiliate who has been placed on the convicted vendor list following a conviction for a public entity crime may not submit a bid on an award to provide any goods or services to a public entity, may not submit a bid on an award with a public entity for the construction or repair of a public building or public work, may not submit bids on leases of real property to a public entity, may not be awarded or perform work as a Contractor, Supplier, Subcontractor, or Consultant

under a award with any public entity, and may not transact business with any public entity in excess of the threshold amount provided in section 287.017 for Category Two for a period of 36 months from the date of being placed on the convicted vendor list. [See s. 287.133(2) (a), Florida Statutes.]

K. **FLORIDA PUBLIC RECORDS LAW.** In accordance with Chapter 119, Florida Statutes, and, except as may be provided by Chapter 119, Florida Statutes, and other applicable State and Federal Laws, all Bidders should be aware that the Bid and the responses thereto are in the public domain and are available for public inspection. Bidders are requested, however, to identify specifically any information contained in their bids that they consider confidential and/or proprietary and that they believe to be exempt from disclosure, citing specifically the applicable exempting law. All bids received in response to this Invitation to Bid become the property of the City and will not be returned. In the event of an award, all documentation produced as part of the contract will become the exclusive property of the City.

L. **PUBLIC RECORDS COMPLIANCE.** The City of Ocoee (City) is a public agency subject to Chapter 119, Florida Statutes. The Contractor agrees to comply with Florida's Public Records Law.
Specifically, the Contractor shall:
1. Keep and maintain public records required by the City to perform the service.
2. Upon request from the City's custodian of public records, provide the City with a copy of the requested records or allow the records to be inspected or copied within a reasonable time at a cost that does not exceed the cost provided in chapter 119, Florida Statutes, or as otherwise provided by law.
3. Ensure that public records that are exempt or confidential and exempt from the public records disclosure requirements are not disclosed except as authorized by law for the duration of the contract term and following completion of the contract if the Contractor does not transfer the records to the City.
4. Upon completion of the contract, Contractor agrees to transfer at no cost to the City all public records in possession of the Contractor or keep and maintain public records required by the City to perform the service. If the Contractor transfers all public record to the City upon completion of the contract, the Contractor shall destroy any duplicate public records that are exempt or confidential and exempt from public records disclosure requirements. If the Contractor keeps and maintains public records upon completion of the contract, the Contractor shall meet all applicable requirements for retaining public records. All records stored electronically must be provided to the City, upon request from the City's custodian of public records, in a format that is compatible with the information technology systems of the City.
5. A Contractor who fails to provide the public records to City within a reasonable time may be subject to penalties under section 119.10, Florida Statutes.

IF THE CONTRACTOR HAS QUESTIONS REGARDING THE APPLICATION OF CHAPTER 119, FLORIDA STATUTES, TO THE CONTRACTOR'S DUTY TO PROVIDE PUBLIC RECORDS RELATING TO THIS CONTRACT, CONTACT THE CUSTODIAN OF PUBLIC RECORDS AT 407-905-3105, CCDL@ocoee.org, WITH AN OFFICE LOCATED AT 1 N. BLUFORD AVENUE, OCOEE, FLORIDA 34761.

M. **No bid may be withdrawn for a period of ninety (90) days after the time and date scheduled for the bid opening. A request for withdrawal or a modification of a bid may be submitted to the Purchasing Agent, in writing, at any time prior to the deadline for submitting bids. After expiration of the deadline for receiving bids, no bid may be withdrawn or modified.**

The City reserves the right to accept or reject any or all bids, to waive formalities, technicalities or irregularities, to request clarification of information submitted in any bid, or to re-advertise for new bids. The City may accept any item or group of items of any bid, unless the Bidder qualifies its bid by

specific limitations. The City may accept one or more bids if, in the City's discretion, the City determines that it is in the City's best interest to do so.

The City reserves the right to award the contract to the Bidder which, in the City's sole discretion, is the most responsive and responsible Bidder. The City reserves the right, as an aid in determining which bid is responsible, to require a bidder to submit such additional evidence of Bidder's qualifications as the City may deem necessary, and may consider any evidence available to the City of the financial, technical, and other qualifications and abilities of a Bidder, including past performance (experience) with the City and others. The City Commission shall be the final authority in the selection of any and all bids.

(Remainder of page left blank intentionally.)

GENERAL TERMS & CONDITIONS:

1. BID SECURITY:

a) Each proposal must be accompanied by Bid Security in the form of a Cashier's/Certified Check or company check upon an incorporated bank or trust company **or** a Bid Bond in an amount equal to five percent (5%) of the amount of the bid. A combination of any of the former is not acceptable. Cash will not be accepted as Bid Security. The Bid Security is submitted as a guarantee that the respondent, if awarded the Contract, will after written notice of such award, enter into a written Contract with the City and as a guarantee that the respondent will not withdraw its bid for a period of ninety (90) days after the scheduled closing time for the receipt of bids, in accordance with the accepted bid and bid documents. Please note checks will be deposited.

b) A copy of the bid security is to be included with the bid submitted electronically Bonfire. The original bid security is to be mailed within five (5) business days after the bid opening to: City of Ocoee, Finance Department/Purchasing, Attention: Olena Stokych, Purchasing Analyst, 1 N. Bluford Avenue, Ocoee, FL 34761. Failure to provide the original bid security will cause your bid to be deemed non-responsive.

c) In the event of withdrawal of said bid within ninety (90) days following the opening of bids, or respondent's failure to enter into said contract with the City or failure to provide the City with other requirements of the contract documents or the bid invitation after issuance of Notice of Intent to Award by the City, then such respondent shall be liable to the City in the full amount of the check or bid bond and the City shall be entitled to retain the full amount of the check or to demand from the Surety the penal sum of the bid bond as liquidated damages and not a penalty.

d) Surety companies executing bonds shall be duly insured by an insurer or corporate surety and signed by a licensed agent who holds a current Power of Attorney from the surety company issuing the bond.

e) The cost of the required bond and required insurance coverage is to be included in the respondent's overhead and is not eligible for reimbursement as a separate cost by the City.

f) The checks of the three (3) most favorable respondents will be returned within three (3) days after the City and the successful respondent have executed the contract for work or until the 91st day after bid opening, whichever is earlier. The remaining checks will be returned within thirty (30) days after the opening of bids. Bid Bonds will be returned upon request following the same criteria as a check.

2. PERFORMANCE AND PAYMENT BONDS

(Required if Project is over $200,000.00.)

a) The Successful Bidder shall furnish the City with a State of Florida 100% Performance and a 100% Payment Bond written by a Surety Company acceptable to the City. Surety companies executing bonds shall be duly insured by an insurer or corporate surety and signed by a licensed agent who holds a current Power of Attorney from the surety company issuing the bond. The attached Performance and Payment Bond Forms shall be used.

b) The cost of the Payment and Performance Bonds shall be borne by the Successful Respondent. The bonds shall be accompanied by duly authenticated or certified documents, in duplicate, evidencing that the person executing the Bonds in behalf of the Surety had the authority to do so on the date of the bonds. The date of the certification cannot be earlier than the Agreement.

3. DEFAULT:

As a result of bids received under this Invitation, the award of the contract may be based, in whole or in part, on delivery and specification factors. Accordingly, should the Contractor not meet the delivery deadline(s) set forth in the specifications or should the Contractor fail to perform any of the other provisions of the specifications and/or other contract documents, the City may declare the Contractor in default and terminate the whole or any part of the contract. Upon declaring the Contractor in default and the contract in whole or in part, the City may procure and/or cause to be delivered the equipment, supplies, or materials specified, or any substitutions thereof and the Contractor shall be liable to the City for any excess costs resulting therefrom. In the event the Contractor has been declared in default of a portion of the contract, the Contractor shall continue the performance of the contract to the extent not terminated under the provisions of this paragraph. Where the Contractor fails to comply with any of the specifications, except for delivery deadline(s), the City may, in its discretion, provide the Contractor with written notification of its intention to terminate for default unless prescribed deficiencies are corrected within a specified period of time. Such notification shall not constitute a waiver of any of the City's rights and remedies hereunder.

4. PATENT INDEMNITY:

Except as otherwise provided, the successful Bidder agrees to indemnify the City and its officers, agents, and employees against liability, including costs and expenses for infringement upon any letters patent of the United States arising out of the performance of this Contract or out of the use or disposal by or for the account of the City or supplies furnished or construction work performed hereunder, to the extent caused by the negligence, recklessness, or intentional wrongful misconduct of the Respondent and persons employed or utilized by the Respondent in the performance of the construction contract.

Further, the Respondent shall fully indemnify, defend, and hold harmless the City and its officers, agents, and employees from any suits, actions, damages, and costs of every name and description, including attorneys' fees, arising from or relating to violation or infringement of a trademark, copyright, patent, trade secret, unpatented invention, or intellectual property right. If the bidder uses any design, device, or materials covered by letters, patent, or copyright, it is mutually agreed and understood without exception that the bid price shall include all royalties or cost arising from the use of such design, device, or materials.

5. PRICING:

Pricing should be provided as indicated on the Scope of Work/Bid Sheet attached, to include any alternate bids. Please note that alternate bids will not be accepted unless specifically called for on the Scope of Work/Bid Sheet. In case of a discrepancy between the unit price and extended price, the unit price will be presumed to be correct. Cost of preparation of a response to this bid is solely that of the bidder and the City assumes no responsibility for such costs incurred by the bidder.

The Bid form should not be completed in pencil. All entries on the Bid form shall be legible. The City reserves the right, but does not assume the obligation, to ask a Bidder to clarify an illegible entry on the Bid form. If the Bid form requires that the Bid price, or constituent portions of the Bid price, be stated in unit prices and total price; the unit prices and the total price for the stated number of units identified on the Bid form should be provided by the Bidder and be correctly computed. If there is an arithmetical conflict, between the unit price stated by the Bidder on the Bid form and the total price stated by the Bidder on the Bid form, the unit price stated by the Bidder on the Bid form shall take precedence. The City may

unilaterally correct such arithmetical conflict on the Bid form to calculate the total price, utilizing the unit prices that have been identified by the Bidder. The taking of such action by the City shall not constitute grounds for the Bidder to withdraw its bid nor shall it provide a defense constituting discharge of the bid bond. The City reserves the right, but does not assume the obligation, to waive any mistake, omission, error or other irregularity that may appear on the Bid form. However, the City reserves the right to reject as non-responsive Bid forms that are incomplete or contain information that is not required.

a) The Bidder represents that the article(s) to be furnished under this Invitation to Bid is (are) new and unused (unless specifically so stated) and that the quality has not deteriorated so as to impair its usefulness.
b) The prices in this bid have been arrived at independently, without consultation, communication, or agreement for the purpose of restriction competition, as to any matter relating to such prices with any other Bidder or with any competitor;
c) Unless otherwise required by law, the prices which have been quoted in this bid have not been knowingly disclosed by the Bidder and will not knowingly be disclosed by the Bidder prior to opening, directly or indirectly to any other Bidder or to any competitor;
d) No attempt has been made or will be made by the Bidder to induce any other person or firm to submit or not to submit a bid for the purpose of restricting competition. Every contract, combination or conspiracy in restraint of trade or commerce in this State is unlawful (s. 542.18, Florida Statutes, and all applicable federal regulations);
e) Bidder warrants the prices set forth herein do not exceed the prices charged by the Bidder under a contract with the State of Florida Purchasing Division; and
f) Bidder agrees that supplies/services furnished under this quotation, if awarded, shall be covered by the most favorable commercial warranties the Bidder gives to any customer for such supplies/services and that rights and remedies provided herein are in addition to and do not limit any rights offered to the City by any other provision of the bid award.

6. DISCOUNTS:

a) Trade and time payment discounts will be considered in arriving at new prices and in making awards, except that discounts for payments within less than 30 days will not be considered in evaluation of bids. However, offered discounts will be taken for less than 30 days if payment is made within discount period.
b) In connections with any discount offered, time will be computed from date of delivery and acceptance at destination, or from the date correct invoice is received in the office of Finance, whichever is later. Payment is deemed to be made, for the purpose of earning the discount, on the date of City Check.

7. SAMPLES:

Samples of items, when required, must be furnished free of expense to the City and, if not called for within fifteen days from date of bid opening, same will be disposed of in the best interest of the City.

8. AWARD CRITERIA:

The contract will be recommended to be awarded to the overall lowest most responsive and responsible Bidder according to the following criteria:

- Compliance with scope of work, specifications, terms, and conditions

- Bid price, the City will evaluate the Total Base Bid including alternates as the basis of review and award provided the total bid is within budget. For clarification, Mobilization shall be 5% of the total bid amount plus Add Alternates.
- Warranty offered
- Experience with similar work
- Successful reference check

9. LITERATURE:

If required by the scope of work, or the specifications, descriptive literature/brochures shall be included with this bid in order to properly evaluate make/model offered. Bids submitted without same may be considered non-responsive and disqualified.

10. BID PROTESTS:

All Bid Protests shall be submitted to the Procurement Manager in the following manner:

1. A Bidder **shall** file a written bid protest under this Article or be barred any relief; oral protests shall not be acknowledged.

2. A bid protest **shall** be limited to the following grounds: (a) issues arising from the procurement provisions of the Project Manual, its addenda, and other bidding documents; and/or (b) applicable federal, state, or local law. No bid protest may be based upon questions concerning the design documents (drawings and specifications). The Bidder shall clarify all questions concerning the design documents of the project prior to submitting its bid.

3. The content of the bid protest **shall** fully state the factual and legal grounds for the protest and the legal basis for the relief requested.

4. The bid protest **shall** be filed with the Procurement Manager not later than five (5) calendar days after the posting of the notice of intent to award or recommendation of award by staff, whichever is earlier.

5. The Procurement Manager, on behalf of the City, shall make a determination of the merits of the protest not later than five (5) business days after receipt of the protest. If the City denies the protest, the City may proceed with award of the contract unless enjoined by order of a court of competent jurisdiction.

11. PAYMENT TERMS:

Payment will be based upon monthly applications for payment properly submitted by the Contractor to the Owner and based upon the percentage of work complete. Retainage shall be five (5) percent of work to date based on the progress payment, including all change orders. All retainage amounts shall be paid when the work is complete, unless otherwise stated in the contract. Payment for all applications for payment for work properly completed shall be made, not later than the Twenty-fifth (25th) business day after the date on which the properly submitted Application for Payment is initially received by the Owner.

No payment will be made for materials ordered without proper purchase order authorization. Payment cannot be made until materials, goods or services, have been received and accepted by the City in the quality and quantity ordered.

Any contract resulting from this solicitation is deemed effective only to the extent of appropriations available.

The City of Ocoee, Florida has the following tax exemption certificates assigned:

- Florida Sales & Use Tax Exemption Certificate No. 85-8013779974C-0; and
- Pursuant to Chapter 212, Florida Statutes, the City is exempt from federal excise, state, and local sales taxes.

12. CONTRACT:

a) The successful Bidder, hereinafter referred to as "Contractor," will be required to enter into a contract with the City. The contract shall be a written agreement similar to the ASCE standard construction contract or City-issued purchase order. Construction time will be sixty (60) days from the Notice to Proceed for substantial completion and ninety (90) days from the Notice to Proceed for final completion.

b) The City may in its sole discretion award any additional work, whether in the existing area, or in any additional area, to any third party, or such work may be performed by the City's employees. Contractor will be expected to cooperate with any or all other Contractors who may be performing work for the City.

13. SAFETY/OSHA REQUIREMENTS:

The Bidder guarantees that the services to be performed and the goods to be provided herein, shall comply with all applicable federal, state and local laws, ordinances, regulations, orders and decrees, including without limitation such of the following acts as may be applicable: Federal Consumer Product Safety Act, Federal Fair Labor Standards Act, Occupational Safety and Health Act, Federal Hazardous Substances Labeling Act, Federal Flammable Fabrics Act, and any applicable environmental regulations.

a) All contractors are required to comply with the Congressional Federal Register (CFR) of the U.S. Department of Labor, Occupational Safety and Health Administration (OSHA) Construction Industry, Part 1926, and CFR 1910, General Industry Standards, that are applicable in construction work.
b) The prime contractor is not only responsible for the safety aspects of his operation and employees, **but** also that of all subcontractors on the job site.
c) Assure that a certified first aid person is designated, phone numbers of physicians, hospital and ambulance services are posted (copy to Personnel Director, City of Ocoee) and that a first aid kit is available.
d) All individuals are required to wear hard hats on all construction sites.
e) Provide personal protective equipment that may be required for jobs in progress (e.g.: hard hats, safety glasses, respirators, ear protection, long pants and shirts, etc.).
f) Observe the speed limit on City property.
g) Construction areas cleaned **daily**; excavations must be barricaded or flagged until backfilled. In some cases, bracing, shoring and sloping may be required.
h) Scaffolds shall have guard rails on all open sides and secured to prevent displacement.

i) Powder actuated stud guns or low velocity and/or similar powder actuated tools require eye and ear protection as well as to ensure that all unauthorized personnel are well clear.
j) Welding and cutting - a fire watch and appropriate fire extinguisher shall be provided and combustible materials cleaned up.
k) All heavy equipment must have, where applicable, (a) back-up alarms, (b) boom angle indicator, (c) load chart, (d) reeving, (3) fire extinguisher, (f) condition of hook and other items in accordance with OSHA 1926.550 and ANSI B30.5.
l) Construction material shall not be stored so as to block exits.
m) Ground fault circuit interrupters are required on all electrical circuits not part of the permanent wiring of the building.
n) Personal fall protection must be provided at elevations exceeding ten (10) feet.
o) Per City Ordinance, any Contractor using construction dumpsters within the City of Ocoee must obtain these services through Superior Waste Services of Florida, Inc.

14. DRUG-FREE WORKPLACE:

Provide a statement concerning the Bidder's status as a Drug-Free Work Place or evidence of an implemented drug-free workplace program. Submit the attached drug free workplace form with bid documents. **Bidder must complete and submit the attached Drug-Free Workplace Form with bid.**

15. CERTIFICATION OF NON-SEGREGATED FACILITIES

The Bidder certifies that the Bidder does not and will not maintain or provide for the Bidder's employees any segregated facilities at any of the Bidder's establishments and that the Bidder does not permit the Bidder's employees to perform their services at any location, under the Bidder's control, where segregated facilities are maintained. The Bidder agrees that a breach of this certification will be a violation of the Equal Opportunity clause in any contract resulting from acceptance of this Bid. As used in this certification, the term "segregated facilities" means any waiting room, work areas, time clocks, locker rooms and other storage and dressing areas, parking lots, drinking facilities provided for employees which are segregated on the basis of race, color, religion, national origin, habit, local custom, or otherwise. The Bidder agrees that (except where the Bidder has obtained identical certification from proposed contractors for specific time periods) the Bidder will obtain identical certifications from proposed subcontractors prior to the award of such contracts exceeding $10,000 which are not exempt from the provisions of the Equal Opportunity clause, and that the Bidder will retain such certifications in the Bidder's files.

The non-discriminatory guidelines as promulgated in Section 202, Executive Order 11246, and as amended by Executive Order 11375 and as amended, relative to Equal Opportunity for all persons and implementations of rules and regulations prescribed by the U.S. Secretary of labor, are incorporated herein.

16. CONFLICT OF INTEREST/NON-COLLUSION CERTIFICATION:

The Bidder declares by submission of a bid package that the only persons, or parties interested in their bid are those named herein, that this bid is, in all respects, fair and without fraud and that it is made without collusion with any other vendor or official of the City of Ocoee. Neither the Affiant nor the above named entity has directly or indirectly entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of free competitive pricing in connection with the entity's submittal for the above project. This statement restricts the discussion of pricing data until the completion of negotiations and execution of the Agreement for this project.

The Bidder certifies that no City Commissioner, other City Official or City employee directly or indirectly owns assets or capital stock of the bidding entity, nor will directly or indirectly benefit by the profits or emoluments of this proposal. (For purposes of this paragraph, indirect ownership or benefit does not include ownership or benefit by a spouse or minor child.)

The Bidder certifies that no member of the entity's ownership or management is presently applying for an employee position or actively seeking an elected position with the City. In the event that a conflict of interest is identified in the provision of services, the Bidder agrees to immediately notify the City in writing. **Bidder must submit the attached Conflict of Interest Disclosure Form.**

The Bidder further declares that a careful examination of the scope of services, instructions, and terms and conditions of this bid has occurred, and that the bid is made according to the provisions of the bid documents, and will meet or exceed the scope of services, requirements, and standards contained in the Bid documents.

Bidder agrees to abide by all conditions of the negotiation process. In conducting negotiations with the City, Bidder offers and agrees that if this negotiation is accepted, the Bidder will convey, sell, assign, or transfer to the City all rights, title, and interest in and to all causes of action it may now or hereafter acquire under the Anti-trust laws of the United States and the State of Florida for price fixing relating to the particular commodities or services purchased or acquired by the City. At the City's discretion, such assignment shall be made and become effective at the time the City tenders final payment to the Bidder. The bid constitutes a firm and binding offer by the Bidder to perform the services as stated.

17. PUBLIC ENTITY CRIME STATEMENT:

All invitations to bid as defined by Section 287.012(16), Florida Statutes, requests for proposals as defined by Section 287.012(23), Florida Statutes, and any contract document described by Section 287.058, Florida Statutes, shall contain a statement informing persons of the provisions of paragraph (2)(a) of Section 287.133, Florida Statutes, which reads as follows:

"A person or affiliate who has been placed on the convicted vendor list following a conviction for a public entity crime may not submit a bid on a contract to provide any goods or services to a public entity, may not submit a bid on a contract with a public entity for the construction or repair of public building or public work, may not submit bids on leases of real property to a public entity, may not be awarded or perform work as a contractor, supplier, subcontractor, or consultant under a contract with any public entity, and may not transact business with any public entity in excess of the threshold amount provided in Section 287.017, for CATEGORY TWO for a period of 36 months from the date of being placed on the convicted vendor list."

All Bidders who submit a Bid or Request for Proposal to the City of Ocoee are guaranteeing that they have read the previous statement and by signing the bid documents are qualified to submit a bid under Section 287.133 (2)(a), Florida Statutes.

18. SCRUTINIZED COMPANIES:

Bidder certifies that the company is not participating in a boycott of Israel. Bidder certifies that the Bidder is not on the Scrutinized Companies that Boycott Israel List, not on the Scrutinized Companies with Activities in Sudan List, not on the Scrutinized Companies with activities in the Iran Petroleum Energy

Sector List, or has been engaged in business operations in Cuba or Syria, as those terms are used and defined in sections 287.135 and 215.473 of the Florida Statutes. In the event that Bidder is unable to provide such certification but still seeks to be considered for award of this solicitation, Bidder shall, on a separate piece of paper, clearly state that it is on one or both of the Scrutinized Companies lists and shall furnish together with its proposal a duly executed written explanation of the facts supporting any exception to the requirement for certification that it claims under Section 287.135 of the Florida Statutes. Bidder agrees to cooperate fully with the City in any investigation undertaken by the City to determine whether the claimed exception would be applicable. The City shall have the right to terminate any contract resulting from this solicitation for default if Bidder is found to have submitted a false certification, or to have been placed on the Scrutinized Companies that Boycott Israel List, or to have been placed on the Scrutinized Companies for Activities in Sudan List, or the Scrutinized Companies with Activities in the Iran Petroleum Energy Sector List, or has been engaged in business operations in Cuba or Syria.

19. Prohibition Against Considering Social, Political or Ideological Interests in Government Contracting: Bidders are hereby notified of the provisions of section 287.05701, Florida Statutes, as amended, that the City will not request documentation of or consider a Bidder's social, political, or ideological interests when determining if the Bidder is a responsible Bidder. Bidders are further notified that the City's governing body may not give preference to a Bidder based on the Bidder's social, political, or ideological interests.

20. PERMITS/LICENSES/FEES:

a) Any permits, licenses or fees required will be the responsibility of the contractor; no separate payments will be made. Permit fees are waived for any City of Ocoee permits required.
b) The City requires a City of Ocoee registration if permitting is required. Please contact the City's Building Department at (407)905-3100 extension 1000, directly for information concerning this requirement.
c) Adherence to all applicable code regulations (Federal, State, County, and City) is the responsibility of the contractor.

21. E-VERIFY REGISTRATION AND USE.

By entering into the Contract, the awarded Contractor is obligated to comply with the provisions of § 448.095, Fla. Stat., "Employment Eligibility." This includes, but is not limited to utilization of the **E-Verify System** to verify the work authorization status of all newly hired employees, and requiring all subcontractors to provide an affidavit attesting that the subcontractor does not employ, contract with, or subcontract with, an alien unauthorized to work in the USA. Failure to comply will lead to termination of this contract, or if a subcontractor knowingly violates the statute, the subcontractor must be terminated immediately. If the Contract is terminated pursuant to Section 448.095, Fla. Stat., such termination is not a breach of contract and may not be considered as such. Any challenge to termination under this provision must be filed in the Ninth Judicial Circuit Court of Florida no later than 20 calendar days after the date of termination. If the Contract is terminated for a violation of Section 448.095 Fla. Stat., by the Contractor, the Contractor shall be liable for any additional costs incurred by the City as a result of the termination of the Contract. Nothing in the E-Verify Certification shall be construed to allow intentional discrimination of any class protected by law.

A. Pursuant to section 448.095, Florida Statutes, Contractor shall register with and use the U.S. Department of Homeland Security's E-Verify system, https://e-verify.uscis.gov/emp, to verify the work authorization status of all Contractor employees hired on and after January 1, 2021.

B. Subcontractors

(i) Contractor shall also require all subcontractors performing work under this Agreement to use the E-Verify system for any employees they may hire during the term of this Agreement.

(ii) Contractor shall obtain from all such subcontractors an affidavit stating the subcontractor does not employ, contract with, or subcontract with an unauthorized alien, as defined in section 448.095, Florida Statutes.

(iii) Contractor shall maintain a copy of all subcontractor affidavits for the duration of the Agreement.

C. Contractor must provide evidence of compliance with section 448.095, Florida Statutes. Evidence shall consist of an affidavit from the Contractor stating all employees hired on and after January 1, 2021 have had their work authorization status verified through the E-Verify system and a copy of their proof of registration in the E-Verify system.

D. Failure to comply with this provision is a material breach of the Agreement, and shall result in the immediate termination of the Agreement without penalty to the City. Contractor shall be liable for all costs incurred by the City to secure a replacement Agreement, including but not limited to, any increased costs for the same services, any costs due to delay, and rebidding costs, if applicable. **Completed the attached Contractor E-Verify Affidavit and submit with qualification package.**

22. INSURANCE REQUIREMENTS:

The Contractor shall not commence any work in connection with an Agreement until all of the following types of insurance have been obtained and such insurance has been approved by the City, nor shall the Contractor allow any Subcontractor to commence work on a subcontract until all similar insurance required of the subcontractor has been so obtained and approved. Policies other than Workers' Compensation shall be issued only by companies authorized by subsisting certificates of authority issued to the companies by the Department of Insurance of Florida which maintain a Best's Rating of "A" or better and a Financial Size Category of "VII" or better according to the A.M. Best Company. Policies for Workers' Compensation may be issued by companies authorized as a group self-insurer by 440.57, Florida Statutes.

a) Loss Deductible Clause: The City shall be exempt from, and in no way liable for, any sums of money which may represent a deductible in any insurance policy. The payment of such deductible shall be the sole responsibility of the General Contractor and/or subcontractor providing such insurance.
b) Workers' Compensation Insurance: The Contractor shall obtain during the life of this Agreement, Worker's Compensation Insurance with Employer's Liability Limits of $500,000/$500,000/$500,000 for all the Contractor's employees connected with the work of this project and, in the event any work is sublet, the Contractor shall require the subcontractor similarly to provide Workers' Compensation Insurance for all of the latter's employees unless such employees are covered by the protection afforded by the Contractor. Such insurance shall comply fully with the Florida Workers' Compensation Law. In case any class of employees engaged in hazardous work under this contract for the City is not protected under the Workers' Compensation statute, the Contractor shall provide, and cause each subcontractor to provide adequate insurance, satisfactory to the City, for the protection of the Contractor's employees not otherwise protected.
   - Include Waiver of Subrogation in favor of the City of Ocoee
c) Contractor's Public Liability and Property Damage Insurance: The Contractor shall obtain during the life of this Agreement COMMERCIAL AUTOMOBILE COVERAGE, this policy should name the City of Ocoee as an additional insured, and shall protect the Contractor and the City from claims for damage for personal injury, including accidental death, as well as claims for property damages which may arise from operations under this

Agreement whether such operations be by the Contractor or by anyone directly or indirectly employed by the Contractor, and the amounts of such insurance shall be the minimum limits as follows:

1) Automobile Bodily Injury Liability & Property Damage Liability
   - $1,000,000 Combined single limit per occurrence (each person, each accident)
   - All covered automobile will be covered via symbol 1
   - Liability coverage will include hired & non-owned automobile liability
   - Include Waiver of Subrogation in favor of The City of Ocoee

2) Comprehensive General Liability (Occurrence Form) - this policy should name the City of Ocoee as an additional insured and should indicate that the insurance of the Contractor is primary and non-contributory.
   - $2,000,000 GENERAL AGGREGATE
   - $2,000,000 PRODUCTS-COMPLETED OPERATIONS AGGREGATE
   - $1,000,000 PER OCCURRENCE
   - $1,000,000 PERSONAL & ADVERTISING INJURY
   - Include Waiver of Subrogation in favor of the City of Ocoee

3) Subcontractor's Comprehensive General Liability, Automobile Liability and Worker's Compensation Insurance: The Contractor shall require each subcontractor to procure and maintain during the life of this subcontract, insurance of the type specified above or insure the activities of these subcontractors in the Contractor's policy, as specified above.

4) Owner's Protective Liability Insurance: **n/a for this project**.

5) Contractual Liability: If the project is not bonded, the Contractor's insurance shall also include contractual liability coverage to insure the fulfillment of the contract. **NOTE: PUBLIC LIABILITY INSURANCE AND AUTOMOBILE LIABILITY INSURANCE, THE CITY SHALL BE NAMED AS ADDITIONAL INSURED.**
   - $1,000,000 PER OCCURRENCE
   - $2,000,000 AGGREGATE

6) Commercial Umbrella:
   - $1,000,000 PER OCCURRENCE
   - $2,000,000 Aggregate
   - Including Employer's Liability and Contractual Liability

7) Builders Risk: **n/a for this project**

8) Certificates of Insurance: Certificate of Insurance Form (see sample attached), naming the City of Ocoee as an additional insured will be furnished by the Contractor upon notice of award. These shall be completed by the authorized Resident Agent and returned to the Office of the Purchasing Agent. This certificate shall be dated and show:

   - The name of the Insured contractor, the specific job by name and job number, the name of the insurer, the number of the policy, its effective date, its termination date.
   - Statement that the Insurer shall mail notice to the Owner at least thirty (30) days prior to any material changes in provisions or cancellation of the policy, except ten (10) days written notice of cancellation for non-payment of premium.

See attached Certificate of Insurance

ACORD. **CERTIFICATE OF LIABILITY INSURANCE**

OP ID JC
FRASE-1

DATE (MM/DD/YYYY)
11/04/04

PRODUCER

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW.

INSURERS AFFORDING COVERAGE	NAIC #
INSURER A: AM Best Rating A- or Better	
INSURER B:	
INSURER C:	
INSURER D:	
INSURER E:	

INSURED

Contractor's Name
Address

COVERAGES

THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. AGGREGATE LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	ADD'L INSRD	TYPE OF INSURANCE	POLICY NUMBER	POLICY EFFECTIVE DATE (MM/DD/YY)	POLICY EXPIRATION DATE (MM/DD/YY)	LIMITS	
	X	GENERAL LIABILITY X COMMERCIAL GENERAL LIABILITY CLAIMS MADE X OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: POLICY X PRO-JECT LOC				EACH OCCURRENCE	$1,000,000
						DAMAGE TO RENTED PREMISES (Ea occurrence)	$50,000
						MED EXP (Any one person)	$5,000
						PERSONAL & ADV INJURY	$1,000,000
						GENERAL AGGREGATE	$2,000,000
						PRODUCTS - COMP/OP AGG	$2,000,000
		AUTOMOBILE LIABILITY X ANY AUTO ALL OWNED AUTOS SCHEDULED AUTOS X HIRED AUTOS X NON-OWNED AUTOS				COMBINED SINGLE LIMIT (Ea accident)	$1,000,000
						BODILY INJURY (Per person)	$
						BODILY INJURY (Per accident)	$
						PROPERTY DAMAGE (Per accident)	$
		GARAGE LIABILITY ANY AUTO				AUTO ONLY - EA ACCIDENT	$
						OTHER THAN AUTO ONLY: EA ACC	$
						AGG	$
	X	EXCESS/UMBRELLA LIABILITY X OCCUR CLAIMS MADE				EACH OCCURRENCE	$1,000,000
						AGGREGATE	$2,000,000
		DEDUCTIBLE RETENTION $					$
							$
							$
		WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? If yes, describe under SPECIAL PROVISIONS below				X WC STATU-TORY LIMITS / OTH-ER	
						E.L. EACH ACCIDENT	$500,000
						E.L. DISEASE - EA EMPLOYEE	$500,000
						E.L. DISEASE - POLICY LIMIT	$500,000
		OTHER Builders Risk				Any 1 Loc Any 1 Occ	100,000 1,000,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES / EXCLUSIONS ADDED BY ENDORSEMENT / SPECIAL PROVISIONS

The insurance evidenced by this certificate shall name the certificate holders as an additional insured on the General Liability & Umbrella Liability. Workers' Compensation, Employers' Liability & General Liability shall contain a Waiver of Subrogation in favor of the certificate holder. The certificate holder is added as a named insured for Builders Risk.

CERTIFICATE HOLDER

OCOEE01

City of Ocoee
150 N. Lakeshore Drive
Ocoee FL 34761-2258

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, THE ISSUING INSURER WILL ENDEAVOR TO MAIL 10 DAYS WRITTEN NOTICE TO THE CERTIFICATE HOLDER NAMED TO THE LEFT, BUT FAILURE TO DO SO SHALL IMPOSE NO OBLIGATION OR LIABILITY OF ANY KIND UPON THE INSURER, ITS AGENTS OR REPRESENTATIVES.

AUTHORIZED REPRESENTATIVE

ACORD 25 (2001/08)

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SAMPLE

23. LIST OF SUBCONTRACTORS:

SUBCONTRACTOR and/or TEMPORARY WORKER AGENCY NAME/ADDRESS/FEDERAL I.D. NO./CONTACT PERSON/PHONE #:

McShea Contracting/ LLC 508 Owen Ave. North Lehigh Acres, FL 33971/Steve maitland/(239) 322-0482

Straight Line Loops, LLC /945 Prescott Blvd. Deltona, Fl 32738 /Andre Cochran/(386) 837-2935

(Attach additional sheets if necessary)

The Bidder certifies that the Bidder has investigated each subcontractor/temporary worker agency listed and has received and has in the Bidder's files evidence that each subcontractor/temporary worker agency maintains a fully-equipped organization capable, technically and financially, of performing the pertinent work and that the subcontractor/temporary agency has done similar work in a satisfactory manner. **It is further acknowledged by the contractor that any CHANGE or OMISSIONS in the subcontractors listed above shall require the City of Ocoee's approval before any work shall commence by the additional subcontractor on this project.**

24. EQUIPMENT LISTING:

Please list year, make & model of all equipment that will be used on City of Ocoee properties, including whether owned or leased. If leased please provide name of lessor.

See attached Equipment List

25. REFERENCES/EXPERIENCE OF RESPONDENT WITH SIMILAR WORK

The Bidder shall complete the following blanks regarding experience with similar type of work. Bidder must demonstrate ability to perform services of similar complexity, nature, and size of this project within past three years.

DATE OF CONTRACT/AMOUNT OF PROJECT/CLIENT'S NAME AND ADDRESS/ TELPHONE NUMBER/EMAIL ADDRESS/NAME OF CONTACT

See attached Work Experience/References

Have you any similar work in progress at this time? Yes X No ___.
Length of time in business 42 Years
Have you ever failed to complete work awarded to you? If so, where and why?
No

Bank or other financial references:
Gail M. Torchia, CTP / First Vice President, Treasury & Payment Solutions SunTrust Bank / Office: 813.224.217

(Attach additional sheets if necessary)

26. SUMMARY OF LITIGATION:

Provide a summary of any litigation, claim(s), bid or contract dispute(s) filed by or against the Bidder in the past five (5) years which is related to the services that the Bidder provides in the regular course of business. The summary shall state the nature of the litigation, claim, or contact dispute, a brief description of the case, the outcome or projected outcome, and the monetary amounts involved. If none, please so state.

See attached 5 Year Litigation History

27. ACKNOWLEDGEMENT OF ADDENDA:

Bidder acknowledges receipt of the following addenda:

No. 1 Dated 1/11/2024
No. ___ Dated ___
No. ___ Dated ___
No. ___ Dated ___
No. ___ Dated ___

(remainder of page left blank intentionally)

EXHIBIT B
BID FORM (Page 1 of 5)

ITB #24-004 ASPHALT PAVING PROJECTS FOR FY 2024

BID SUBMITTED BY Ranger Construction Industries, Inc. **FL CONTRACTOR LICENSE #** CGC 031554

ITEM NO. 1	OLD WINTER GARDEN (MAGUIRE TO BLUFORD) MILLING AND RESURFACING	UNIT	QTY	UNIT PRICE	ITEM TOTAL
1.01	Mobilization/Demobilization & General Construction Requirements & Restoration (5% of Base Bid plus add alternates)	LS	1	$ 9,500.00	$ 9,500.00
1.02	1.5" Milling (Max.)	SY	17,027	$ 3.50	$ 59,594.50
1.03	1.5" Resurface Type FC-12.5 Asphalt Paving	SY	17,027	$ 17.80	$ 303,080.60
1.04	Traffic Signal Loop System Restoration	LS	1	$ 11,400.00	$ 11,400.00
1.05	Temporary Striping and Thermoplastic Final Striping	LS	1	$ 36,800.00	$ 36,800.00
				SUB-TOTAL:	$ 420,375.10

ITEM NO. 2	OLD WINTER GARDEN (BLACKWOOD TO HEMPEL) MILLING AND RESURFACING	UNIT	QTY	UNIT PRICE	ITEM TOTAL
2.01	Mobilization/Demobilization & General Construction Requirements & Restoration (5% of Base Bid plus add alternates)	LS	1	$ 9,800.00	$ 9,800.00
2.02	1.5" Milling (Max.)	SY	19,624	$ 3.02	$ 59,264.48
2.03	1.5" Resurface Type FC-12.5 Asphalt Paving	SY	19,624	$ 18.10	$ 355,194.40
2.04	Traffic Signal Loop System Restoration	LS	1	$ 18,100.00	$ 18,100.00
2.05	Temporary Striping and Thermoplastic Final Striping	LS	1	$ 27,400.00	$ 27,400.00
				SUB-TOTAL:	$ 469,758.88

REVISED BID FORM (Page 2 of 5)

ITB #24-004 ASPHALT PAVING PROJECTS FOR FY 2024

BID SUBMITTED BY Ranger Construction Industries, Inc. **FL CONTRACTOR LICENSE #** CGC 031554

ITEM NO. 3	CLARKE RD (SILVER STAR TO AD MIMS) (1" FC 9.5, 1.5"SP 9.5)	UNIT	QTY	UNIT PRICE	ITEM TOTAL
3.01	Mobilization/Demobilization & General Construction Requirements & Restoration (5% of Base Bid plus add alternates)	LS	1	$ 24,400.00	$ 24,400.00
3.02	2" Milling (Max.)	SY	34,706	$ 3.07	$ 106,547.42
3.03	1" Resurface Type SP- 9.5 Asphalt Paving	SY	34,706	$ 11.60	$ 402,589.60
3.04	1" Resurface Type FC-9.5 Asphalt Paving	SY	34,706	$ 13.96	$ 484,495.76
3.05	Traffic Signal Loop System Restoration	1	1	$ 17,000.00	$ 17,000.00
3.06	Temporary Striping and Thermoplastic Final Striping	1	1	$ 90,800.00	$ 90,800.00
				SUB-TOTAL:	$ 1,125,832.78

ITEM NO. 4	LAKEWOOD HILLS SUBDIVISION (STARKE LAKE CIR, ALASKA DR, HAWAII DR)	UNIT	QTY	UNIT PRICE	ITEM TOTAL
4.01	Mobilization/Demobilization & General Construction Requirements & Restoration (5% of Base Bid plus add alternates)	LS	1	$ 7,500.00	$ 7,500.00
4.02	1.25" Milling (Max.)	SY	7520	$ 3.15	$ 23,688.00
4.03	1.25" Resurface Type SP-9.5 Asphalt Paving (Revised)	SY	7520	$ 13.45	$ 101,144.00
4.04	Temporary Striping and Thermoplastic Final Striping (6 stop bars)	LS	1	$ 4,170.00	$ 4,170.00
				SUB-TOTAL:	$ 136,502.00

REVISED BID FORM (Page 3 of 5)

ITB #24-004 ASPHALT PAVING PROJECTS FOR FY 2024

BID SUBMITTED BY Ranger Construction Industries, Inc. **FL CONTRACTOR LICENSE #** CGC 031554

ITEM NO. 5	MARSDEN ST / SULLIVAN AVE	UNIT	QTY	UNIT PRICE	ITEM TOTAL
5.01	Mobilization/Demobilization & General Construction Requirements & Restoration (5% of Base Bid plus add alternates)	LS	1	$ 4,570.00	$ 4,570.00
5.02	1.25" Milling (Max.)	SY	3,408	$ 3.50	$ 11,928.00
5.03	1.25" Resurface Type SP-9.5 Asphalt Paving (Revised)	SY	3,408	$ 13.55	$ 46,178.40
5.04	Temporary Striping and Thermoplastic Final Striping (2 stop bars)	LS	1	$ 3,570.00	$ 3,570.00
				SUB-TOTAL:	$ 66,246.40

ITEM NO. 6	MOORE ROAD (EASTERN MOST 300 FT To 7th Ave)	UNIT	QTY	UNIT PRICE	ITEM TOTAL
6.01	Mobilization/Demobilization & General Construction Requirements & Restoration (5% of Base Bid plus add alternates)	LS	1	$ 1,900.00	$ 1,900.00
6.02	1.5" Milling (Max.)	SY	1,280	$ 8.35	$ 10,688.00
6.03	1.5" Resurface Type SP-12.5 Asphalt Paving	SY	1,280	$ 21.65	$ 27,712.00
6.04	Temporary Striping and Thermoplastic Final Striping	LS	1	$ 6,440.00	$ 6,440.00
				SUB-TOTAL:	$ 46,740.00

BID FORM (Page 4 of 5)

ITB #24-004 ASPHALT PAVING PROJECTS FOR FY 2024

BID SUBMITTED BY Ranger Construction Industries, Inc. **FL CONTRACTOR LICENSE #** CGC 031554

ITEM NO.	TIGER MINOR SOUTH PARKING LOT	UNIT	QTY	UNIT PRICE	ITEM TOTAL
7.01	Mobilization/Demobilization & General Construction Requirements & Restoration (5% of Base Bid plus add alternates)	LS	1	$ 2,720.00	$ 2,720.00
7.02	1" Milling (Max.)	SY	1,945	$ 5.50	$ 10,697.50
7.03	1.5" Resurface Type SP-12.5 Asphalt Paving	SY	1,945	$ 18.90	$ 36,760.50
7.04	Temporary Striping and Thermoplastic Final Striping	LS	1	$ 5,390.00	$ 5,390.00
				SUB-TOTAL:	$ 55,568.00

	ACTION PARK PARKING LOT	UNIT	QTY	UNIT PRICE	ITEM TOTAL
8.01	Mobilization/Demobilization & General Construction Requirements & Restoration (5% of Base Bid plus add alternates)	LS	1	$ 9,600.00	$ 9,600.00
8.02	1" Milling (Max.) (2' strip along curb)	SY	78	$ 93.90	$ 7,324.20
8.03	1" Overlay Type SP 9.5 Asphalt Paving	SY	1,805	$ 16.60	$ 29,963.00
8.04	Temporary Striping and Thermoplastic Final Striping	LS	1	$ 8,620.00	$ 8,620.00
				SUB-TOTAL:	$ 55,507.20

REVISED BID FORM (Page 5 of 5)

ITB #24-004 ASPHALT PAVING PROJECTS FOR FY 2024

BID SUBMITTED BY Ranger Construction Industries, Inc. **FL CONTRACTOR LICENSE #** CGC 031554

ITEM NO. 9	OCOEE CEMETERY DRIVE (ADD ALTERNATE)	UNIT	QTY	UNIT PRICE	ITEM TOTAL
9.01	Mobilization/Demobilization & General Construction Requirements & Restoration (5% of Base Bid plus add alternates)	LS	1	$ 12,400.00	$ 12,400.00
9.02	1.25" Milling (Max.)	SY	1,642	$ 5.85	$ 9,605.70
9.03	1.25" Resurface Type SP-9.5 Asphalt Paving (Revised)	SY	1,642	$ 17.20	$ 28,242.40
9.04	Stamped Asphalt (Brick Pattern - Red)	SY	130	$ 154.80	$ 20,124.00
9.05	Asphalt Berm (9" W x 6" H)	LF	300	$ 27.10	$ 8,130.00
				SUB-TOTAL:	$ 78,502.10

TOTAL BASE BID WITHOUT ITEM NO. 9 ADD ALTERNATE = $ 2,376,530.36

WRITTEN: Two million three hundred seventy-six thousand five hundred thirty dollars and thirty-six cents

TOTAL BID WITH ITEM NO. 9 ADD ALTERNATE = $ 2,455,032.46

WRITTEN: Two million four hundred fifty-five thousand thirty-two dollars and forty-six cents

EXHIBIT C
BID BOND

KNOW ALL MEN BY THESE PRESENTS, that we, the undersigned, _____

Ranger Cosntruction Industries, Inc. , as Principal, and Travelers Casualty and Surety Company of America

_____ as Surety, are hereby held and firmly bound unto the City of Ocoee, Florida, as Owner, in the penal sum of, (5 percent of the Contract Bid) $_____

Five Percent of the Contract Bid

(written amount in dollars and cents)

for the payment of which, well and truly to be made, we hereby jointly and severally bind ourselves, successors and assigns.

Signed, this 16th day of January, 2024. The Condition of the above obligation is such that whereas the Principal has submitted to the City of Ocoee, Florida a certain Bid, attached hereto and hereby made a part hereof to enter into a contract in writing, for the **ITB #24-004 Asphalt Paving Projects for FY 2024 (Project).**

NOW THEREFORE

1. Bidder and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to pay to Owner upon default of Bidder any damages, costs, or expenses, including attorney's fees, incurred by Owner that are proximately caused by such default. In no event shall Bidder's and Surety's obligation hereunder exceed the penal sum set forth on the face of this Bond.

2. Default of Bidder shall occur upon the failure of Bidder to deliver within the time required by the Bidding Documents (or any extension thereof agreed to in writing by Owner) the executed Agreement required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents and Contract Documents.

3. This obligation shall be null and void if:

   3.1 Owner accepts Bidder's bid and Bidder delivers within the time required by the Bidding Documents (or any extension thereof agreed to in writing by Owner) the executed Agreement required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents and Contract Documents, or

   3.2 All bids are rejected by Owner, or

   3.3 Owner fails to issue a Notice of Intent to Award to Bidder within ninety (90) days from the time and date fixed for the opening of Bids (or any extension thereof

agreed to in writing by Bidder and, if applicable, consented to by Surety when required by paragraph 5 hereof).

4. Payment under this Bond will be due and payable upon default by Bidder and within 30 calendar days after receipt by Bidder and Surety of written notice of default from Owner, which notice will be given with reasonable promptness, identifying this Bond and the Project and including a statement of the amount due.

5. Surety waives notice of and any and all defenses based on or arising out of any time extension to issue notice of award agreed to in writing by Owner and Bidder, provided that the total time for issuing notice of award including extensions shall not in the aggregate exceed 120 days from Bid Due Date without Surety's written consent.

6. No suit or action shall be commenced under this bond prior to 30 calendar days after the notice of default required in paragraph 4 above is received by Bidder and Surety and in no case later than one year after Bid Due Date.

7. Any suit or action under this Bond shall be commenced only in a court of competent jurisdiction located in the state in which the Project is located.

8. Notices required hereunder shall be in writing and sent to Bidder and Surety at their respective addresses shown on the face of this Bond. Such notices may be sent by personal delivery, commercial courier or by United States Registered or Certified Mail, return receipt requested, postage pre-paid, and shall be deemed to be effective upon receipt by the party concerned.

9. Surety shall cause to be attached to this Bond, a current and effective Power of Attorney evidencing the authority of the officer, agent or representative who executed this Bond on behalf of Surety to execute, seal and deliver such Bond and bind the Surety thereby.

10. This Bond is intended to conform to all applicable statutory requirements. Any applicable requirement of any applicable statute that has been omitted from this Bond shall be deemed to be included herein as if set forth at length. If any provision of this Bond conflicts with any applicable provision of any applicable statute, then the provision of said statute shall govern and the remainder of this Bond that is not in conflict therewith shall continue in full force and effect.

11. The term "bid" as used herein includes a bid, offer, or proposal as applicable.

IN WITNESS WHEREOF, the Principal and the Surety have hereunto set their hands and seals, and such of them as are corporations have caused their corporate seals to be hereto affixed and these presents to be signed by their proper officers, the day and year first set forth above.

BIDDER:	Strike out (X) non-applicable signature blocks and complete applicable block. All signatures must have their names printed or type below their signature.

If Bidder is **SOLE PROPRIETORSHIP**, complete this signature block. NA	
_____ (Individual's Signature)	(1) _____ (Witness)
_____ (Individual's Signature)	(2) _____ (Witness)
doing business as _____	**(SEAL)**
_____ (Business Address)	
_____ (Telephone No.) _____ (Florida License No.)	

If Bidder is **PARTNERSHIP**, complete this signature block. NA	
_____ (Partnership Name)	(1) _____ (Witness)
_____ (General Partner's Signature)	(2) _____ (Witness)
_____ (General Partner's Name)	**(SEAL)**
_____ (Business Address)	
_____ (Telephone No.) _____ (Florida License No.)	

If Bidder is **CORPORATION**, complete this signature block.	
Ranger Construction Industries, Inc. (Corporation Name)	(1) _____ (Witness)
Florida (State of Incorporation)	(2) Helena Ma. Alanzo (Witness)
By: F Scott Fowler (Name of Person Authorized to Sign - See Note 1)	**(SEAL)**
Vice President (Title)	
_____ (Authorized Signature)	
Bob Schafer. (Corporation President)	
1200 Elboc Way, Winter Garden, Fl 34787 (Business Address)	
(407) 656-9255 (Telephone No.) CGC 031554 (Florida License No.)	

EXHIBIT D - ITB #24-004 BID CONFLICT OF INTEREST DISCLOSURE FORM

The award of this contract is subject to the provisions of Chapter 112, Florida Statutes. All Bidders must disclose within their Bid: the name of any City of Ocoee employee, Mayor or City Commissioner, other City Official, or City Consultants, who owns assets or capital stock, directly or indirectly, in the Bidder's firm or any of its branches, or would directly or indirectly benefit by the profits or emoluments of this Bid. (Indirect ownership or benefit applies to any members of his or her immediate family.) Bidder certifies that no member of the entity's ownership or management is presently applying for an employee position or actively seeking an elected position with the City. In the event that a conflict of interest is identified in the provision of services, Bidder agrees to immediately notify the City in writing.

The purpose of this disclosure form is to give the City the information needed to identify potential conflicts of interest for the City Commission, Staff, and other key City employees and consultants involved in the award and administration of this contract.

According to Chapter 112, Florida Statutes, the term "conflict of interest" "means a situation in which regard for a private interest tends to lead to disregard of a public duty or interest", and refers to situations in which financial or other personal considerations may adversely affect, or have the appearance of adversely affecting, an employee's professional judgment in exercising any City duty or responsibility in administration, management, instruction, research, or other professional activities.

Please check one of the following statements and attach additional documentation if necessary:

X To the best of our knowledge, the undersigned firm has no potential conflict of interest for this Bid.

_____ The undersigned firm, by attachment to this form, submits information which may be a potential conflict of interest for this Bid.

Acknowledged by:

Ranger Construction Industries, Inc.

Firm Name

Signature

F Scott Fowler - Vice President

Name and Title (Print or Type)

1/16/2023

Date

SURETY

Travelers Casualty and Surety Company of America (Surety Business Name)	Witness: (If agency is not a Corporation) (1) _____ (Witness)
One Tower Square Hartford, CT 06183 (Principal Place of Business)	(2) _____ (Witness)
By: _____ (Surety Agent's Signature - See Note 2)	Attest: (If Agency is a Corporation)
William D. Phelps (Surety Agent's Name)	Richard L. Higginbotham (Corporate Secretary Signature)
Attorney-In-Fact and Florida Resident Agent (Surety Agent's Title)	Richard L. Higginbotham (Corporate Secretary Name)
George H. Friedlander Company (Business Name of Local Agent for Surety)	(Corporate Seal)
P.O. Box 361057 Melbourne, FL 32935 (Business Address)	
(561) 762-5118 (Telephone No.) N/A (Bond No.)	

NOTES:

(1) Complete and attach "Corporate Authority to Execute Documents" if executed by any corporate employee other than president or vice-president.

(2) Complete and attach a certified copy of "Power-of-Attorney" prepared by Surety appointing individual "Attorney-in-Fact" for execution of Bid Bond on behalf of Surety and corresponding notarized "Attorney-in-Fact".

(3) Above addresses are to be used for giving required notice.

(4) Any singular reference to Bidder, Surety, Owner or other party shall be considered plural where applicable.

(5) Surety companies executing bonds must appear on the Treasury Department's most current list (Circular 570 as amended) and be authorized to transact business in the state where the project is located.

ATTORNEY-IN-FACT AFFIDAVIT

STATE OR COMMONWEALTH OF Florida)

COUNTY OR CITY OF Orange)

Before me, a Notary Public, personally came William D. Phelps known to me, and known to be the Attorney-in-Fact of Travelers Casualty and Surety Company of America, a Connecticut Corporation, which (Surety Company) (State)

executed the attached bond as surety, who deposed and said that his signature and the corporate seal of said

Travelers Casualty and Surety Company of America were affixed by order and authority of said Company's Board of Directors, (Surety Company)

and that the execution of the attached bond is the free act and deed of Travelers Casualty and Surety Company of America (Surety Company)

Given under my hand and seal this 16th day of January, 2024.

ELENA M ARANGO-MINER
Notary Public-State of Florida
Commission # HH 324181
My Commission Expires
October 20, 2026

Helena M. Arango-Miner
(Notary Public)

My Commission Expires 10/20/2026.

END OF SECTION

TRAVELERS	Travelers Casualty and Surety Company of America Travelers Casualty and Surety Company St. Paul Fire and Marine Insurance Company

POWER OF ATTORNEY

KNOW ALL MEN BY THESE PRESENTS: That Travelers Casualty and Surety Company of America, Travelers Casualty and Surety Company, and St. Paul Fire and Marine Insurance Company are corporations duly organized under the laws of the State of Connecticut (herein collectively called the "Companies"), and that the Companies do hereby make, constitute and appoint **WILLIAM D PHELPS** of **MELBOURNE**, **Florida**, their true and lawful Attorney(s)-in-Fact to sign, execute, seal and acknowledge any and all bonds, recognizances, conditional undertakings and other writings obligatory in the nature thereof on behalf of the Companies in their business of guaranteeing the fidelity of persons, guaranteeing the performance of contracts and executing or guaranteeing bonds and undertakings required or permitted in any actions or proceedings allowed by law.

IN WITNESS WHEREOF, the Companies have caused this instrument to be signed, and their corporate seals to be hereto affixed, this **21st** day of **April, 2021.**

State of Connecticut

City of Hartford ss.

By: _____
Robert L. Raney, Senior Vice President

On this the **21st** day of **April, 2021**, before me personally appeared **Robert L. Raney**, who acknowledged himself to be the Senior Vice President of each of the Companies, and that he, as such, being authorized so to do, executed the foregoing instrument for the purposes therein contained by signing on behalf of said Companies by himself as a duly authorized officer.

IN WITNESS WHEREOF, I hereunto set my hand and official seal.

My Commission expires the **30th** day of **June, 2026**

_____
Anna P. Nowik, Notary Public

This Power of Attorney is granted under and by the authority of the following resolutions adopted by the Boards of Directors of each of the Companies, which resolutions are now in full force and effect, reading as follows:

RESOLVED, that the Chairman, the President, any Vice Chairman, any Executive Vice President, any Senior Vice President, any Vice President, any Second Vice President, the Treasurer, any Assistant Treasurer, the Corporate Secretary or any Assistant Secretary may appoint Attorneys-in-Fact and Agents to act for and on behalf of the Company and may give such appointee such authority as his or her certificate of authority may prescribe to sign with the Company's name and seal with the Company's seal bonds, recognizances, contracts of indemnity, and other writings obligatory in the nature of a bond, recognizance, or conditional undertaking, and any of said officers or the Board of Directors at any time may remove any such appointee and revoke the power given him or her; and it is

FURTHER RESOLVED, that the Chairman, the President, any Vice Chairman, any Executive Vice President, any Senior Vice President or any Vice President may delegate all or any part of the foregoing authority to one or more officers or employees of this Company, provided that each such delegation is in writing and a copy thereof is filed in the office of the Secretary; and it is

FURTHER RESOLVED, that any bond, recognizance, contract of indemnity, or writing obligatory in the nature of a bond, recognizance, or conditional undertaking shall be valid and binding upon the Company when (a) signed by the President, any Vice Chairman, any Executive Vice President, any Senior Vice President or any Vice President, any Second Vice President, the Treasurer, any Assistant Treasurer, the Corporate Secretary or any Assistant Secretary and duly attested and sealed with the Company's seal by a Secretary or Assistant Secretary; or (b) duly executed (under seal, if required) by one or more Attorneys-in-Fact and Agents pursuant to the power prescribed in his or her certificate or their certificates of authority or by one or more Company officers pursuant to a written delegation of authority; and it is

FURTHER RESOLVED, that the signature of each of the following officers: President, any Executive Vice President, any Senior Vice President, any Vice President, any Assistant Vice President, any Secretary, any Assistant Secretary, and the seal of the Company may be affixed by facsimile to any Power of Attorney or to any certificate relating thereto appointing Resident Vice Presidents, Resident Assistant Secretaries or Attorneys-in-Fact for purposes only of executing and attesting bonds and undertakings and other writings obligatory in the nature thereof, and any such Power of Attorney or certificate bearing such facsimile signature or facsimile seal shall be valid and binding upon the Company and any such power so executed and certified by such facsimile signature and facsimile seal shall be valid and binding on the Company in the future with respect to any bond or understanding to which it is attached.

I, **Kevin E. Hughes**, the undersigned, Assistant Secretary of each of the Companies, do hereby certify that the above and foregoing is a true and correct copy of the Power of Attorney executed by said Companies, which remains in full force and effect.

Dated this **16th** day of **January**, **2024**.

_____
Kevin E. Hughes, Assistant Secretary

To verify the authenticity of this Power of Attorney, please call us at 1-800-421-3880.
Please refer to the above-named Attorney(s)-in-Fact and the details of the bond to which this Power of Attorney is attached.

EXHIBIT E
ITB #24-004 DRUG-FREE WORKPLACE CERTIFICATION

IDENTICAL TIE BIDS: Preference shall be given to businesses with drug-free workplace programs. Whenever two or more bids which are equal with respect to price, quantity, and service are received by the State or by any political subdivision for the procurement of commodities or contractual services, a bid received from a business that certifies that it has implemented a drug-free workplace program shall be given preference in the award process. Established procedures for processing tie bids will be followed if none of the tied vendors have a drug-free workplace program (Florida Statutes Section 287.087). In order to have a drug-free workplace program, a business shall:

1. Publish a statement notifying employees that the unlawful manufacture, distribution, dispensing, possession, or use of a controlled substance is prohibited in the workplace and specifying the actions that will be taken against employees for violations of such prohibition.

2. Inform employees about the dangers of drug abuse in the workplace, the business's policy of maintaining a drug-free workplace, and available drug counseling, rehabilitation, and employee assistance programs, and the penalties that may be imposed upon employees for drug abuse violations.

3. Give each employee engaged in providing the commodities or contractual services that are under bid a copy of the statement specified in subsection (1).

4. In the statement specified in subsection (1), notify the employees that, as a condition of working on the commodities or contractual services that are under bid, the employee will abide by the terms of the statement and will notify the employer of any conviction of, or pleas of guilty or *nolo contendere* to, any violation of Chapter 893 or of any controlled substance law of the United States or any state, for a violation occurring in the workplace no later than five (5) days after such conviction.

5. Impose a sanction on, or require the satisfactory participation in a drug abuse assistance or rehabilitation program is such is available in the employee's community, by any employee who is so convicted.

6. Make a good faith effort to continue to maintain a drug-free workplace through implementation of this section.

As the person authorized to sign the statement, I certify that this firm complies fully with the above requirements.

Bidder: Ranger Construction Industries, Inc.

Signed: _____

By: F Scott Fowler
(Print or Type Name)

Title: Vice President

Date: 1/16/2024

END OF SECTION

EXHIBIT F - BID # 24-004 COMPANY INFORMATION/SIGNATURE SHEET

FAILURE TO COMPLY WITH THESE BID INSTRUCTIONS WILL RESULT IN DISQUALIFICATION OF YOUR BID. PLEASE SIGN BELOW ATTESTING THAT YOU HAVE READ AND UNDERSTAND ALL BID INSTRUCTIONS AND THAT THE PRICES REFLECTED ON THE "SCOPE OF WORK/BID FORM" ARE ACCURATE AND WITHOUT COLLUSION. THE PERSON SIGNING THIS BID SHOULD HAVE THE LEGAL AUTHORITY TO BIND THE COMPANY INTO A LEGAL CONTRACT.

Ranger Construction Insustries, Inc.
COMPANY NAME

(407) 749-6266
TELEPHONE (INCLUDE AREA CODE)

(407) 656-3188
FAX (INCLUDE AREA CODE)

estimating@rangerconstruction.com
E-MAIL ADDRESS

AUTHORIZED SIGNATURE (manual)

F Scott Fowler
NAME/TITLE (PLEASE PRINT)

IF REMITTANCE ADDRESS IS DIFFERENT FROM PURCHASE ORDER ADDRESS, PLEASE INDICATE BELOW:

Same

1200 Elboc Way
STREET ADDRESS

Winter Garden Florida 34787
CITY STATE ZIP

FEDERAL ID # 59-2098662

____ Individual X Corporation ____ Partnership ____ Other (Specify) ____

Sworn to and subscribed before me by means of ■ physical presence or ☐ online notarization this 16 day of January, 20 24.

Personally Known X or

Produced Identification NA

NA
(Type of Identification)

Notary Public - State of Florida
County of Orange

ELENA M ARANGO-MINER
Notary Public-State of Florida
Commission # HH 324181
My Commission Expires
October 20, 2026

Elena Ma. Arango-Miner
Signature of Notary Public

Elena M Arango-Miner
Printed, typed or stamped
Commissioned name of Notary Public

EXHIBIT G
CONTRACTOR E-VERIFY AFFIDAVIT

I hereby certify that Ranger Construction Industries, Inc. [insert contractor company name] does not employ, contract with, or subcontract with an unauthorized alien, and is otherwise in full compliance with Section 448.095, Florida Statutes.

All employees hired on or after January 1, 2021 have had their work authorization status verified through the E-Verify system.

A true and correct copy of Ranger Construction Industries, Inc. [insert contractor company name] **proof of registration in the E-Verify system is attached to this Affidavit.**

Print Name: F Scott Fowler

Date: 1/16/2024

STATE OF FLORIDA

COUNTY OF Orange

The foregoing instrument was acknowledged before me by means of ■physical presence or ☐online notarization, this 1/16/2024 (date) by F Scott Fowler (name of officer or agent, title of officer or agent) of Ranger Construction Industries, Inc. (name of contractor company acknowledging), a Florida (state or place of incorporation) corporation, on behalf of the corporation. He/she is personally known to me or has produced Personally Known (type of identification) as identification.

[Notary Seal]

Notary Public

ELENA M ARANGO-MINER
Notary Public-State of Florida
Commission # HH 324181
My Commission Expires
October 20, 2026

Elena M Arango-Miner
Name typed, printed or stamped

My Commission Expires: 10/20/2026

Mayor
Rusty Johnson

City Manager
Robert Frank

ocoee
florida

Commissioners
Scott R. Kennedy, District 1
Rosemary Wilsen, District 2
Richard Firstner, District 3
Ages Hart, District 4

January 11, 2024

ADDENDUM NO. ONE (1)
CITY OF OCOEE
ITB No. 24-004
ASPHALT PAVING PROJECTS FOR FY 2024

This addendum shall modify and become a part of the original bid documents for the Asphalt Paving Projects for FY 2024. This addendum consists of twenty-two (22) pages, including Revised Bid Form and Plan Sheets. Bidders shall acknowledge receipt of this Addendum in the space provided on page 21 of the bid documents. Failure to do so may subject the bidder to disqualification. **The bid date remains the same.**

PLEASE BE AWARE THE TIME PERIOD FOR QUESTIONS HAS EXPIRED. NO FURTHER QUESITONS WILL BE ACCEPTED PRIOR TO THE BID OPENING.

Important Note: REVISED BID FORM, REVISED BID PLANS ATTACHED

In accordance with the information contained within this addendum, the Bid Form and Bid Plans have been revised. Bidders must use the attached revised Bid Form; or your bid will be disqualified for failure to use the revised Bid Form.

Answers to questions received and/or amendments to the bid documents are as follows:

Q1. The milling and resurfacing limits at several locations will damage additional loops at intersections that are not accounted for on the plans. Since the Traffic signal loops are LS, will all damaged loops within the mill and resurfacing limits need to be replaced?

A1. See revised plans. All damaged loops within the mill and resurfacing limits shall be replaced by the contractor. The City is not responsible for any damaged loops not identified on the plans and encourages all bidders to visit the sites.

Q2. Plans call out all F-loops, several locations have B-loops. Does the City want the existing type loops ("B" or "F") put back and not all "F"?

A2. See revised plans. All damaged loops within the mill and resurfacing limits shall be replaced by the contractor.

Q3. In the plans there is three locations that call for 1.25" of SP 12.5, per FDOT specifications the minimum depth for SP 12.5 is 1.5", please advise?

A3. See revised Bid Form and Plan Sheets. The asphalt type for those three areas (Marsden St/Sullivan Ave, Lakewood Hills Sub., and Ocoee Cemetery) shall be SP-9.5.

Q4. What traffic level is the SP 9.5, SP 12.5, and FC 12.5?

A4. Design Traffic Level is C.

Q5. Do all the bumper stops at Tiger Park and Action Park get replaced?

A5. Wheel stops at Tiger Minor Park and Action Park shall be removed and stockpiled on-site. Location for stockpile shall be coordinated with City Inspector.

Q6. Two locations tie into a railroad (Action Park/Clarke Rd), who is providing the cost of the flaggers for the railroad?

A6. Costs relating the railroad coordination would be the responsibility of the contractor.

Q7. Who is the owner of the railroad?

A7. Regional Rail – Florida Central Railroad (FCEN).

Q8. How many trains usually run per day?

A8. This information shall be obtained from Regional Rail – Florida Central Railroad (FCEN).

Q9. Is there a training class that must be taken for the railroad?

A9. This information shall be obtained from Regional Rail – Florida Central Railroad (FCEN).

Q10. Could you please provide an Excel version of the bid form?

A10. Not available, please use the Revised Bid Form that was provided in this Addendum.

Q11. Will the city cover the Railroad fee for the work on Clarke Road and Action Parking lot?

A11. The Contractor shall be responsible for any fee related to the Railroad coordination.

Q12. How soon after milling does the resurfacing need to take place? Does it have to be paved back the same day? Within 5 days?

A12. Areas that are milled shall be resurfaced within 5 days of the milling operation.

Olena Stokych

Olena Stokych
Purchasing Analyst

Attachments: Revised Bid Form
Revised Plans C2, C3, C4, C8, C9, C10, C14

cc: Steve Krüg, P.E., Public Works Director
Milen Womack, City Engineer

LITIGATION HISTORY FOR
RANGER CONSTRUCTION INDUSTRIES, INC.
(FIVE (5) YEARS)

The following concerns litigation brought by or against Ranger Construction Industries, Inc. (Ranger) within the last five (5) years, but excludes employee/labor related claims. Any settlements are confidential.

2018 Cases

1. Case Number, Name and Date Filed

Gerding v. Ranger Construction Industries, Inc., Orange County Circuit Court Case No.: 2018-CA-000389-O

Filed: January 11, 2018

Ranger was Defendant

Name of Court or other Tribunal

Orange County Circuit Court – Ninth Judicial Circuit

Amount in dispute is in excess of $30,000.

Type of Case

Civil

Claim or Cause of Action and Brief description of each Count

Plaintiff filed a lawsuit for Trespass for resulting in damages to Plaintiff's home and the homes of others.

Brief description of the Subject Matter and Project Involved

Plaintiff claimed that Ranger claimed that Ranger in its pile driving operations in the installation of the Apollo Bridge, Project No. 241241-1-52-01 for the Florida Department of Transportation caused vibrations that damage the property of the Plaintiff and Plaintiff's neighbors. Ranger denies any liability from claims made against it and denies the allegations of all pleadings in the lawsuit directed at Ranger claiming such liability or responsibility.

Disposition of Case

This matter remains pending but not being prosecuted.

All inquiries regarding the litigation on behalf of Ranger should be directed to:

Robert L. Frye
General Counsel
1645 North Congress Avenue
West Palm Beach, Florida 33409
Email: rob.frye@vecelliogroup.com
Phone: 561-784-3487

Opposing Counsel

Name: Raymer F. Maguire, III
Harold Lassman
Maguire Lassman, P.A.
605 East Robinson Street, Suite 140
Orlando, Florida 32801

Email: none known

Telephone: 407-228-9522

2. Case Number, Name and Date Filed

Rios v. Ranger Construction Industries, Inc., et al., Orange County Circuit Court Case No.: 2018-CA-010754-O; companion case, *Monagas v. Ranger Construction Industries, Inc., et al.*, Orange County Circuit Court Case No.: 2018-CA-010754-O

Filed: October 2, 2018

Ranger was a Defendant

Name of Court or other Tribunal

Orange County Circuit Court – Ninth Judicial Circuit

Amount in dispute is in excess of $30,000.

Type of Case

Civil

Claim or Cause of Action and Brief description of each Count

Plaintiff filed a multi-count lawsuit against several defendant, including and action for Negligence against Ranger resulting in damages to Plaintiffs.

Brief description of the Subject Matter and Project Involved

Plaintiffs claim that a dump truck controlled by others and parked in a construction area under the control of Ranger led to damages to Plaintiffs when struck by a vehicle Plaintiffs were travelling in. The construction area was on South John Young Parkway Project for the Florida Department of Transportation with Prince Contracting, LLC being the Prime Contractor. Ranger denies any liability from claims made against it and denies the allegations of all pleadings in the lawsuit directed at Ranger claiming such liability or responsibility.

Disposition of Case

This matter was settled and a Notice of Voluntary Dismissal was filed.

All inquiries regarding the litigation on behalf of Ranger should be directed to:

Robert L. Frye
General Counsel
1645 North Congress Avenue
West Palm Beach, Florida 33409
Email: rob.frye@vecelliogroup.com
Phone: 561-784-3487

Opposing Counsel

Name: R. Samuel Dunaway
Dan Newlin & Partners
7335 W. Sand Lake Road, Suite 300
Orlando, FL 32819

Email: sam.dunaway@newlinlaw.com

Telephone: 407-845-1810

3. Case Number, Name and Date Filed

Wantman Group v. Ranger Construction Industries and Travelers Casualty and Surety Company of America, Palm Beach County Circuit Court Case No.: 2018-CA-003131, Div. AN

Ranger was Defendant/Counter-Plaintiff

Filed: March 14, 2018

Name of Court or other Tribunal

Palm Beach County Circuit Court – Fifteenth Judicial Circuit

Amount in dispute is in excess of $30,000.

Type of Case

Civil

Claim or Cause of Action and Brief description of each Count

Wantman Group brought an action against Ranger Construction and Ranger Construction's bonding company for Breach of Contract as to Segment C (Count I), Breach of Segment C Bond (Count II), Breach of Contract of Contract as to Segment D (Count III), Breach of Segment D Bond (Count IV), Unjust Enrichment (Count V) and Declaratory Relief (Count VI). Ranger Construction brought its Counterclaim against Wantman Group seeking damages for Breach of Segment C Memorandum of Understanding (Count I), Breach of Segment C Design Services Agreement (Count II), Professional Negligence as to Segment C (Count III), Breach of Segment D Memorandum of Understanding (Count IV), Breach of Segment D Design Services Agreement (Count V), Professional Negligence as to Segment D (Count VI).

Brief description of the Subject Matter and Project Involved

This is a payment dispute commenced by Wantman Group with Ranger Construction countering that Wantman Group caused damages to Ranger Construction in the form of, among other things, additional costs for work efforts and extended performance to overcome errors by Wantman Group on Segments C and D of the I-75 Project for FDOT in Broward County, Florida.

Disposition of Case

Settled during the lawsuit. Stipulation for Voluntary Dismissal has been filed. Settlement terms are confidential.

All inquiries regarding the litigation on behalf of Ranger should be directed to:

Robert L. Frye
General Counsel
1645 North Congress Avenue
West Palm Beach, Florida 33409
Email: rob.frye@vecelliogroup.com
Phone: 561-784-3487

Opposing Counsel

Name: Eddie Baird
Baird Law
941 W. Morse Blvd., Suite 100
Winter Park, FL 32789

Email: eddie@baird.law

Telephone: 407-906-7615

4. Case Number, Name and Date Filed

Colbath v. Ranger Construction Industries, Palm Beach Circuit Court Case No.: 2018-CA-004312, Div. AI

Filed: April 10, 2018

Ranger is Defendant

Name of Court or other Tribunal

Palm Beach County Circuit Court – Fifteenth Judicial Circuit

Amount in dispute is in excess of $30,000.

Type of Case

Civil

Claim or Cause of Action and Brief description of each Count

Jason Colbath filed a one count Complaint against Ranger Construction for Negligence.

Brief description of the Subject Matter and Project Involved

Jason Colbath claims that he was involved in a one car crash due to the roadway under construction by Ranger Construction on a State Road 710 Project for FDOT in Palm Beach County, Florida.

Disposition of Case

This matter has been settled.

All inquiries regarding the litigation on behalf of Ranger should be directed to:

Robert L. Frye
General Counsel
1645 North Congress Avenue
West Palm Beach, Florida 33409
Email: rob.frye@vecelliogroup.com
Phone: 561-784-3487

Opposing Counsel

Name: Steven J. Rothman
505 South Flagler Drive, Suite 1100
West Palm Beach, FL 33401

Email: srothman@jonesfoster.com

Telephone: 561-650-0404

5. Case Number, Name and Date Filed

Daigle v. Ranger Construction Industries, Palm Beach Circuit Court Case No.: 50 2018 CA 004312, Div. AJ

Filed: August 8, 2018

Ranger was Defendant

Name of Court or other Tribunal

Palm Beach County Circuit Court – Fifteenth Judicial Circuit

Amount in dispute is in excess of $30,000.

Type of Case

Civil

Claim or Cause of Action and Brief description of each Count

Edward Daigle filed a one count lawsuit against Ranger Construction for Negligence.

Brief description of the Subject Matter and Project Involved

Edward Daigle claimed that he was involved in a one car crash due to the roadway under construction by Ranger Construction on a State Road 710 Project for FDOT in Palm Beach County, Florida.

Disposition of Case

Settled during the lawsuit. Order of Dismissal with Prejudice was entered.
All inquiries regarding the litigation on behalf of Ranger should be directed to:

Robert L. Frye
General Counsel

1645 North Congress Avenue
West Palm Beach, Florida 33409
Email: rob.frye@vecelliogroup.com
Phone: 561-784-3487

Opposing Counsel

Name: J. Freddy Rhoads
6701 South Dixie Highway
West Palm beach, Florida 33405

Email: freddy@rhoadslawgroup.com

Telephone: 561-253-6397

2019 Cases

1. Case Number, Name and Date Filed

Ranger Construction Industries v. Sunray Paving and RLI Insurance Company, Seminole County Circuit Court Case No.: 2019-CA-003-53-15-L

Ranger is Plaintiff.

Filed: October 3, 2019

Name of Court or other Tribunal

Seminole County Circuit Court – Eighteenth Judicial Circuit

Amount in dispute is in excess of $30,000.

Type of Case

Civil

Claim or Cause of Action and Brief description of each Count

Ranger Construction filed a lawsuit against RLI Insurance Company on an Action on a Lien Transfer Bond (Count I) and then an action for Open Account (Count II), Account Stated (Count III) and Goods Sold (Count IV) against Sunray Paving.

Brief description of the Subject Matter and Project Involved

Payment dispute. Ranger Construction Industries, Inc. is due monies for asphalt materials sold concerning the Parkdale Place Project located in Seminole County, Florida.

Disposition of Case

This matter has been resolved.

All inquiries regarding the litigation on behalf of Ranger should be directed to:

Robert L. Frye
General Counsel
1645 North Congress Avenue
West Palm Beach, Florida 33409
Email: rob.frye@vecelliogroup.com
Phone: 561-784-3487

Opposing Counsel

Name: None

Email: None

Telephone: None

2. Case Number, Name and Date Filed

Winston Towers 500 Association, Inc. v. Ranger Construction Industries, Inc., et al., Miami-Dade County Circuit Court Case No.: 19-000516-CA-01

Filed: January 4, 2019

Ranger was a Defendant.

Name of Court or other Tribunal

Miami-Dade County Circuit Court – Eleventh Judicial Circuit

Amount in dispute is in excess of $30,000.

Type of Case

Civil

Claim or Cause of Action and Brief description of each Count

Plaintiff filed a multi-party and multi-count lawsuit, which included actions against the Project Subcontractors such as Ranger for Negligence and Violations of Building Code and Statutory Warranties.

Brief description of the Subject Matter and Project Involved

Plaintiff claims damages arising out of alleged defects in the work of multiple trades at the Winston Tower 500 Condominium Project, which is a 22-story residential building in Miami-Dade County, Florida. Ranger denies any liability from claims made against it and denies the allegations of all pleadings in the lawsuit directed at Ranger claiming such liability or responsibility.

Disposition of Case

The matter was resolved during litigation and a Stipulation for Dismissal and Order of Dismissal was filed.

All inquiries regarding the litigation on behalf of Ranger should be directed to:

Robert L. Frye
General Counsel
1645 North Congress Avenue
West Palm Beach, Florida 33409
Email: rob.frye@vecelliogroup.com
Phone: 561-784-3487

Opposing Counsel

Name: James C. Prichard
Ball Janik, LLP
201 E. Pine Street
Orlando, Florida 32801

Email: jprichard@balljanik.com

Telephone: 407-455-5664

3. Case Number, Name and Date Filed

Ranger Construction Industries, Inc. v. Engecon Construction, Inc. and Great American Insurance Company, Palm Beach County Circuit Court Case No.:50-2019-CA-014732-XXXXMB

Ranger is Plaintiff.

Filed: November 15, 2019

Name of Court or other Tribunal

Palm Beach County Circuit Court – Fifteenth Judicial Circuit

Amount in dispute is in excess of $30,000.

Type of Case

Civil

Claim or Cause of Action and Brief description of each Count

Ranger Construction has brought a claim for Action on Payment Bond (Count I) and an action for Breach of Contract (Count II) seeking payment of monies owed to Ranger Construction by Engecon Construction.

Brief description of the Subject Matter and Project Involved

This is a payment dispute whereby Engecon Construction owes Ranger Construction monies for work performed on a Village of Royal Palm Beach Project known as Road Resurfacing (Ponce De Leon and La Mancha).

Disposition of Case

Settled. Case dismissed.

All inquiries regarding the litigation on behalf of Ranger should be directed to:

Robert L. Frye
General Counsel
1645 North Congress Avenue
West Palm Beach, Florida 33409
Email: rob.frye@vecelliogroup.com
Phone: 561-784-3487

Opposing Counsel

Name: Ira Libanoff
Ferencik, Libanoff, Brandt, Bustamante and Goldstein, P.A.
150 S. Pine Island Road, Suite 400
Plantation, FL 33324

Email: ilibanoff@flbbwlaw.com

Telephone: 954-474-8080

2020 Cases

1. Case Number, Name and Date Filed

Ranger Construction Industries, Inc. v. Wantman Group, Inc., Palm Beach County Circuit Court Case No. 50 2020 CA 002166 MB, Division AD

Ranger is Plaintiff/Counter-Defendant

Filed: February 25, 2020

Name of Court or other Tribunal

Palm Beach County Circuit Court – Fifteenth Judicial Circuit

Amount in dispute is in excess of $30,000.

Type of Case

Civil

Claim or Cause of Action and Brief description of each Count

Ranger Construction brought an action against Wantman Group for Breach of Contract (Count I) and Professional Negligence (Count II). Wantman Group filed a Counterclaim against Ranger Construction for Breach of Contract (Count I) and Unjust Enrichment (Count II).

Brief description of the Subject Matter and Project Involved

This is a dispute commenced by Ranger Construction claiming that Wantman Group caused damages to Ranger Construction in the form of additional costs due to work efforts to overcome errors by Wantman Group on the I-95 at St. John's Heritage Parkway Interchange Project for FDOT in Brevard County, Florida. Wantman Group countered claiming monies unpaid to it by Ranger Construction for work performed.

Disposition of Case

The case has been settled, and the case has been dismissed.

All inquiries regarding the litigation on behalf of Ranger should be directed to:

Robert L. Frye
General Counsel
1645 North Congress Avenue
West Palm Beach, Florida 33409
Email: rob.frye@vecelliogroup.com
Phone: 561-784-3487

Opposing Counsel

Name: Eddie Baird
Baird Law
941 W. Morse Blvd., Suite 100
Winter Park, FL 32789

Email: eddie@baird.law

Telephone: 407-906-7615

2. Case Number, Name and Date Filed

Ranger Construction Industries, Inc. v. Hubbard Construction Company, Broward County Circuit Court Case No.: 06 2020 CA 010113 CE

Filed: June 19, 2020

Ranger is Plaintiff

Name of Court or other Tribunal

Broward County Circuit Court – Seventeenth Judicial Circuit

Amount in dispute is in excess of $30,000.

Type of Case

Civil

Claim or Cause of Action and Brief description of each Count

Ranger Construction brought a single count lawsuit against Hubbard Construction for Breach of Contract.

Brief description of the Subject Matter and Project Involved

This is a payment dispute where Ranger Construction seeks payment for work performed for Hubbard Construction on the SR-9/I-95 Project for FDOT in Miami-Dade and Broward Counties.

Disposition of Case

This matter has settled, and has been dismissed.

All inquiries regarding the litigation on behalf of Ranger should be directed to:

Robert L. Frye

General Counsel
1645 North Congress Avenue
West Palm Beach, Florida 33409
Email: rob.frye@vecelliogroup.com
Phone: 561-784-3487

Opposing Counsel

Name: Curtis L. Brown
Wright, Fulford, Moorhead & Brown, P.A.
505 Maitland Avenue, Suite 1000
Altamonte Springs, FL 32701

Email: cbrown@wfmblaw.com

Telephone: 407-425-0234

3. Case Number, Name and Date Filed

Wesley Allen Miller v. Michael Colby Dorosz and Ranger Construction Industries, Inc., Orange County Circuit Court Case No. 2020-CA-011462-O

Ranger is a Defendant

Filed: November 17, 2020

Name of Court or other Tribunal

Orange County Circuit Court – Ninth Judicial Circuit

Amount in dispute is in excess of $30,000.

Type of Case

Civil

Claim or Cause of Action and Brief description of each Count

Plaintiff brought an action for Negligence as to each Defendant arising from an automobile accident.

Brief description of the Subject Matter and Project Involved

This dispute concerns a claim for damages arising from an automobile accident relating to a Project near SR 408 in Orange County, Florida.

Disposition of Case

This case has been settled and a Notice of Settlement has been filed. The filing of a dismissal remains pending.

All inquiries regarding the litigation on behalf of Ranger should be directed to:

Robert L. Frye
General Counsel
1645 North Congress Avenue
West Palm Beach, Florida 33409
Email: rob.frye@vecelliogroup.com
Phone: 561-784-3487

Opposing Counsel

Name:	Adrienn N. Toth Morgan & Morgan, P.A. 20 N. Orange Avenue, Suite 1600 Orlando, FL 32801
Email:	atoth@forthepeople.com
Telephone:	407-420-1414

4. Case Number, Name and Date Filed

Prince Contracting, LLC v. Ranger Construction Industries, Inc., Orange County Circuit Court Case No. 2020-CA-010736-O

Ranger was a Defendant

Filed: November 26, 2020

Name of Court or other Tribunal

Orange County Circuit Court – Ninth Judicial Circuit

Amount in dispute is in excess of $30,000.

Type of Case

Civil

Claim or Cause of Action and Brief description of each Count

Prince Contracting, LLC brought an action against Ranger for Contractual Indemnification and Breach of Contract allegedly due to an auto accident on a Project located in Orange County. This concerns the *Rios* litigation cited above.

Brief description of the Subject Matter and Project Involved

This matter concerns the same facts as the *Rios* litigation cited above.

Disposition of Case

The case has been settled, and the case has been dismissed.

All inquiries regarding the litigation on behalf of Ranger should be directed to:

Robert L. Frye
General Counsel
1645 North Congress Avenue
West Palm Beach, Florida 33409
Email: rob.frye@vecelliogroup.com
Phone: 561-784-3487

Opposing Counsel

Name:	Kurt M. Spengler Wicker Smith 390 N. Orange Avenue, Suite 1000 Orlando, FL 32801
Email:	kspengler@wickersmith.com
Telephone:	407-843-3939

2021 Cases

1. Case Number, Name and Date Filed

Ranger Construction Industries, Inc. v. Competition Grading, Inc., Palm Beach County Small Claims Court Case No. 502021SC001627XXXXMBRE

Ranger is Plaintiff

Filed: January 28, 2021

Name of Court or other Tribunal

Palm Beach County Small Claims Court – Fifteenth Judicial Circuit

Amount in dispute is in excess of $30,000.

Type of Case

Civil

Claim or Cause of Action and Brief description of each Count

Ranger Construction brought an action against Competition Grading due to nonpayment by Competition Grading for asphalt materials sold to Competition Grading.

Brief description of the Subject Matter and Project Involved

Competition Grading accepted the asphalt and incorporated the asphalt into a Project known as Car World of Palm Beach, and then failed by Ranger Construction for the same.

Disposition of Case

Default and Default Final Judgment were entered against Competition Grading. This matter remains pending while Ranger seeks to collect on the Default Final Judgment.

All inquiries regarding the litigation on behalf of Ranger should be directed to:

Robert L. Frye
General Counsel
1645 North Congress Avenue
West Palm Beach, Florida 33409
Email: rob.frye@vecelliogroup.com
Phone: 561-784-3487

Opposing Counsel

There is no opposing counsel.

2. Case Number, Name and Date Filed

Ranger Construction Industries, Inc. v. R.I.B. Equipment Services, LLC, Broward County Small Claims Court Case No. 062021SC011352AXXXCE

Ranger is Plaintiff

Filed: March 1, 2021

Name of Court or other Tribunal

Broward County Small Claims Court – Seventeenth Judicial Circuit

Amount in dispute is less than $5,000.

Type of Case

Civil

Claim or Cause of Action and Brief description of each Count

Ranger Construction brought an action against R.I.B. Equipment due to nonpayment by R.I.B. Equipment for asphalt materials sold to R.I.B. Equipment.

Brief description of the Subject Matter and Project Involved

R.I.B. Equipment accepted the asphalt and incorporated the asphalt into a project located in Broward County, and then failed by Ranger Construction for the same.

Disposition of Case

This matter has settled, and the case has been dismissed.

All inquiries regarding the litigation on behalf of Ranger should be directed to:

Robert L. Frye
General Counsel
1645 North Congress Avenue
West Palm Beach, Florida 33409
Email: rob.frye@vecelliogroup.com
Phone: 561-784-3487

Opposing Counsel

There is no opposing counsel at this time.

3. Case Number, Name and Date Filed

Greenberg v. Kolter Group Acquisitions LLC, Ranger Construction Industries, Inc. et al., Palm Beach Circuit Court Case No. 502021CA009158XXXXMB Div. AN

Ranger is Defendant

Filed: July 27, 2021

Name of Court or other Tribunal

Palm Beach County Circuit Court – Fifteenth Judicial Circuit

Amount in dispute is in excess of $30,000.

Type of Case

Civil

Claim or Cause of Action and Brief description of each Count

Plaintiff claims damages from multiple Defendants arising out of alleged defects in the work of for a Project developed by Kolter Group known as "Alton Neighborhood 1 — Phase 1 Unit of Development 2C — NPBCID Job #: PRJ-564 ARCADIS Project #: WF59OPO 1.1122" which led to an accident at the intersection of Edison Place and Dickens Terrace in Palm Beach Gardens, Florida. Ranger denies any liability from claims made against it and denies the allegations of all pleadings in the lawsuit directed at Ranger claiming such liability or responsibility.

Brief description of the Subject Matter and Project Involved

Plaintiff seeks damages for injuries claimed due to an accident at Edison Place and Dickens Terrace in Palm Beach Gardens, Florida related to work performed on a Project developed by Kolter Group known as "Alton Neighborhood 1 — Phase 1 Unit of Development 2C — NPBCID Job #: PRJ-564 ARCADIS Project #: WF59OPO 1.1122"

Disposition of Case

This matter as to Ranger Construction Industries, Inc. has been dismissed with prejudice.

All inquiries regarding the litigation on behalf of Ranger should be directed to:

Robert L. Frye
General Counsel
1645 North Congress Avenue
West Palm Beach, Florida 33409
Email: rob.frye@vecelliogroup.com
Phone: 561-784-3487

Opposing Counsel

William T. Allen, Jr., Esq.
Steven M. Brady, Esq.
David Carlson, Esq.
Allen Law Firm, P.A.
2550 S.W. 76th Street, Suite 150
Gainesville, Florida 32608
Phone: (352) 331-6789

Fax: (352) 331-6785

4. Case Number, Name and Date Filed

Inverrary Gardens Master Association, Inc. v. Tiger Capital Group, LLC, Ranger Construction Industries, Inc. et al., Broward County Circuit Court Case No. CACE 21-017287

Ranger is Defendant

Filed: September 20, 2021

Name of Court or other Tribunal

Broward County Circuit Court – Seventeenth Judicial Circuit

Amount in dispute is in excess of $30,000.

Type of Case

Civil

Claim or Cause of Action and Brief description of each Count

Inverrary Gardens Master Association, Inc. brought an interpleader action concerning funds held regarding a contract with Advanced Pavement Group, LLC concerning a project for the Association. The action seeks to determine how the funds should be distributed.

Brief description of the Subject Matter and Project Involved

Ranger Construction had supplied some asphalt to the Project, but has been paid in full and provided a Final Release for the payment.

Disposition of Case

This matter has been resolved as to Ranger Construction and the case as to Ranger Construction has been dismissed.

All inquiries regarding the litigation on behalf of Ranger should be directed to:

Robert L. Frye
General Counsel
1645 North Congress Avenue
West Palm Beach, Florida 33409
Email: rob.frye@vecelliogroup.com
Phone: 561-784-3487

Opposing Counsel

John Schank
Frank, Weinberg & Black, P.L.
7805 SW 6th Court
Plantation, FL 33324
Office: (954) 474-8000
Fax: (954) 474-9850
Email: jscahnk@fwblaw.net

5. Case Number, Name and Date Filed

Lindsey Mitchell v. Brett Vaughn and Ranger Construction Industries, Inc., Orange County Circuit Court Case No. 2021-CA-009362-O

Ranger was a Defendant

Filed: September 24, 2021

Name of Court or other Tribunal

Orange County Circuit Court – Ninth Judicial Circuit

Amount in dispute is in excess of $30,000.

Type of Case

Civil

Claim or Cause of Action and Brief description of each Count

Plaintiff brought an action for Negligence as to each Defendant arising from an automobile accident.

Brief description of the Subject Matter and Project Involved

This dispute concerns a claim for damages arising from an automobile accident relating to a Project near the intersection of I-4 and SR 414 in Maitland, Florida.

Disposition of Case

The case has been settled, and dismissal of the action is pending.

All inquiries regarding the litigation on behalf of Ranger should be directed to:

Robert L. Frye

General Counsel
1645 North Congress Avenue
West Palm Beach, Florida 33409
Email: rob.frye@vecelliogroup.com
Phone: 561-784-3487

Opposing Counsel

Name: Donna Zmijewski
DAN NEWLIN INJURY ATTORNEYS
7335 W. Sand Lake Road, Suite 300
Orlando, FL 32819

Email: donna@newlinlaw.com

Telephone: 407-440-9524

2022 Cases

1. Case Number, Name and Date Filed

Traffic Control Devices, LLC v. Ranger Construction Industries, Inc. and Travelers Casualty and Surety Company of America, Seminole County Circuit Court Case No. 2022-CA-000032

Ranger is a Defendant

Filed: January 14, 2022

Name of Court or other Tribunal

Seminole County Circuit Court – Eighteenth Judicial Circuit

Amount in dispute is in excess of $50,000.

Type of Case

Civil

Claim or Cause of Action and Brief description of each Count

Traffic Control Devices, LLC has brought a claim for Breach of Contract (Count I) and an action for Action on Payment Bond (Count II) seeking payment of monies claimed to be owed to Traffic Control Devices, LLC by Ranger Construction Industries, Inc. and its payment bond surety.

Brief description of the Subject Matter and Project Involved

Traffic Control Devices, LLC seeks payment for work performed concerning the SR 91, AET Turnpike North, AET Northern Coin Conversion MP 210-249 Project for FDOT in Lake, Orange, Osceola and Sumter Counties. However, due to delays in Traffic Control Devices, LLC performance, Ranger Construction Industries, Inc. backcharged Traffic Control Devices, LLC in accordance with the Subcontract for delay impacts sustained by Ranger Construction Industries, Inc.

Disposition of Case

This matter has been resolved and the case has been dismissed.

All inquiries regarding the litigation on behalf of Ranger should be directed to:

Robert L. Frye
General Counsel
1645 North Congress Avenue
West Palm Beach, Florida 33409
Email: rob.frye@vecelliogroup.com
Phone: 561-784-3487

Opposing Counsel

Alejandro Espino
VLP COPENHAVER ESPINO, PLLC
201 Alhambra Circle, Suite 801
Coral Gables, Florida 33134
Telephone: (305) 443-2043
E-mail: aespino@vlplaw.com

2. Case Number, Name and Date Filed

Eagle Carriers of South Florida, LLC v. Orion & Associates Trucking Solutions, LLC, Ranger Construction Industries, Inc. et al.,
Palm Beach County Circuit Court Case No. 50-2022-CA-005620-XXXX-MB

Ranger is a Defendant

Filed: June 30, 2022

Name of Court or other Tribunal

Palm County Circuit Court – Fifteenth Judicial Circuit

Amount in dispute is in excess of $50,000.

Type of Case

Civil

Claim or Cause of Action and Brief description of each Count

Eagle Carriers of South Florida, LLC filed a thirteen count Complaint against various Defendants, including Ranger and its payment bond surety Travelers relating to a South Florida Water Management District Project known as C-139 Annex Restoration Phase 2 and Agricultural Area Stormwater Rerouting located in Hendry County. Count VIII (Claim Against Payment Bond) pertains to Travelers, while Counts IX (Unjust Enrichment) and X (Quantum Meruit) pertain to Ranger.

Brief description of the Subject Matter and Project Involved

Eagle Carriers of South Florida, LLC seeks payment for alleged hauling services provided to Orion & Associates Trucking Solutions, LLC, a trucking subcontractor to Ranger on the Project.

Disposition of Case

This matter has been resolved and the case has been dismissed as to Ranger, Travelers and the South Florida Water Management District.

All inquiries regarding the litigation on behalf of the Ranger should be directed to:

Robert L. Frye
General Counsel
1645 North Congress Avenue
West Palm Beach, Florida 33409
Email: rob.frye@vecelliogroup.com
Phone: 561-784-3487

Opposing Counsel

Raul Morales
Martinez Morales
2600 S. Douglas Road, Suite 305
Coral Gables, Florida 33134
Email: rmorales@mmlawfl.com
Phone: 305-501-5011

3. Case Number, Name and Date Filed

Garrett Lamar Carter v. Central Florida Expressway Authority and Ranger Construction Industries, Inc., Orange County Circuit Court Case No. 2022-CA-009531-O

Ranger is a Defendant

Filed: October 20, 2022

Name of Court or other Tribunal

Orange County Circuit Court – Ninth Judicial Circuit

Amount in dispute is in excess of $50,000.

Type of Case

Civil

Claim or Cause of Action and Brief description of each Count

Plaintiff brought an action for Negligence as to each Defendant arising from accident involving the Plaintiff's motorcycle.

Brief description of the Subject Matter and Project Involved

This dispute concerns a claim for damages arising from an accident relating to a Project near SR 414 Above Highway 441 in Orange County, Florida. The accident allegedly was caused by uneven concrete.

Disposition of Case

This case has been resolved and dismissed.

All inquiries regarding the litigation on behalf of Ranger should be directed to:

Robert L. Frye
General Counsel
1645 North Congress Avenue
West Palm Beach, Florida 33409
Email: rob.frye@vecelliogroup.com
Phone: 561-784-3487

Opposing Counsel

Name: Aboubakr Maaroufi
Bogin, Munns & Munns, P.A.
1524 N. John Young Parkway
Kissimmee, FL 34741

Email: amaaroufi@boginmunns.com

Telephone: 407-870-1919

2023 Cases

1. Case Number, Name and Date Filed

Matthew Shuman v. Ranger Construction Industries, Inc., et al., Orange County Circuit Court Case No. 2023-CA-006416-O

Ranger is a Defendant

Filed: March 21, 2023

Name of Court or other Tribunal

Orange County Circuit Court – Ninth Judicial Circuit

Amount in dispute is in excess of $50,000.

Type of Case

Civil

Claim or Cause of Action and Brief description of each Count

Plaintiff brought an action for Negligence as to Ranger and the driver of a Ranger vehicle arising from accident involving the Plaintiff's automobile.

Brief description of the Subject Matter and Project Involved

This dispute concerns a claim for damages arising from an accident relating to a Project near SR 417 approaching Mile Marker 11 in Orange County, Florida.

Disposition of Case

This case has been resolved and dismissed.

All inquiries regarding the litigation on behalf of Ranger should be directed to:

Robert L. Frye
General Counsel
1645 North Congress Avenue
West Palm Beach, Florida 33409
Email: rob.frye@vecelliogroup.com

Phone: 561-784-3487

Opposing Counsel

Name: James Thomas Gordon
313 Central Avenue
Oviedo, FL 32765

Email: jim@beersandgordonlaw.com

Telephone: 407-862-1825

2. Case Number, Name and Date Filed

Roadway Construction, LLC v. Ranger Construction Industries, Inc. and Travelers Casualty and Surety Company of America, Miami-Dade County Circuit Court Case No. 2023-018607-CA-01

Ranger is a Defendant

Filed: June 23, 2023

Name of Court or other Tribunal

Miami-Dade County Circuit Court – Eleventh Judicial Circuit

Amount in dispute is in excess of $50,000.

Type of Case

Civil

Claim or Cause of Action and Brief description of each Count

Roadway Construction, LLC has brought a claim for Breach of Contract (Count I) and an action for Action on Payment Bond (Count II) seeking payment of monies claimed to be owed to Roadway Construction, LLC by Ranger Construction Industries, Inc. and its payment bond surety.

Brief description of the Subject Matter and Project Involved

Roadway Construction, LLC seeks payment for work performed relating to a South Florida Water Management District Project known as C-139 Annex Restoration Phase 2 and Agricultural Area Stormwater Rerouting located in Hendry County. Ranger and Travelers do not owe Roadway Construction, LLC unpaid monies for work performed on the referenced Project.

Disposition of Case

This action was recently filed and is pending.

All inquiries regarding the litigation on behalf of the Ranger should be directed to:

Robert L. Frye
General Counsel
1645 North Congress Avenue
West Palm Beach, Florida 33409
Email: rob.frye@vecelliogroup.com
Phone: 561-784-3487

Opposing Counsel

Timothy S. Taylor
Taylor, Corwin & Van Cleaf, PLLC
255 Alhambra Circle, Suite 1170
Coral Gables, Florida 33134
Email: ttaylor@tcv.law
Phone: 305-859-4400

3. Case Number, Name and Date Filed

I-595 Express, LLC v. Dragados USA, Inc., Prince Contracting, Inc., Ranger Construction Industries, Inc., et al., Broward County Circuit Court Case No. CACE 23-017550, Div: 13

Ranger is a Defendant

Filed: August 25, 2023

Name of Court or other Tribunal

Broward County Circuit Court – Seventeenth Judicial Circuit

Amount in dispute is in excess of $50,000.

Type of Case

Civil

Claim or Cause of Action and Brief description of each Count

I-595 Express, LLC has brought a claim against Ranger for Negligence, Breach of Implied Warranty of Merchantability, Breach of Implied Warranty for a Particular Purpose and Common Law Indemnity. Multiple other defendants have been sued for the same counts. There is one count for Breach of Contract against Dragados.

Brief description of the Subject Matter and Project Involved

I-595 Express, LLC claims damages against multiple defendants for allegedly installing defective overhead signs that are located on the I-595 roadway at various locations. Although Ranger did not install any such signage or have the signage as part of its scope of work, the lawsuit nonetheless includes Ranger.

Disposition of Case

This action was recently filed, but not served and presently is pending.

Although insurance defense counsel may be assigned to the matter, for the time being all inquiries regarding the litigation on behalf of the Ranger should be directed to:

Bradley S. Copenhaver
VLP Copenhaver Espino
413 East Park Avenue
Tallahassee, Florida 32301
(850) 224-6205 (office)
bcopenhaver@vlplaw.com

and

Robert L. Frye
General Counsel
1645 North Congress Avenue
West Palm Beach, Florida 33409
Email: rob.frye@vecelliogroup.com
Phone: 561-784-3487

Opposing Counsel

Timothy S. Taylor
Taylor, Corwin & Van Cleaf, PLLC
255 Alhambra Circle, Suite 1170
Coral Gables, Florida 33134
Email: ttaylor@tcv.law
Phone: 305-859-4400

Ranger Construction

WORK EXPERIENCE/REFERENCES

JOB NAME	JOB DESCRIPTION	LOCATION	CLIENT	CONTRACT AMOUNT	COMPLETION DATE	CONTACT INFORMATION
Palm Beach County yearly paving and resurfacing contract	Paving and resurfacing as needed within the county	Palm Beach County	Palm Beach County	Original Contract Amount: $13,000,000	We have this contract since 2015	Adam Faustini, CGC / AFaustin@pbcgov.org Assistant Director, Road and Bridge Engineering & Public Works Dept. Road & Bridge Division (561) 233-3956/ 2555 Vista Parkway West Palm Beach, FL 33411
Seminole County Annual Paving Contract(PO Based)	Paving	Various Areas through-out Seminole county	Seminole County	Initial Contract: $1,260,680.00/Final Amount: $4,547,388.88	We had the contract for 3 years, ended December 2022	Dave Bryant/bryantdp@cdmsmith.com/1301 East Second Street, Sanford, FL 32771/Tel (407) 665-7116
City of Greenacres Annual Paving Contract(PO Based)	Milling & Resurfacing	Greenacres	City of Greenares	$254,960.00	We have this contract since 2018	5750 Melaleuca Ln, Greenacres, FL 33463 Contact person: Wyman Scott/Roads and Drainage Supervisor (561)642 2185 Email: wscott@greenacresfl.gov
SR 500 T5732	Milling & Resurfacing	SR 500 (MP 20-115 to MP 21-895)	FDOT/Dsitrict 5	$4,299,607.56	January 2023/Completed on time/on budget	Phillip Garcia/phillip.garcia@jacobs.com/(786) 810-5689 FDOT: 719 South Woodland Blvd, Deland, FL 32720 Philip Maggio P.E. - (352)326-7747
Northridge Blvd	Milling & Resurfacing	Northridge Street , Clermont, FL 34711	City of Clermont	$455,606.35	October 2022/Completed on time/on budget	James Maiworm/ jmaiworm@clermontfl.org/ 3335 Hancock Road, Clermont FL 34711/Tel: (352) 241-0178
Kirby Industrial Park & Palm Bay Colony	Milling & Resurfacing	City of Palm Bay	City of Palm Bay	$1,024,250.95	8/1/2022/Completed on time/on budget	Frank Watanabe 321.409.6341 Frank.watanabe@palmbayflorida.org
T1802 SR 559 at 557A/Gilead Drive	Milling & Resurfacing	SR 559 at 557A/Gilead Drive	FDOT/District 1	$912,054.91	2/24/2022/Completed on time/on budget	William George wgeorge@consoreng.com Phone: +1.813.244.3159 Ext. 51058 Mobile: 813-316-6646 District One Construction 863-519-2361 Office 863-899-9367 FDOT Cell
E52A7 SR 5 (US1) @ SR 404 EB Ramps Signalization	Mill & Resurface	SR 5 (US1) @ SR 404 EB Ramps Signalization	FDOT / District 5	$1,852,006.44	12/18/2021/Completed on time/on budget	Suzanne Phillips, PE /suzanne.phillips@dot.state.fl.us /(386) 943-5514
SR 408 Woodbury Road	Resurfacing	SR 408 from Woodbury Road to North of SR 50	Central Florida Expressway Authority	$2,412,806.53	11/2/2021/Completed on time/on budget	Steven Capers/(407) 690-5000
T4494 (Southern Blvd from Crestwood/Forest Hill Blvd easterly 0.333 miles)	Work included road widening, bridge structure widening, revetment systems, milling & resurfacing, concrete curb & sidewalk, French drain, sewer main, & RCP, ITS, and lastly reconstruction of a signalized intersection	Palm Beach County	FDOT/District 4	$5,685,197.65	3/17/2021/Completed on time/on budget	(954) 777-4130 5548 NW 9 Avenue Fort Lauderdale, FL 33309
WDW Property Wide FY20 (20KW-0116)	Asphalt Paving	Various Areas through-out Walt Disney World	Walt Disney World Resort	$1,043,553.99	9/30/2020/Completed on time/on budget	Michael Lisi/Michael.A.Lisi@disney.com/407-656-9255
E8R58 Turnpike (SR 91 from South of Atlantic Ave to North of Boynton Beach BLVD MP 81-MP 87)	Street Resurfacing	Palm Beach County	FDOT - Turnpike Enterprise	$10,063,165.00	8/31/2020/Completed on time/on budget	Jaime Gomez Construction Project Manager Florida's Turnpike Enterprise Pompano Beach Operations Center Office: (954) 934-1131 Cel: (954) 789-1383

Ranger Construction

WORK EXPERIENCE/REFERENCES

Hood Road (Hood Rd of Fl TP to W of Cental Blvd; Palm Beach County)	The project scope included 1 mile of widening in each direction of travel, new bridge structure over I-95, MSE walls, drainage, signalization, curb and gutter, sidewalk, signage & pavement markings.	Palm Beach County	Palm Beach County BOCC	$14,338,574.37	9/13/2019/Completed on time/on budget	Palm Beach County Construction Coordination Tel: (561) 684-4181
PBIA Golfview Infrastructure PH I	Site Work	Palm Beach International Airport	Palm Beach International Airport	$5,171,912.85	3/10/2017/Completed on time/on budget	Cindy Portnoy (561) 471-7400 cportnoy@pbia.org
Furnish and Install Asphaltic Concrete Paving 200+ Ton	Resurfacing Various areas within the City	City of Port St Lucie	City of Port St Lucie	$4,982,166.10 (PO Based)	3 Year Contract with one more year optional (started April 2019)	Thomas Salvador Manager – CIP / Inspections Roads and Bridges Division Public Works Department tsalvador@cityofpsl.com Tel: (772) 871-5187
Orange County Annual Paving Contract (since 2017)	Paving and resurfacing as needed within the County	Orange County	Orange County	PO Based contract since October 2019: $6,972,302.69	We have this contract since 2017/The new Contract Started in October 2019 - Ended July 2023	Fernando Valladares Gudino Contract Administrator Orange County Public Works Roads and Drainage Division Email: Fernando.ValladaresGudino@ocfl.net Phone: 407 836 7960
City of Palm Beach Gardens Annual Milling and Asphalt(2012/13/14/15/16/17/18)	Paving and resurfacing as needed within the city	City of Palm Beach Gardens	City of Palm Beach Gardens	$1,024,950.00	we have this contract since 2012	Daniel Widdick/dwiddick@pbgfl.com Operations Manager Streets and Stormwater office: (561) 804-7044 cell: (561)282-8552 | site: www.pbgfl.com address: 4050 Johnson Dairy Rd| Palm Beach Gardens, FL 33410
Village of Wellington Yearly Paving Contract (2015/16/17/18)	Paving and resurfacing as needed within the Village	Village of Wellington	Village of Wellington	$1,271,303.00	we have this contract since 2015	Dennis Flaherty-Superintendent of Roads (561) 791-4000 dflaherty@wellingtonfl.gov 12300 Forest Hill Boulevard, Wellington, FL 33414
Paradise Park PH 4 Stormwater	Street improvements for Paradise Park Phase 4 Full depth base reclamation 8" pave 1.5" SP 12.5 15,640 SY Bottom lift and 1" SP 9.5 15,640 Top lift. The site is approximately 48.7 acres of single family homes and is bounded by Juanita Avenue to the north, San Diego Avenue and Barcelona Avenue to the south, 23rd street to the west and Canal No.1 to the East.	2300 Virginia Ave. Fort Pierce FL 34982	St Lucie County BOCC	$512,734.80	January 2020/Completed on time/on budget	Owner Name: St Lucie County BOCC (772) 462-1100 Address: 2300 Virginia Ave. Fort Pierce FL 34982 John Alylor(Site Superintendent - Loren Jock Trucking)) (772) 888-3614 John@LorenJockTrucking.com
St. Lucie West Motorcoach PH 1	Rehabilitation of asphalt pavement including but not limited to approximately 4,000 SY of mill and overlay with SP9.5 asphalt surface course, full depth asphalt repairs, remove and replace concrete curb, install new striping, remove and replace wheel stops and utility valve adjustments.	800 NW Peacock Blvd, Port St. Lucie, FL 34986	St. Lucie West Motorcoach	$206,367.65	9/1/2020 /Completed on time/on budget	Tiffany Perry Property Manager Tel: (772) 336-1135 tiffany@signaturepropertymgmt.com

Ranger Construction

WORK EXPERIENCE/REFERENCES

Taxiway C1	Rehabilitation of Taxilane C1 asphalt pavement rejuvenation P-632 of Taxilane, removed and replaced electrical and lighting along Taxilane C1 and new pavement striping. Pavement rejuvenation of including but not limited to approximately 5,000 SY of mill and overlay with SP12.5 asphalt surface course and installed 25	2011 SE Airport Rd, Stuart, FL 34996	Rehabilitation of Taxilane C1 asphalt pavement rejuvenation P-632 of Taxilane, removed and replaced electrical and lighting along Taxilane C1 and new pavement striping. Pavement rejuvenation of including but not	$355,212.00	September 2020/Completed on time/on budget	Douglas N. Norman Sr. Vice President (Hoyle Tanner) Tel: (407) 380-1919 Email: dnorman@hoyletanner.com
Rainbow Lakes Estates Road Improvements	Milling and Paving	601 25th Ave, Ocala, FL 34471	Marion County	$255,106.99	December 2019/Completed on time/on budget	Pete Hodges (Project manager) Tel: (352) 671-8444
Taxilane Charlie	Rehabilitation of Taxilane Charlie, including but not limited to approximately 1,280 SY of mill and overlay with P-401 asphalt surface course, and approximately 15,500 SY of full depth pavement removal, scarify top 3" of limerock, add limerock to achieve homogenous base and overlay with 4" of P-401 asphalt surface course.	2011 SE Airport Rd, Stuart, FL 34996	Martin County BOCC	$700,759.91	September 2019/on time(Contract time was extended due to County Administrator/on budget	Douglas N Norman(Sr. Vice President (Hoyle Tanner)) (407)380-1919 dnorman@hoyletanner.com
Taxiway E Extension and Rehabilitate North Apron	Stormwater System; Mill & Resurfacing N Apron and add reinforcement mesh between bottom & top lifts; Construct TWY E1 & Demo existing TWY C-2; Construct TWY E Ext; and Performance Sod	PO Box 1389, Vero Beach, FL 32961	City of Vero Beach	$3,760,884.79	August 2019 /Completed on time/on budget	Danielle Priest (Director of Operations Amherst Consutling) (772)713-0710 Danielle.Priest@amherst-consulting.com
Deerwood Elementary	Reclamation and Paving	817 Bill Beck Blvd, Kissimmee, FL 34744-4492	School District of Osceola County	$283,530.00	August 2019/Completed on time/on budget	Jim Fisher (Project Manager) (407) 518-2964
High Meadow Ave Resurfacing and Bike Lanes	Project includes milling, resurfacing, and roadway widening to add bike lanes along SW High Meadow Avenue (from CR-714/SW Martin Highway to SW Murphy Road). The scope of work also includes erosion control, clearing and grubbing, excavation, fill and embankment, drainage structures and piping, Bahia sod, and other incidental work.	2401 SE Monterey Rd, Stuart, FL 34996	Martin County	$766,697.90	July 2019/Completed on time/on budget	Rene Fresneda(Martin County Public Works Dept. - Capital Projects Division) (772)288-5467 rfresned@martin.fl.us
Jupiter Lakes Blvd Phase II	Widening, Curb, Landscaping, Permeable concrete sidewalk	Town of Jupiter	Town of Jupiter	$798,165.60	03/12/2019 Completed on time/on budget	Thomas Criscoll (Project Manager) (561)741-2215 scotti@jupiter.fl.us
Signature Flight Support Phase II	Concrete Apron, Lighting	Orlando, FL	Signature Flight Corporation	$2,728,780.02	01/31/2019 Completed on time/on budget	Mark Jensen (Project Manager) (407)926-6611 mjansen@aidinc.us
SR-60 from 38th Ave to 21st Ave-E4S80	Contract consist of milling and resurfacing, drainage improvements including pipe liner, curb and gutter, sidewalks and ramps, driveways, traffic monitoring sites, signing and pavement markings, signalization (vehicular and pedestrian) including detection	Indian River County	FDOT	$2,070,318.00	10/14/2018 Completed on time/on budget	Michael Jacobs: P: (772) 429-4949 - C: (772) 579-3276 Michael.Jacobs@dot.state.fl.us or Donald Larson: P: 772/429-4893 Cell: 772/828-1789 cell donald.larson@dot.state.fl.us

Ranger Construction

WORK EXPERIENCE/REFERENCES

E1Q76/SR 15 from NE 131st Ln to south of NE 224th St	Contract consist of milling and resurfacing, adding a southbound left turn lane, base work, shoulder treatment, drainage improvements, signing and pavement marking and signalization	Okeechobee County	FDOT	$3,162,332.00	9/4/2018 Completed on time/on budget	Susan Hindman (863) 273-1656 Susan.Hindman@dot.state.fl.us
Lyons Rd Improvements	Road Widening, Milling and Resurfacing	Boca Raton, FL	GL Homes	$891,345.12	9/1/2018 Completed on time/on budget	John Kopelakis (561) 684-4180 jkopelakis@pbcgov.org
SR 25 (US27)N-FDOT Fin No. 430603-1-52-01 T4445	The improvements under this contract consist of milling and resurfacing, cross slope correction, signing and pavement markings, installation of traffic monitoring sites, signalization and lighting improvements along SR 25 (US 27).	US 27 - Broward County	FDOT	$8,418,937.03	8/31/2018 Completed on time/on budget	Mario Sabi Jr., E.I. Project Engineer Pinnacle Consulting Enterprises, Inc. FDOT Broward Ops. 5548 NW 9th Avenue Ft. Lauderdale, FL 33309 Mobile: 305-951-1372 msabijr@pinnaclecei.com
I 75 Segment D	Heavy Highway – Express Lane Construction and Interchange Improvements	FDOT D4 Broward County	FDOT	$80, 437, 734.08	7/16/2018 Completed on time/on budget	Scott Gombar, P.E (954) 931-6799 sgombar@eismanrusso.com
Glades Rd Interchange Ramp Improvements – FDOT Fin No. 435615-1-52-01 E8P90	Work consists of providing all labor, materials, equipment and incidentals necessary for widening the northbound off ramp to two (2) lanes and adjusting Turnpike Mainline geometry to provide an additional auxiliary lane in the northbound direction from Milepost 75.603 to Milepost 76.404. The existing ramp bridge over the Lake Worth Drainage District canal will be modified to remove the northbound off ramp traffic and a new two lane bridge constructed. Minor modifications to signing and pavement markings, ITS, and lighting are also included. The Improvements under this Contract also consist of the addition of a right turn lane from the Turnpike off ramp to Glades Rd westbound and a right turn lane along Glades Road westbound to the northbound entry to Florida's Turnpike. The signing and pavement markings, lighting, and signalization was modified at the Turnpike Entrance and the	Glades Rd in Boca Raton, and FL's Turnpike MP 75	FDOT	$8,378,687.61	4/11/2018 Completed on time/on budget	Elizabeth N. Jett, P.E. American Engineering Group, Inc. Senior Project Engineer 8726 NW 26th Street, Suite #4, Miami, FL 33172 Mobile: 305-951-0015 ejett@americanenggroup.com
US 27 Boggy Marsh Lake Louisa - FDOT Fin No. 238422-1-52-01 T5558	The improvements under this contract consist of the reconstruction of SR 25 (US 27) in Lake County from Boggy Marsh Road to 1,000 feet north of Lake Louisa Road from rural typical section to a suburban six (6) lane divided typical section. This contract also includes curb and gutter, some improvements, signing and pavement markings, gravity and retaining walls, box culverts and signals, etc.	US 27 Lake County	FDOT	$37,254,543.23	4/1/2018 Completed on time/on budget	William R Wages (407) 948-8281 BWAGES@METRICENG.COM
Haverhill Road	Milling And Resurfacing	Palm Beach County	Palm Beach County	$888,838.50	2/1/2018 Completed on time/on budget	John Kopelakis (561) 684-4180 jkopelakis@pbcgov.org
Cobblestone Country Club Overlay	Construction of a parking lot	10301 SW Rookery Way, Palm City, FL 34990	Cobblestone Country Club HOA, Inc.	$530,900.85	5/162017 Completed on time/on budget	Clobblestone Country Club HOA, Inc., (772) 233-8010 / hoaoffice@cobblestonecc.org

Ranger Construction

WORK EXPERIENCE/REFERENCES

Palm Beach International Airport Taxiway E & D	Taxiway Construction	Palm Beach International Airport	PBIA	$4,955,479.55	5/1/2016 Completed on time/on budget	Cindy Portnoy (561) 471-7400 cportnoy@pbia.org
I-595 Segment D	I-595 Improvements – Express Lanes Construction	FDOT D4 Broward County	Dragados USA	$54,037,650.71	3/1/2014 Completed on time/on budget	Antonio Mayo

Ranger Construction

RANGER CONSTRUCTION INDUSTRIES, Inc.
EQUIPMENT LIST

Rat Grp	Rat Grp Desc	Unit Number	Description	Cat 6 Desc	Serial Number
010	Backhoe-Gradall & Other	01.20410	Excavator Wheel Cat M318D 14	2014	D8W01146
010	Backhoe-Gradall & Other	01.20640	Excavator Wheel Cat M318 21	2021	KE700346
012	Backhoe over 2 less than 3 cy	01.20540	Excavator Mini Cat 305E2 w/Ham	2018	H5M07995
013	Backhoe over 3 less than 4 cy	01.30580	Excavator Cat 336EL 14	2014	JRJ00429
013	Backhoe over 3 less than 4 cy	01.30590	Excavator Cat 336FL 15	2015	RKB00652
013	Backhoe over 3 less than 4 cy	01.30610	Excavator Cat 336FL 16	2015	TZA00321
013	Backhoe over 3 less than 4 cy	01.30620	Excavator Cat 336FL 16	2016	TZA00424
013	Backhoe over 3 less than 4 cy	01.30640	Excavator Cat 330 19	2019	LHW00350
013	Backhoe over 3 less than 4 cy	01.30650	Excavator Cat 336EW	2019	DKS01357
013	Backhoe over 3 less than 4 cy	01.30660	Excavator Cat 336 21	2021	YBN10791
013	Backhoe over 3 less than 4 cy	01.30670	Excavator Cat 336 21	2021	YBN10850
013	Backhoe over 3 less than 4 cy	01.30700	HD Excavator Cat 336 14	2014	RZA00573
014	Backhoe over 4 less than 5 cy	01.40170	Excavator Cat 349 21	2021	RYG10052
033	D3 Size Dozer	03.30100	Dozer Cat D3K2 GPS	2018	KL202911
035	D5 Size Dozer	03.50360	Dozer Cat D5K II LGP 13	2013	KYY00596
035	D5 Size Dozer	03.50400	Dozer Cat D5K LGP 14	2015	KYY01364
035	D5 Size Dozer	03.50410	Dozer Cat D3 22 GPS	2022	XKY02521
036	D6 Size Dozer	03.60530	Dozer Cat D6K II LGP 14	2014	RST00628
036	D6 Size Dozer	03.60570	Dozer Cat D6K II LGP 15	2015	RST01411
036	D6 Size Dozer	03.60620	Dozer Cat D6N LGP GPS 18	2018	MG501527
036	D6 Size Dozer	03.60660	HD Dozer Cat D6N LGP 17	2017	MG500983
036	D6 Size Dozer	03.60670	Dozer Cat D4 22	2022	RLT00408
042	12/120 Size Grader	04.20680	Grader Cat 12M 2012	2012	B9F00915
042	12/120 Size Grader	04.20700	Grader Cat 12M 09	2009	B9F00546
042	12/120 Size Grader	04.20710	Grader Cat 12M3 15	2015	N9F00234
042	12/120 Size Grader	04.20730	Grader Cat 12M3 15	2015	N9R00156
042	12/120 Size Grader	04.20750	Grader Cat 12M 11	2011	R9B00121
042	12/120 Size Grader	04.20760	Grader Cat 12M3 16	2016	N9F00512
042	12/120 Size Grader	04.20770	Grader Cat 12M3 19	2019	N9F01229
042	12/120 Size Grader	04.20780	Grader Cat 140	2022	EB200581
042	12/120 Size Grader	04.20790	Grader Cat 140	2022	EB200582
044	14/140 Size Grader	04.40120	Grader Cat 140 21 GPS	2021	EB300373
044	14/140 Size Grader	04.40130	Grader Cat 140A	2020	EB300120
054	Rear Dump 40-49 Ton	05.40620	Off Road Trk John Deere 410E	2021	1DW410EBPMF710646-1
054	Rear Dump 40-49 Ton	05.40630	Off Road Trk John Deere 410E	2021	1DW410EBCMF710840-1
063	Scraper 623 Size	06.30090	Scraper Cat 615C 01	2001	9XG01440
072	Loader 2-2.9 cy	07.20870	Loader Cat 938K 13	2013	SWL01787
072	Loader 2-2.9 cy	07.20880	Loader Cat 926M 15	2015	LTE00298
072	Loader 2-2.9 cy	07.20900	Loader Cat 926M 15	2015	LTE00302
072	Loader 2-2.9 cy	07.20910	Loader Cat 926M 16	2016	LTE00478
072	Loader 2-2.9 cy	07.20920	Loader Cat 926M 16	2016	LTE00481
072	Loader 2-2.9 cy	07.20950	Loader Cat 926M 16	2016	LTE02602
072	Loader 2-2.9 cy	07.20970	Loader Cat 926M 16	2016	LTE02604
072	Loader 2-2.9 cy	07.20980	Loader Cat 926M 17	2017	LTE01000
072	Loader 2-2.9 cy	07.20990	Loader Cat 926M 17	2017	LTE02897
072	Loader 2-2.9 cy	07.21040	Loader Cat 938M 19	2019	J3R07638
072	Loader 2-2.9 cy	07.21050	Loader Cat 938M 19	2019	J3R07254
072	Loader 2-2.9 cy	07.21060	Loader Cat 926M 19	2019	LTE06159
072	Loader 2-2.9 cy	07.21080	Loader Cat 926M 19	2019	LTE07261
072	Loader 2-2.9 cy	07.21090	Loader Cat 926M 19	2019	LTE07358
072	Loader 2-2.9 cy	07.21100	Loader Cat 926M 19	2019	LTE07360

072	Loader 2-2.9 cy	07.21120	Loader Cat 938M 21	2021	P5K01543
072	Loader 2-2.9 cy	07.21200	Loader Cat 926M 22	2022	W5L01855
072	Loader 2-2.9 cy	07.21210	Loader Cat 926M 22	2022	W5L01647
073	Loader 3-3.9 cy	07.30530	Loader Cat 950K w/Forks	2014	R4A02162
073	Loader 3-3.9 cy	07.30540	Loader Cat 950M 15	2015	EMB00778
073	Loader 3-3.9 cy	07.30550	Loader Cat 950M 16	2016	EMB01238
073	Loader 3-3.9 cy	07.30560	Loader Cat 950M 17	2017	EMB02545
073	Loader 3-3.9 cy	07.30570	Loader Cat 950M 18	2018	J1S00888
073	Loader 3-3.9 cy	07.30580	Loader Cat 950M 21	2021	J1S03581
076	Loader Asphalt Plant	07.50140	CXLoader CAT 966K 12	2012	TFS00642
076	Loader Asphalt Plant	07.50170	Loader CAT 966K 20	2020	EJA01733
076	Loader Asphalt Plant	07.60090	Loader Cat 972G 04	2004	AWP00364
076	Loader Asphalt Plant	07.60180	Loader Cat 972M 16	2016	A8P00653
076	Loader Asphalt Plant	07.60200	Loader Cat 972M 18	2018	A8P01763
076	Loader Asphalt Plant	07.60210	Loader Cat 972M 18	2018	LSJ01970
076	Loader Asphalt Plant	07.60220	Loader Cat 972M 18 WP	2018	LSJ01976
076	Loader Asphalt Plant	07.60240	Loader Cat 972M 21	2021	LSJ02867
076	Loader Asphalt Plant	07.60250	Loader Cat 972M 21	2021	LSJ02829
076	Loader Asphalt Plant	07.60260	Loader Cat 972M 22	2022	LSJ03218
085	Core Machine Drill	08.50020	Drill Core Rig Shop Built 08	2008	NOVIN0200720637
085	Core Machine Drill	08.50040	Drill Core Machine 91	1991	NOVIN000082373166
085	Core Machine Drill	08.50090	Drill Coring Rig 78	1978	NOVIN0200802208
085	Core Machine Drill	08.50110	Trailer Coring Machine 01	2001	NOVIN0200193206
085	Core Machine Drill	08.50120	Trailer Coring Machine 01	2001	XXXXX
085	Core Machine Drill	08.50130	Drill Core Rig Shop Built 02	2002	NOVINO200802209
085	Core Machine Drill	08.50170	Drill Core Rig Shop Built 08	2007	NOVIN0200720624
085	Core Machine Drill	08.50210	Trailer Coring Machine 90	2002	NOVIN000081908495
085	Core Machine Drill	08.50220	Trailer Core Rig Big Tex 21	2021	16V1U1710M3025843
085	Core Machine Drill	38.40590	Trailer Core Rig HM3 96	1996	NOVIN000083115089
092	Welder 200 amp	09.20010	Welder Hobart 71	1971	16DW-32994
093	Welder 300 amp	09.30050	Welder Miller Trailblazer 325	2015	MF350110R
093	Welder 300 amp	09.30060	Welder Miller Trailblazer 325	2017	MH460761R
094	Welder 400 amp	09.40100	Welder Miller 225 Bobcat 93	1993	KD373417
094	Welder 400 amp	09.40410	Welder Miller Dimension 452	2018	MJ090036C
094	Welder 400 amp	09.40510	Welder Lincoln SAE300-HE	2019	C1190100001
094	Welder 400 amp	09.40520	Welder Lincoln SAE300-HE	2019	C1190100002
094	Welder 400 amp	09.40550	Welder Lincoln SAE300-HE	2019	C1191001296
096	Welder 600 amp	09.60030	Welder Hobart RCC-610 78	1978	78WS07330
101	Light Plants	10.10490	Light Tower Wacker LTC4L 06	2006	5F13D141961002020
101	Light Plants	10.10520	Light Tower Wacker LTC4 07	2007	5F13D141071005017
101	Light Plants	10.10540	Light Tower Wacker LTC4 07	2007	5F13D141071005714
101	Light Plants	10.10850	Light Tower Magnum MLT3060M 14	2014	5AJLS1415EB402284
101	Light Plants	10.10860	Light Tower Wacker LTN6L 13	2013	20202795
101	Light Plants	10.10870	Light Tower Wacker LTN6L 13	2013	20202787
102	Arrow Boards	10.20290	Multi-Purpose Sign	2012	
102	Arrow Boards	10.20300	Multi-Purpose Sign X 6	2013	
102	Arrow Boards	10.20310	Multi-Purpose Sign X 7	2013	
102	Arrow Boards	10.20330	Multi-Purpose Sign X 4	2015	
105	Airport Runway Closed Signs	10.50010	Runway Closure Marker 07	2007	991892
105	Airport Runway Closed Signs	10.50020	Runway Closure Marker 07	2007	991893
105	Airport Runway Closed Signs	10.50030	Runway Closure Marker AE-LRX L	2019	300471981
114	Vibratory Base Roller	11.40940	CXRoller Cat CS323E Vib. 06	2006	DAR00279
114	Vibratory Base Roller	11.40950	Roller Cat CS54B 15	2015	L4H00598
114	Vibratory Base Roller	11.40970	Roller Cat CS56B 15	2015	L8H01251
114	Vibratory Base Roller	11.40980	Roller Cat CS56B 15	2015	L4H00449
114	Vibratory Base Roller	11.40990	Roller Cat CS56B 15	2015	L4H00454
114	Vibratory Base Roller	11.41000	Roller Cat CS64B 15	2015	C6S00122
114	Vibratory Base Roller	11.41010	Roller Dirt Cat CS54B	2012	L4H00201
114	Vibratory Base Roller	11.41030	Roller Cat CS56B 21	2021	S5601471

114	Vibratory Base Roller	11.41040	Roller Cat CS56B 21	2021	S5601469
114	Vibratory Base Roller	11.41050	Roller Cat CS56B 21	2021	S5601461
114	Vibratory Base Roller	11.41070	Roller Dirt Cat CS54B	2019	CS500949
116	3 Wheel Base Roller	11.60100	Roller Dynapac CS142N 3 Wh 11	2011	10000503V0A005811
116	3 Wheel Base Roller	11.60110	Roller Dynapac CS142N 3 Wh 11	2011	10000503C0A006441
116	3 Wheel Base Roller	11.60120	Roller Dynapac CS1400N 3 Wheel	2014	3J0A013601
117	Tampers	11.70100	Plate Tamp Wacker DPU6555HE	2015	10490098
117	Tampers	11.70140	Plate Tamp Wacker DPU6555HE	2019	10929983
117	Tampers	11.70150	Plate Tamp Wacker DPU6555HE	2019	10920532
117	Tampers	11.70160	Plate Tamp Weber MT CR7 CCD	2019	20015596
117	Tampers	11.70170	Plate Tamp Weber MT CR7 CCD	2019	20014792
117	Tampers	11.70180	Plate Tamp Weber MT CR7 CCD	2019	20015421
117	Tampers	11.70190	Plate Tamp Weber MT CR7 CCD	2019	20015599
121	Asphalt Traffic Roller	12.10390	CXRoller Bomag BW11R Traff 06	2006	901A22202238
121	Asphalt Traffic Roller	12.10440	Roller Ingersol Rand PT125R 07	2007	193233
121	Asphalt Traffic Roller	12.10600	Roller Bomag BW11RH Traffic 10	2010	901A22221020
121	Asphalt Traffic Roller	12.10610	Roller Bomag BW11RH Traffic 12	2012	901A22231020
121	Asphalt Traffic Roller	12.10620	Roller Bomag BW11RH Traffic 13	2013	901A22231051
121	Asphalt Traffic Roller	12.10630	Roller Bomag BW11RH Traffic 13	2013	901A22231052
121	Asphalt Traffic Roller	12.10640	Roller Bomag BW11RH Traff	2017	861538721053
121	Asphalt Traffic Roller	12.10650	Roller Bomag BW11RH Traffic 17	2017	861538721059
121	Asphalt Traffic Roller	12.10660	Roller Traffic Cat CW16	2017	TL500220
121	Asphalt Traffic Roller	12.10670	HD Roller Traffic Cat CW16 16	2016	TL500148
122	Asph. Double Drum Vib Roller	12.20470	CXRoller Cat CB224E 05	2005	22400814
122	Asph. Double Drum Vib Roller	12.20740	Roller Ingersoll Rand DD112 07	2007	192748
122	Asph. Double Drum Vib Roller	12.20820	Roller Cat CB54XW 12	2012	JLM00709
122	Asph. Double Drum Vib Roller	12.20830	Roller Hamm HD120VO 12	2012	H1840853
122	Asph. Double Drum Vib Roller	12.20840	Roller Cat CB54XW 12	2012	JLM00693
122	Asph. Double Drum Vib Roller	12.20940	Roller Cat CB10 17	2017	P8P00106
122	Asph. Double Drum Vib Roller	12.20960	Roller Cat CB24B	2015	042000542
122	Asph. Double Drum Vib Roller	12.20970	Roller Cat CB24B	2016	2X400255
122	Asph. Double Drum Vib Roller	12.20980	Roller Cat CB10 17	2017	P8P00115
122	Asph. Double Drum Vib Roller	12.20990	Roller Cat CB64B OZ 17 w/GPS	2017	C5600326
122	Asph. Double Drum Vib Roller	12.21020	Roller Cat CB10 17	2017	P8P00201
122	Asph. Double Drum Vib Roller	12.21030	Roller Wacker RD12A 18	2018	24415270
122	Asph. Double Drum Vib Roller	12.21040	Roller Cat CB13 18	2018	PWP00128
122	Asph. Double Drum Vib Roller	12.21050	Roller Cat CB13 18	2018	PWP00129
122	Asph. Double Drum Vib Roller	12.21060	Roller Asphalt Cat CB54XW	2017	K3J00273
122	Asph. Double Drum Vib Roller	12.21070	Roller Asphalt Cat CB64	2017	C5600232
122	Asph. Double Drum Vib Roller	12.21080	Roller Cat CB13 20	2020	PWP00455
122	Asph. Double Drum Vib Roller	12.21090	Roller Cat CB13 20	2020	PWP00514
122	Asph. Double Drum Vib Roller	12.21120	Roller Cat CC34B	2020	CC300393
122	Asph. Double Drum Vib Roller	12.21140	Roller Asphalt Cat CB24B	2020	2X402176
124	Asphalt D/D Static Roller	12.40360	Roller Bomag BW9AS 06	2006	901C14603447
124	Asphalt D/D Static Roller	12.40380	Roller Hypac C330B 06	2006	901B15803872
124	Asphalt D/D Static Roller	12.40390	Roller Bomag BW9AS 06	2006	109C14603429
124	Asphalt D/D Static Roller	12.40400	Roller Bomag BW9AS 06	2006	109C14603456
124	Asphalt D/D Static Roller	12.40410	Roller Hypac C340C 07	2007	901C14603469
124	Asphalt D/D Static Roller	12.40420	Roller Hypac C330B 07	2007	901B15803899
124	Asphalt D/D Static Roller	12.40470	Roller Hypac C330B 07	2007	901B15803903
124	Asphalt D/D Static Roller	12.40500	Roller Bomag BW9AS 13	2013	901C14611025
124	Asphalt D/D Static Roller	12.40520	Roller Static Weiler C310	2018	C310A-1103
124	Asphalt D/D Static Roller	12.40530	Roller Static Weiler C307	2018	W1115
124	Asphalt D/D Static Roller	12.40540	Roller Static Weiler C307	2018	W1117
124	Asphalt D/D Static Roller	12.40550	Roller Static Weiler C310	2019	C310A-1125
124	Asphalt D/D Static Roller	12.40570	HD Roller Static Wiler C307 15	2015	C310-1004
124	Asphalt D/D Static Roller	12.40580	HD Roller Static Weilr C307 15	2015	C307-1056
124	Asphalt D/D Static Roller	12.40590	HD Roller Static Weilr C307 16	2015	C307-1065
138	Concrete Saws	13.80090	Concrete Saw Core Cut	Unknown	
138	Concrete Saws	13.80100	Concrete Saw Diamond CC2525KC2	2019	162516
141	Mixers Regular	14.10100	Mixer Cat RM500 16	2016	M8900133
152	Box Tractors w/Broom	15.20550	Tractor Broom N.H. TN75A 08	2008	HJE086514

152	Box Tractors w/Broom	15.20650	Tractor Broom Massey MF4608 15	2015	EJK22809
152	Box Tractors w/Broom	15.20660	Tractor Massey MF5613 15	2015	E162043
152	Box Tractors w/Broom	15.20670	Tractor Broom Massey MF4608 15	2015	EJK22768
152	Box Tractors w/Broom	15.20680	Tractor Broom Massey MF4608 15	2015	EJK23025
152	Box Tractors w/Broom	15.20690	Tractor Broom Massey MF4608 15	2015	FJK21321
152	Box Tractors w/Broom	15.20700	Tractor Broom Massey MF4608 15	2015	FJK21123
152	Box Tractors w/Broom	15.20730	Tractor Broom Massey MF4607M16	2016	GJM72202
152	Box Tractors w/Broom	15.20740	Tractor Broom Massey MF4607M16	2016	GJM72109
152	Box Tractors w/Broom	15.20790	Tractor Broom Massey MF4607MCA	2017	HJM70103
152	Box Tractors w/Broom	15.20800	Tractor Broom Massey MF4607MCA	2017	HJM70301
152	Box Tractors w/Broom	15.20810	Tractor Broom Massey MF4607MCA	2017	GJM74804
152	Box Tractors w/Broom	15.20820	Tractor Broom Massey MF4607MCA	2017	GJM74701
152	Box Tractors w/Broom	15.20830	Tractor Broom Massey MF4607MCA	2017	HJM70404
152	Box Tractors w/Broom	15.20840	Tractor Broom Massey MF4607MCA	2017	HJM70102
152	Box Tractors w/Broom	15.20850	Tractor Broom Massey MF4607MCA	2018	HJM74004
152	Box Tractors w/Broom	15.20860	Tractor Broom Massey MF4607MCA	2018	HJM74102
152	Box Tractors w/Broom	15.20870	Tractor Broom Massey MF4607MCA	2018	HJM74103
152	Box Tractors w/Broom	15.20920	Broom Superior SM74J	2019	919561
152	Box Tractors w/Broom	15.20970	HD Trctor Broom Massey MF4607M	2020	AG3M46070LJM75201
154	Utility Tractors	15.40080	Tractor John Deere 7250R 19	2018	1RW7250RHJD101326
160	Paver 10 FT	16.00880	Paver Cat AP1000F 15	2015	AC400186
160	Paver 10 FT	16.00890	Paver Cat AP1000F 16	2016	AC400196
160	Paver 10 FT	16.00900	Paver Cat AP1000F 16	2016	AC400204
160	Paver 10 FT	16.00910	Paver Cat AP1000F 16	2016	AC400205
160	Paver 10 FT	16.00930	Paver Cat AP1000F 15	2015	AC400176
160	Paver 10 FT	16.00960	Paver Cat AP1000F 17	2017	AC400289
160	Paver 10 FT	16.00970	Paver Cat AP1000F 17	2017	AC400283
160	Paver 10 FT	16.00980	Paver Cat AP1000F 17	2017	AC400271
160	Paver 10 FT	16.01000	Paver Cat AP1055F 17	2017	TJ500699
160	Paver 10 FT	16.01010	Paver Cat AP1000F 18	2018	AC400362
160	Paver 10 FT	16.01030	HD Paver Cat AP1055F 19	2019	TJ501096
160	Paver 10 FT	16.01040	Paver Cat AP1055F 22	2022	TJ501483
168	Paver 8 FT	16.80210	Paver CAT AP600F 17	2017	AP600165
168	Paver 8 FT	16.80220	Paver CAT AP600F 18	2018	AP600171
168	Paver 8 FT	16.80230	Paver CAT AP600F 21	2021	AP600243
168	Paver 8 FT	16.80250	Paver CAT AP500F 22	2022	44900165
168	Paver 8 FT	16.80270	HD Paver CAT AP600E 17	2017	AP60135
171	Milling Machines 8 FT	17.10150	Milling Mach Cat PM622	2019	JFC00153
171	Milling Machines 8 FT	17.10160	Milling Mach Cat PM622	2020	TPH00102
171	Milling Machines 8 FT	17.10170	Milling Mach Cat PM622	2020	TPH00109
171	Milling Machines 8 FT	17.10180	Milling Mach Cat PM622 20	2020	TPH00110
171	Milling Machines 8 FT	17.10190	Milling Mach Cat PM622	2021	TPH00105
171	Milling Machines 8 FT	17.10200	HD Milling Mach Cat PM622 18	2018	JFC00186
172	Shuttle Buggies	17.20070	Shuttle Buggy Weiler E1250A	2013	E1250A-1112
172	Shuttle Buggies	17.20090	Shuttle Buggy Weiler E2850 16	2016	W1159A
172	Shuttle Buggies	17.20100	Shuttle Buggy Weiler E2850 17	2017	W1179A
172	Shuttle Buggies	17.20110	Shuttle Buggy Weiler E2850 17	2017	W1230
172	Shuttle Buggies	17.20120	Shuttle Buggy Weiler E1650 18	2018	W1003
172	Shuttle Buggies	17.20140	Shuttle Buggy Weiler E1650 20	2020	1W9E1650TL0001049
181	Pumps Hydraulic	18.10440	Pump Hyd MWI 2000D 21	2021	14996/14434
181	Pumps Hydraulic	18.10480	Pump Hyd MWI HTC006 6"	2022	14918/15224
182	Pumps Wellpoint	18.20270	Pump Piston BBA BL200-8	2019	
182	Pumps Wellpoint	18.20280	Pump Piston BBA BL200-8	2019	
183	Pumps Other	18.30020	Pump Station Platform	Unknown	
183	Pumps Other	18.30030	Pumps, Valves, Meters	Unknown	
183	Pumps Other	18.30080	Pump Asphalt & Tank Alteratns	Unknown	
183	Pumps Other	18.30090	Pump Fuel w/ Control System	Unknown	
183	Pumps Other	18.30140	Pump Holland 8" Wellpoint 97	1997	H-4040WP-D-161
183	Pumps Other	18.30180	Wellpoint BBA PT150 6" Pump	2019	21017473
183	Pumps Other	18.30190	Wellpoint BBA PT150 6" Pump	2019	21020158
183	Pumps Other	18.30200	Wellpoint BBA PT150 6" Pump	2019	21016836
183	Pumps Other	18.30210	Wellpoint BBA PT150 6" Pump	2019	21018408

191	Trenchers	19.10040	Trencher Vermeer V1150 98	1998	1VRF051M4V1001
195	Road Wideners	19.50110	Rd Widener Weiler W7308 19	2019	W1702
195	Road Wideners	19.50120	Rd Widener Attachment FH-R	2020	1111
197	Forklifts-Job Charge	19.20270	Telehandeler Cat TL1055	2014	KDE00389
197	Forklifts-Job Charge	19.20280	Telehandeler Cat TL1055	2014	KDE00964
202	Brooms Front Mount	20.20080	Broom Tractor Massy MF4607	2020	M46070LJM70603
202	Brooms Front Mount	20.20090	Broom Tractor Massy MF4607	2020	M46070LJM70602
202	Brooms Front Mount	20.20100	Broom Tractor Massy MF4607	2020	M46070LJM70902
211	Distributor to 2000 gal	21.10490	Distributor Ford F750 12	2012	3FRXF7FJXCV313304
211	Distributor to 2000 gal	21.10500	Distributor Ford F750 12	2012	3FRXF7FJ1CV313305
211	Distributor to 2000 gal	21.10510	Distributor Ford F750 13	2013	3FRXF7FJ2DV489894
211	Distributor to 2000 gal	21.10520	Distributor Ford F750 15	2015	3FRXF7FJ5FV554675
211	Distributor to 2000 gal	21.10530	Distributor Ford F750 15	2015	3FRXF7FJXFV671104
211	Distributor to 2000 gal	21.10540	Distributor KW T370 17	2017	2NKHHM7X9HM166150
211	Distributor to 2000 gal	21.10550	Distributor KW T370 17	2017	2NKHHM7X1HM176624
211	Distributor to 2000 gal	21.10560	Distributor KW T370 17	2017	2NKHHM7X7HM176627
211	Distributor to 2000 gal	21.10570	Distributor KW T370 17	2017	2NKHHM7X9HM176628
211	Distributor to 2000 gal	21.10590	Distributor KW T370 17	2017	2NKHHM7XXJM181942
211	Distributor to 2000 gal	21.10600	Distributor KW T370 18	2018	2NKHHM7X8JM209513
211	Distributor to 2000 gal	21.10620	Distributor KW T370 20	2020	2NKHHM7X6LM378819
211	Distributor to 2000 gal	21.10630	Distributor KW T370 20	2020	2NKHHM7X2LM378817
211	Distributor to 2000 gal	21.10640	HD Distributor Ford F750 15	2015	3FRXF7FJ1FV726765
231	Compressor to 199 cfm	23.10460	Air Comp AtlasCopco XAS185 13	2013	HOP043619
252	Sweeper Truck	25.20130	Sweeper Elgin Broom Bear	2020	1FVACXFE3LHLB2889
261	Skid Steer Loaders	26.10220	Loader Cat 248 Skid Steer 03	2003	6YZ01974
261	Skid Steer Loaders	26.10230	Loader Cat 268B Skid Steer 04	2004	LBA00356
261	Skid Steer Loaders	26.10300	Loader Cat 268B Skid Steer 05	2005	LBA00901
261	Skid Steer Loaders	26.10320	Loader Cat 248B Skid Steer 05	2005	SCL00879
261	Skid Steer Loaders	26.10540	Loader 256C Skid Steer 07	2007	DWS00592
261	Skid Steer Loaders	26.10580	Loader Cat 262C Skidsteer w/Mi	2013	TMW00776
261	Skid Steer Loaders	26.10590	Loader Cat 272DXHP Skidsteer w	2013	SHY00277
261	Skid Steer Loaders	26.10600	Loader Cat 299C Skidsteer 12	2012	JSP02129
261	Skid Steer Loaders	26.10630	Skidsteer Cat 262D Mill PC306B	2015	DTB03420/PCT00593
261	Skid Steer Loaders	26.10650	Skid Steer CAT 262C 12	2012	MST03946
261	Skid Steer Loaders	26.10680	Skid Steer CAT 262D	2016	DTB05052
261	Skid Steer Loaders	26.10690	Skid Steer CAT 272D	2016	ETL00337
261	Skid Steer Loaders	26.10700	Skid Steer CAT 262D 17	2017	DTB06111
261	Skid Steer Loaders	26.10750	Skid Steer CAT 272D w PC306B M	2018	MD200703/PCT01686
261	Skid Steer Loaders	26.10760	Loader Track Skid Cat 289C	2013	JMP02394
261	Skid Steer Loaders	26.10780	Skid Steer CAT 262D w PC306B M	2019	DTB10578/PCT02225
261	Skid Steer Loaders	26.10790	Skid Steer CAT 262D w PC306B M	2019	DTB10690/PCT02231
261	Skid Steer Loaders	26.10820	Skid Steer Cat 259D	2018	FTL11460
261	Skid Steer Loaders	26.10850	HD Skidsteer Cat 262D3	2020	ZB203274
261	Skid Steer Loaders	26.10860	Skidsteer Cat 262D3 Broom/Plan	2022	ZB204658
261	Skid Steer Loaders	26.10890	Skidsteer Cat 262D3	2022	ZB204661
302	SUV'S - Overhead	30.23650	Ford Explorer XLT 2014	2014	1FM5K7D80EGB25096
302	SUV'S - Overhead	30.23770	Ford Explorer XLT 4x4 2015	2015	1FM5K8D80FGB12730
302	SUV'S - Overhead	30.23840	Ford Escape SE 2016	2016	1FMCU0GX3GUA54024
302	SUV'S - Overhead	30.23930	Ford Explorer XLT 2016	2016	1FM5K8D88GGA88436
302	SUV'S - Overhead	30.24020	Ford Explorer XLT 2017	2017	1FM5K7D87HGA94191
302	SUV'S - Overhead	30.24060	Ford Explorer XLT 2017	2017	1FM5K8D85HGB33107
302	SUV'S - Overhead	30.24090	Ford Explorer XLT 2017	2017	1FM5K7D82HGC36821
302	SUV'S - Overhead	30.24100	Ford Escape SE 2017	2017	1FMCU0G91HUD43289
302	SUV'S - Overhead	30.24140	Ford Escape SEL 2018	2018	1FMCU9HD3JUA10704
302	SUV'S - Overhead	30.24220	Ford Explorer Sport 2018	2018	1FM5K8GT3JGA45131
302	SUV'S - Overhead	30.24250	Ford Escape SE 2018	2018	1FMCU0GD6JUA58484
302	SUV'S - Overhead	30.24270	Ford Escape SE 2018	2018	1FMCU0GD7JUA17149
302	SUV'S - Overhead	30.24290	Ford Escape SE 2018	2018	1FMCU0GDXJUC27521
302	SUV'S - Overhead	30.24360	Ford Explorer XLT 2020	2020	1FM5K8DH3LGA63862
302	SUV'S - Overhead	30.24370	Ford Expedition LTD 2019	2019	1FMJU2AT6KEA66079
302	SUV'S - Overhead	30.24470	Ford Escape SE 2021	2021	1FMCU0G65MUA38359

302	SUV'S - Overhead	30.24490	Ford Explorer XLT 2021	2021	1FMSK7DHXMGB28721
302	SUV'S - Overhead	30.40040	Ford Escape SE	2022	1FMCU9G62NUA87637
304	Vans	30.10910	Van Ford Transit 250 KUV	2016	1FDYR5PM1GKA09587
304	Vans	30.10920	Van Ford Transit T350 XLT	2015	1FBZX2ZM2FKA20384
304	Vans	30.10930	Van Ford E350 Reading	2015	1FDWE3FL5FDA05268
304	Vans	30.10970	Van Ford Transit 350XL 16	2016	1FBZX2ZM8GKB46931
304	Vans	30.10980	Van Ford Transit 350XL 16	2016	1FBZX2ZM3GKB46934
304	Vans	30.10990	Van Ford Transit 350XL MR 17	2017	1FBAX2CM6HKA44695
304	Vans	30.11000	Van Ford Transit 350XL MR 17	2017	1FBAX2CMXHKA09884
304	Vans	30.11010	Van Ford E350 Reading	2017	1FDWE3F68HDC46562
304	Vans	30.11020	Van Ford Transit 350XL 18	2019	1FBZX2CM4KKA43796
304	Vans	30.40010	Van Ford Transit T250 2019	2019	1FTYR2UG4KKB15204
310	Trucks Other	31.00060	Steam Truck Ford F600 89	1989	1FDNK64P0KVA54359
311	Service Truck	31.31430	Service PM Truck Ford F550 17	2017	1FDUF5HT7HDA01223
311	Service Truck	31.31620	Service PM Truck Ford F550 19	2019	1FDUF5HT8KDA00587
311	Service Truck	31.31630	Service PM Truck Ford F550 19	2019	1FDUF5HTXKDA00588
312	Fuel Truck	31.10400	Fuel Truck Kenworth T800 98 SP	1998	1NKDLT0X2WJ772217
312	Fuel Truck	31.20200	Fuel Truck KW T370 13	2013	2NKHHM7X3EM398237
312	Fuel Truck	31.20210	Fuel Truck KW T370 13	2013	2NKHHM7X5EM398238
312	Fuel Truck	31.20220	Fuel Truck KW T370 15	2015	2NKHHM7X2FM437451
312	Fuel Truck	31.20230	Fuel Truck KW T370 4x4 17	2017	2NKHJM7X9HM150938
312	Fuel Truck	31.20240	Fuel Truck KW T370 4x4 17	2017	2NKHJM7X0HM150939
312	Fuel Truck	31.20290	Fuel Truck KW T370 19	2019	2NKHJM7X6KM289335
312	Fuel Truck	31.20300	Fuel Truck KW T370 19	2019	2NKHJM7X8KM289336
312	Fuel Truck	31.20310	Fuel Truck Pinroth Panther T8	2017	935200626
313	Mechanic/Welder Truck - Shop	31.31190	Mechanics Truck Ford F550 12	2012	1FDUF5HT1CEA61940
313	Mechanic/Welder Truck - Shop	31.31200	Dodge Ram 5500 Mechanics Trk	2012	3C7WDNBL7CG329672
313	Mechanic/Welder Truck - Shop	31.31220	Dodge Ram 5500 SLT 2013	2013	3C7WRNBL4DG512269
313	Mechanic/Welder Truck - Shop	31.31280	Mechanics Truck Ram 5500 2014	2014	3C7WRNBL6EG163469
313	Mechanic/Welder Truck - Shop	31.31300	Dodge Ram 5500 Mechanics Trk	2015	3C7WRNBLXEG174104
313	Mechanic/Welder Truck - Shop	31.31310	Dodge Ram 5500 Steam Truck	2015	3C7WRNBL6FG588885
313	Mechanic/Welder Truck - Shop	31.31320	Dodge Ram 5500 Steam Truck	2015	3C7WRNBL5FG591499
313	Mechanic/Welder Truck - Shop	31.31340	Dodge Ram 5500 Mechanics Trk S	2015	3C7WRNBL2FG607237
313	Mechanic/Welder Truck - Shop	31.31350	Dodge Ram 5500 Mechanics Trk S	2015	3C7WRNBL4FG607238
313	Mechanic/Welder Truck - Shop	31.31400	Mechanics Trk Dodge Ram 5500 S	2015	3C7WRNBL5FG626140
313	Mechanic/Welder Truck - Shop	31.31410	Mechanics Trk Dodge Ram 5500 S	2015	3C7WRNBL6FG626146
313	Mechanic/Welder Truck - Shop	31.31440	Mechanics Trk Ford F550 Summit	2016	1FDUF5HT8GEC58139
313	Mechanic/Welder Truck - Shop	31.31460	Mechanics Trk Ford F550 Summit	2017	1FDUF5HT6HEC86457
313	Mechanic/Welder Truck - Shop	31.31470	Mechanics Trk Ford F550 Summit	2017	1FDUF5HT8HEC86458
313	Mechanic/Welder Truck - Shop	31.31480	Mechanics Trk Ford F550 Summit	2017	1FDUF5HTXHEC86459
313	Mechanic/Welder Truck - Shop	31.31490	Mechanics Trk Ford F550 Summit	2017	1FDUF5HT6HEC86460
313	Mechanic/Welder Truck - Shop	31.31500	Mechanics Trk Ford F550 Summit	2017	1FDUF5HT8HEC86461
313	Mechanic/Welder Truck - Shop	31.31510	Mechanics Trk Ford F550 C&C 18	2018	1FDUF5HT5HEE65217
313	Mechanic/Welder Truck - Shop	31.31590	Mechanics Trk Ford F550 Knaphe	2018	1FDUF5HT7JEB13651
313	Mechanic/Welder Truck - Shop	31.31600	Mechanics Trk Ford F550 Knaphe	2018	1FDUF5HT2JEB69528
313	Mechanic/Welder Truck - Shop	31.31610	Mechanics Trk Ford F550 Knaphe	2018	1FDUF5HT8JEB66567
313	Mechanic/Welder Truck - Shop	31.31970	Mechanics Trk International CV	2019	1HTKTSWMXKH170797
313	Mechanic/Welder Truck - Shop	31.32020	Mechanics Trk Ford F550 Knaphe	2021	1FDUF5HT5NEC72061
313	Mechanic/Welder Truck - Shop	31.32030	Mechanics Trk Ford F550 Knaphe	2021	1FDUF5HT7NEC72062
313	Mechanic/Welder Truck - Shop	31.32080	HD MechTruck Ford F450 17	2017	1FDTF4GT6HEC05836
313	Mechanic/Welder Truck - Shop	31.32090	HD Mech Truck Ford F450 17	2017	1FDTF4GT3HEC27894
313	Mechanic/Welder Truck - Shop	31.32120	Mechanics Trk Ford F550 C&C	2022	1FDUF5HT5NEE45691
319	Asphalt Crew Truck	31.90200	CXPaving Crew Truck FordF75005	2005	3FRWW75FX5V146650
319	Asphalt Crew Truck	31.90210	Paving Crew Truck Ford F750 05	2005	3FRXW75B15V131455
319	Asphalt Crew Truck	31.90220	Paving Crew Truck Ford F650 05	2005	3FRNW65E25V168963
319	Asphalt Crew Truck	31.90230	Paving Crew Truck Ford F650 05	2005	3FRNW65E55V192075
319	Asphalt Crew Truck	31.90280	Paving Crew Truck Ford F750 08	2008	3FRWW75C88V659633
319	Asphalt Crew Truck	31.90290	Paving Crew Truck Ford F750 11	2011	3FRWW7FK2BV444813
319	Asphalt Crew Truck	31.90300	Paving Crew Truck KW T370 17	2017	2NKHHM7X7HM151016
319	Asphalt Crew Truck	31.90310	Paving Crew Truck KW T370 17	2017	2NKHHM7X1HM151013
319	Asphalt Crew Truck	31.90320	Paving Crew Truck KW T370 17	2017	2NKHHM7X3HM151014
319	Asphalt Crew Truck	31.90330	Paving Crew Truck KW T370 17	2017	2NKHHM7X5HM151015
319	Asphalt Crew Truck	31.90340	Paving Crew Truck KW T370 18	2018	2NKHHM7X0JM188138
319	Asphalt Crew Truck	31.90350	Paving Crew Truck KW T370 18	2018	2NKHHM7X2JM188139

319	Asphalt Crew Truck	31.90360	Paving Crew Truck KW T370 18	2019	2NKHHM7XXKM292413
319	Asphalt Crew Truck	31.90370	Paving Crew Truck KW T370 18	2019	2NKHHM7X1KM292414
319	Asphalt Crew Truck	31.90380	Paving Crew Truck KW T370 18	2019	2NKHHM7X9KM293195
320	Utility Trucks-Other	32.00100	Attenuator Truck Ford F700 93	1993	1FDXK74P6PVA03812
320	Utility Trucks-Other	32.30080	Attenuator Truck Ford F600 89	1989	1FDNK64P9KVA54358
321	On Hwy Water Trucks	32.10290	Water Truck Kenworth T800 86	1986	1NKDL50XXHS336868
321	On Hwy Water Trucks	32.10370	Water Truck Kenworth T800 87	1987	1NKDL50X0HS336863
321	On Hwy Water Trucks	32.10480	Water Truck Kenworth T800 91	1991	1NKDL50XXMJ560447
321	On Hwy Water Trucks	32.10530	Water Truck Kenworth T800 97	1997	1NKDL90XXVJ740973
321	On Hwy Water Trucks	32.10540	Water Truck Kenworth T800 06	2006	1NKDLT0X36J148202
321	On Hwy Water Trucks	32.10550	Water Truck Kenworth T800 98	1998	1NKDLT0X4WJ772218
321	On Hwy Water Trucks	32.10560	Water Truck Ford F550 10	2010	1FDUF5HT5BEB10135
321	On Hwy Water Trucks	32.10570	Water Truck Frghtliner 2450 Ga	1997	1FVACXDT0FHGC6735
321	On Hwy Water Trucks	32.10580	Water Truck F750 2450 Gallon	1997	3FRXF7FB8FV704724
321	On Hwy Water Trucks	32.10590	Water Truck T370 2450 Gallon	2017	2NKHHM7X4JM180494
321	On Hwy Water Trucks	32.10610	Water Truck International 4400	2011	3HAMSAAR0BL425346
321	On Hwy Water Trucks	32.10620	Water Truck Mack CV713 4000	2007	1M2AG11Y97M047200
321	On Hwy Water Trucks	32.10630	Water Truck Freightliner M2 Le	2020	3ALACXFC2LDME8810
321	On Hwy Water Trucks	32.10640	Water Truck Ford F550 13	2013	1FDUF5HT3DEB32833
321	On Hwy Water Trucks	32.10650	Water Truck Freightliner M2 Le	2022	1FVACXFC0NHNF1043
323	Flatbed Trucks to 1 Ton	32.30840	MOT Ford F450 2012	2012	1FD0X4HT0CEC05631
323	Flatbed Trucks to 1 Ton	32.30930	MOT Dodge Ram 5500 2015	2015	3C7WRNBL0FG530688
323	Flatbed Trucks to 1 Ton	32.30980	MOT Dodge Ram 5500 2015	2015	3C7WRNBL5FG688931
323	Flatbed Trucks to 1 Ton	32.31010	MOT Ford F550 XL 16	2016	1FDUF5HT9GEB87906
323	Flatbed Trucks to 1 Ton	32.31030	MOT Ford F550 XL 16	2016	1FDUF5GT1GEB54853
323	Flatbed Trucks to 1 Ton	32.31050	Flatbed Ford F450 SCrew 16	2016	1FD0W4HT9GEC67618
323	Flatbed Trucks to 1 Ton	32.31060	MOT Ford F550 XL 16	2016	1FDUF5GT2GEC57411
323	Flatbed Trucks to 1 Ton	32.31070	MOT Ford F550 XL 17	2017	1FDUF5HT7HEB62147
323	Flatbed Trucks to 1 Ton	32.31080	MOT Ford F550 XL 17	2017	1FDUF5HT9HEB62148
323	Flatbed Trucks to 1 Ton	32.31090	MOT Ford F550 XL 17	2017	1FDUF5GT5HEB94791
323	Flatbed Trucks to 1 Ton	32.31110	MOT Ford F550 XL 17	2017	1FDUF5GT7HED29964
323	Flatbed Trucks to 1 Ton	32.31120	MOT Ford F550 XL 17	2017	1FDUF5GT9HED29965
323	Flatbed Trucks to 1 Ton	32.31130	MOT Ford F550 XL 18	2018	1FDUF5GT1JEC08708
323	Flatbed Trucks to 1 Ton	32.31140	MOT Ford F550 XL 18	2018	1FDUF5GT3JEC08709
323	Flatbed Trucks to 1 Ton	32.31150	MOT Ford F550 XL 18	2018	1FDUF5GTXJEC08710
323	Flatbed Trucks to 1 Ton	32.31190	Flatbed Ford F550 XL	2018	1FDUF5HT6JEB41943
323	Flatbed Trucks to 1 Ton	32.31200	Flatbed Ford F550 XL	2018	1FD0W5HT0KEC02512
323	Flatbed Trucks to 1 Ton	32.31210	Flatbed Ford F550 XL	2018	1FD0W5HT8JED02730
323	Flatbed Trucks to 1 Ton	32.31220	Flatbed Ford F550 XL 19	2018	1FD0W5HT0KED68514
323	Flatbed Trucks to 1 Ton	32.31230	Flatbed International CV 19	2019	1HTKTSWK4KH082472
323	Flatbed Trucks to 1 Ton	32.31240	MOT Ford F550 XL 19	2019	1FD0W5HT3KEF60669
323	Flatbed Trucks to 1 Ton	32.31250	MOT International CV515 20	2020	1HTKTSWMXLH856291
323	Flatbed Trucks to 1 Ton	32.31260	MOT International CV515 20	2020	1HTKTSWM7LH856295
323	Flatbed Trucks to 1 Ton	32.31270	MOT International CV515 20	2020	1HTKTSWM3LH856293
323	Flatbed Trucks to 1 Ton	32.31280	MOT Ford F550 XL 19	2019	1FD0W5HT5KEG12111
323	Flatbed Trucks to 1 Ton	32.31290	MOT Ford F550 XL 19	2019	1FD0W5HT3KEG34074
323	Flatbed Trucks to 1 Ton	32.31300	HD MOT Ford F450 XL 21	2021	1FDUF4GTXNEC23787
324	Pipe Crew Vehicles	32.30850	Dodge 5500 Crew Cab 2012	2012	3C7WDNFL1CG329645
325	Sand Truck	32.10380	Sand Truck Kenworth T800 91	1991	1NKDL50X8MJ560446
329	Flatbed Trucks over 1 Ton	31.80140	MOT Ford F800 95	1995	1FDXF80C8SVA73060
331	Pickup Truck 2WD - Overhead	33.24640	Ford F250 XL Regular Cab 2013	2013	1FTBF2AT0DEA13321
331	Pickup Truck 2WD - Overhead	33.24950	Ford F 150 XL Supercab 2013	2013	1FTFX1CFXDKF32958
331	Pickup Truck 2WD - Overhead	33.25350	Ford F150 XL Super Cab 2016	2016	1FTEX1CP0GFA08915
331	Pickup Truck 2WD - Overhead	33.25720	Ford F150 XLT Super Cab 2017	2017	1FTEX1CG3HKC84580
331	Pickup Truck 2WD - Overhead	33.25770	Ford F150 XL Super Cab 2017	2017	1FTEX1CF7HKD19886
331	Pickup Truck 2WD - Overhead	33.25800	Ford F150 XLT Super Cab 2017	2017	1FTEX1CF6HKD83773
331	Pickup Truck 2WD - Overhead	33.25820	Ford F150 XL Super Cab 2017	2017	1FTEX1CF4HKD83772
331	Pickup Truck 2WD - Overhead	33.25870	Ford F150 XLT Super Cab 2018	2018	1FTEX1C5XJKC35610
331	Pickup Truck 2WD - Overhead	33.25880	Ford F150 XLT Super Cab 2018	2018	1FTEX1C51JKC35611
331	Pickup Truck 2WD - Overhead	33.25950	Ford F150 XLT Super Crew 2018	2018	1FTEW1C54JKC35606
331	Pickup Truck 2WD - Overhead	33.25990	Ford F150 XL Super Cab 2018	2018	1FTEX1C54JKD46251
331	Pickup Truck 2WD - Overhead	33.26150	Ford F150 XLT Super Crew 2018	2018	1FTEW1C50JKE85778
331	Pickup Truck 2WD - Overhead	33.26180	Ford F150 XLT Super Cab 2018	2018	1FTEX1C51JFA77053

331	Pickup Truck 2WD - Overhead	33.26210	Ford F150 XLT Super Cab 2016	2018	1FTEX1C55JKF83041
331	Pickup Truck 2WD - Overhead	33.26220	Ford F150 XLT Super Cab 2018	2018	1FTEX1C53JKF83037
331	Pickup Truck 2WD - Overhead	33.26540	Ford F150 XLT Super Crew 2021	2021	1FTFW1E58MKD08644
332	Pickup Truck 2WD	33.24870	Ford F150 XL Supercab 2013	2013	1FTFX1CF3DKE62316
332	Pickup Truck 2WD	33.25180	Ford F150 XL Super Cab 2014	2014	1FTFX1CF5EKG06336
332	Pickup Truck 2WD	33.25250	Ford F150 XL Super Cab 2015	2015	1FTEX1CF3FKD82920
332	Pickup Truck 2WD	33.25300	Ford F150 XL Super Cab 2016	2016	1FTEX1CF1GKD89933
332	Pickup Truck 2WD	33.25310	Ford F150 XL Super Cab 2016	2016	1FTEX1CF7GFA15111
332	Pickup Truck 2WD	33.25530	Ford F150 XL Super Cab 2016	2016	1FTEX1CF2GKE18257
332	Pickup Truck 2WD	33.25540	Ford F150 XL Super Cab 2016	2016	1FTEX1CF8GKE48430
332	Pickup Truck 2WD	33.25620	Ford F150 XL Super Cab 2017	2017	1FTEX1CF7HKC07430
332	Pickup Truck 2WD	33.25630	Ford F150 XL Super Cab 2017	2017	1FTEX1CF7HKC13728
332	Pickup Truck 2WD	33.25670	Ford F150 XL Super Cab 2017	2017	1FTEX1CF1HKC46255
332	Pickup Truck 2WD	33.25680	Ford F150 XL Super Cab 2016	2016	1FTEX1C87GFB75880
332	Pickup Truck 2WD	33.25760	Ford F150 XL Super Cab 2017	2017	1FTEX1CF9HKD19887
332	Pickup Truck 2WD	33.25790	Ford F150 XL Super Cab 2017	2017	1FTEX1CF0HKD19888
332	Pickup Truck 2WD	33.25830	Ford F150 XL Super Cab 2017	2017	1FTEX1CF2HKD83771
332	Pickup Truck 2WD	33.25890	Ford F150 XL Super Cab 2018	2018	1FTEX1C53JKC35612
332	Pickup Truck 2WD	33.25920	Ford F150 XL Super Cab 2018	2018	1FTEX1C59JKC35615
332	Pickup Truck 2WD	33.25930	Ford F150 XL Super Cab 2018	2018	1FTEX1C50JKC35616
332	Pickup Truck 2WD	33.25940	Ford F150 XL Super Cab 2018 QC	2018	1FTEX1C52JKC35617
332	Pickup Truck 2WD	33.25980	Ford F150 XLT Super Cab 2017	2017	1FTEX1CF2HKC87123
332	Pickup Truck 2WD	33.26000	Ford F150 XL Super Cab 2018	2018	1FTEX1C56JKD46252
332	Pickup Truck 2WD	33.26040	Ford F150 XL Super Cab 2018	2018	1FTEX1C53JKD46256
332	Pickup Truck 2WD	33.26120	Ford F150 XL Super Cab 2018	2018	1FTEX1C58JKE77084
332	Pickup Truck 2WD	33.26140	Ford F150 XL Super Cab 2018	2018	1FTEX1C51JKE77086
332	Pickup Truck 2WD	33.26520	Ford F150 XL Super Cab 2020	2020	1FTEX1C50LKE46706
332	Pickup Truck 2WD	33.26560	Ford F150 XL Super Cab 2021	2021	1FTEX1C54MKD83434
332	Pickup Truck 2WD	33.26570	Ford F150 XL Super Cab 2021	2021	1FTEX1C59MKD83431
332	Pickup Truck 2WD	33.26790	Ford F-150 XL SuperCab 2022	2022	1FTEX1C5XNKD52089
332	Pickup Truck 2WD	33.26800	Ford F-150 XL SuperCab 2022	2022	1FTEX1C55NKD24328
332	Pickup Truck 2WD	33.26810	Ford F-150 XL SuperCab 2022	2022	1FTEX1C57NKD24329
332	Pickup Truck 2WD	33.26820	Ford F-150 XL SuperCab 2022	2022	1FTEX1C53NKD24330
332	Pickup Truck 2WD	33.26830	Ford F-150 XL SuperCab 2022	2022	1FTEX1C56NKD52090
332	Pickup Truck 2WD	33.26840	Ford F-150 XL SuperCab 2022	2022	1FTEX1C58NKD52091
332	Pickup Truck 2WD	33.26850	Ford F-150 XL SuperCab 2022	2022	1FTEX1C5XNKD52092
332	Pickup Truck 2WD	33.26860	Ford F-150 XL SuperCab 2022	2022	1FTEX1C51NKD52093
332	Pickup Truck 2WD	33.26870	Ford F-150 XL SuperCab 2022	2022	1FTEX1C53NKD52094
332	Pickup Truck 2WD	33.26880	Ford F-150 XL SuperCab 2022	2022	1FTEX1C55NKD52095
332	Pickup Truck 2WD	33.26890	Ford F-150 XL SuperCab 2022	2022	1FTEX1C57NKD52096
332	Pickup Truck 2WD	33.26900	Ford F-150 XL SuperCab 2022	2022	1FTEX1C59NKD52097
332	Pickup Truck 2WD	33.26910	Ford F-150 XL SuperCab 2022	2022	1FTEX1C50NKD52098
332	Pickup Truck 2WD	33.26920	Ford F-150 XL SuperCab 2022	2022	1FTEX1C52NKD52099
332	Pickup Truck 2WD	33.26930	Ford F-150 XL SuperCab 2022	2022	1FTEX1C55NKD52100
332	Pickup Truck 2WD	33.26940	Ford F-150 XL SuperCab 2022	2022	1FTEX1C57NKD52101
332	Pickup Truck 2WD	33.26950	Ford F-150 XL SuperCab 2022	2022	1FTEX1C55NKD24331
332	Pickup Truck 2WD	33.26960	Ford F-150 XL SuperCab 2022	2022	1FTEX1C57NKD24332
332	Pickup Truck 2WD	33.26970	Ford F-150 XL SuperCab 2022	2022	1FTEX1C59NKD24333
332	Pickup Truck 2WD	33.26980	Ford F-150 XL SuperCab 2022	2022	1FTEX1C50NKD24334
332	Pickup Truck 2WD	33.26990	Ford F-150 XL SuperCab 2022	2022	1FTEX1C52NKD24335
332	Pickup Truck 2WD	33.27000	Ford F-150 XL SuperCab 2022	2022	1FTEX1C54NKD24336
332	Pickup Truck 2WD	33.27010	Ford F-150 XLT SuperCab 2022	2022	1FTEX1C56NKD24337
332	Pickup Truck 2WD	33.27020	Ford F-150 XLT SuperCab 2022	2022	1FTEX1C58NKD24338
333	Pickup Truck 4WD - Overhead	33.26530	Ford F150 XLT Super Cab 2020	2020	1FTEX1C52LKE46707
333	Pickup Truck 4WD - Overhead	33.45410	Ford F150 XLT Supercrew 2013	2013	1FTFW1EF7DKE40612
333	Pickup Truck 4WD - Overhead	33.45960	Ford F150 XL Supercab 2015	2015	1FTFX1EF8FKD11259
333	Pickup Truck 4WD - Overhead	33.46040	Ford F150 XLT Supercrew 2015	2015	1FTEW1EF2FFB70681
333	Pickup Truck 4WD - Overhead	33.46320	Ford F150 XLT Supercrew 2016	2016	1FTEW1EF1GKE48429
333	Pickup Truck 4WD - Overhead	33.46470	Ford F150 XLT Supercrew 2016	2016	1FTEW1EF5GKD99994
333	Pickup Truck 4WD - Overhead	33.46480	Ford F150 XLT Supercrew 2016	2016	1FTEW1EF7GFC27183
333	Pickup Truck 4WD - Overhead	33.46550	Ford F150 XLT Super Cab 2017	2017	1FTFX1EF8HKC19734
333	Pickup Truck 4WD - Overhead	33.46870	Ford F150 XLT Super Crew 2017	2017	1FTEW1EF0HKD83770
333	Pickup Truck 4WD - Overhead	33.46880	Ford F150 XLT Super Crew 2017	2017	1FTEW1EF4HKD83769
333	Pickup Truck 4WD - Overhead	33.46890	Ford F150 XLT Super Cab 2017	2017	1FTFX1EFXHKD83776
333	Pickup Truck 4WD - Overhead	33.46900	Ford F150 XLT Super Cab 2017	2017	1FTFX1EF8HKD83775
333	Pickup Truck 4WD - Overhead	33.47020	Ford F150 XLT Super Crew 2018	2018	1FTEW1E52JKC10720
333	Pickup Truck 4WD - Overhead	33.47030	Ford F150 XLT Super Crew 2017	2017	1FTEW1EF0HKE06867
333	Pickup Truck 4WD - Overhead	33.47190	Ford F150 XL Super Cab 2018	2018	1FTFX1E57JKD46259

333	Pickup Truck 4WD - Overhead	33.47220	Ford F150 XLT Super Crew 2018	2018	1FTEW1E52JKD46250
333	Pickup Truck 4WD - Overhead	33.47250	Ford F150 XLT Super Cab 2018	2018	1FTFX1EG1JFA77007
333	Pickup Truck 4WD - Overhead	33.47410	Ford F150 XL Super Cab 2018	2018	1FTFX1E57JKF83043
333	Pickup Truck 4WD - Overhead	33.47550	Ford F150 XLT Super Crew 2019	2019	1FTEW1E55KKC27917
333	Pickup Truck 4WD - Overhead	33.47560	Ford F150 XLT Super Crew 2019	2019	1FTEW1E50KF825336
333	Pickup Truck 4WD - Overhead	33.47590	Ford F150 XLT Super Crew 2018	2018	1FTFW1E57JKF07292
333	Pickup Truck 4WD - Overhead	33.47610	Ford F150 XLT Super Crew 2019	2019	1FTEW1E57KKE40013
333	Pickup Truck 4WD - Overhead	33.47620	Ford F150 XLT Super Crew 2019	2019	1FTEW1E51KKE40010
333	Pickup Truck 4WD - Overhead	33.47630	Ford F150 XLT Super Crew 2019	2019	1FTEW1E53KKE40011
333	Pickup Truck 4WD - Overhead	33.47910	Ford F150 XLT Super Crew 2020	2020	1FTEW1E49LKE07541
333	Pickup Truck 4WD - Overhead	33.48010	Ford F150 XLT Super Crew 2020	2020	1FTEW1E58LKE46663
333	Pickup Truck 4WD - Overhead	33.48070	Ford F150 XLT Super Cab 2020	2020	1FTFX1E50LKE46710
333	Pickup Truck 4WD - Overhead	33.48170	Ford Ranger XLT SCew 2020	2020	1FTER4FH9LLA95337
333	Pickup Truck 4WD - Overhead	33.48200	Ford F150 XL Super Cab 2021	2021	1FTFX1E53MKD08645
333	Pickup Truck 4WD - Overhead	33.48210	Ford F150 XL Super Cab 2021	2021	1FTFX1E57MKD08647
333	Pickup Truck 4WD - Overhead	33.48230	Ford F150 Lariat 2021	2021	1FTFW1E5XMFA38714
333	Pickup Truck 4WD - Overhead	33.48410	Ford F150 XLT Super Crew 2021	2021	1FTFW1E54MKE54457
333	Pickup Truck 4WD - Overhead	33.48910	Ford F-150 XLT 4x4 SuperCrew22	2022	1FTFW1E54NKD24325
333	Pickup Truck 4WD - Overhead	33.48940	Ford F-150 XLT 4x4 SuperCrew 2	2022	1FTFW1E58NKD24327
333	Pickup Truck 4WD - Overhead	33.49160	Ford Ranger XLT 4x4 Crew Cab	2022	1FTER4FH9NLD20374
333	Pickup Truck 4WD - Overhead	33.49170	Ford F-150 XLT SuperCrew 21	2021	1FTFW1E5XMKE73613
334	Pickup Truck 4WD	33.45710	Ford F150 XLT Supercab 2014	2014	1FTFX1EF2EFA70824
334	Pickup Truck 4WD	33.46070	Ford F150 XL Supercab 2015	2015	1FTFX1EF5FKD82922
334	Pickup Truck 4WD	33.46090	Ford F150 XL Supercab 2015	2015	1FTFX1EF7FKD82923
334	Pickup Truck 4WD	33.46140	Ram 3500 SLT Regular Cab 2015	2015	3C7WRTAL5FG649164
334	Pickup Truck 4WD	33.46180	Ford F150 XL Supercab 2016	2016	1FTFX1EF7GFA21377
334	Pickup Truck 4WD	33.46230	Flatbed Dodge Ram 5500 2016	2015	3C7WRNBL4GG131624
334	Pickup Truck 4WD	33.46540	Ford F150 XLT Supercrew 2017	2017	1FTEW1EF6HKC19732
334	Pickup Truck 4WD	33.46590	Ford F150 XL Super Cab 2017	2017	1FTFX1EF1HKC46256
334	Pickup Truck 4WD	33.46610	Ford F250 XLT Super Crew 2017	2017	1FT7W2BT0HEC22178
334	Pickup Truck 4WD	33.46630	Ford F150 XLT Super Cab 2017	2017	1FTFX1EF5HKC46258
334	Pickup Truck 4WD	33.46640	Ford F150 XLT Super Cab 2016	2016	1FTFX1EG3GKF91389
334	Pickup Truck 4WD	33.46850	Ford F150 XL Super Cab 2017	2017	1FTFX1EF5HKD60647
334	Pickup Truck 4WD	33.46910	Ford F250 XL Super Cab 2017	2017	1FT7X2B6XHEE04476
334	Pickup Truck 4WD	33.46920	Ford F150 XL Super Cab 2017	2017	1FTEX1EF7HKD83777
334	Pickup Truck 4WD	33.47040	Ford F150 XL Super Cab 2018	2018	1FTEX1E56JKC13858
334	Pickup Truck 4WD	33.47060	Ford F150 XLT Super Cab 2018	2018	1FTFX1E52JKC35618
334	Pickup Truck 4WD	33.47130	Ford F150 XL Super Cab 2017	2017	1FTFX1EF3HKD38601
334	Pickup Truck 4WD	33.47170	Ford F150 XL Super Cab 2018	2018	1FTFX1E53JKD46257
334	Pickup Truck 4WD	33.47180	Ford F150 XL Super Cab 2018	2018	1FTFX1E55JKD46258
334	Pickup Truck 4WD	33.47200	Ford F150 XL Super Cab 2018	2018	1FTFX1E53JKD46260
334	Pickup Truck 4WD	33.47210	Ford F150 XL Super Cab 2018	2018	1FTEX1E50JKD46261
334	Pickup Truck 4WD	33.47340	Ford F150 XL Super Cab 2018	2018	1FTFX1E51JKE77087
334	Pickup Truck 4WD	33.47400	Ford F150 XL Super Cab 2018	2018	1FTFX1E55JKF83042
334	Pickup Truck 4WD	33.47450	Ford F150 XLT Super Cab 2018	2018	1FTFX1E50JKF83045
334	Pickup Truck 4WD	33.47470	Ford F250 XL Supercrew 2019	2018	1FT7X2B6XKED13151
334	Pickup Truck 4WD	33.47530	Ford F250 XL Supercrew 2019	2019	1FT7W2BT8KED61126
334	Pickup Truck 4WD	33.47600	Ford F250 XL Supercrew 2019	2019	1FT7W2BT8KEC70082
334	Pickup Truck 4WD	33.47640	Ford F150 XLT Super Crew 2019	2019	1FTEW1E55KKE40012
334	Pickup Truck 4WD	33.47650	Ford F150 XL Super Cab 2019	2019	1FTFX1E51KKE40008
334	Pickup Truck 4WD	33.47660	Ford F150 XL Super Cab 2019	2019	1FTFX1E53KKE40009
334	Pickup Truck 4WD	33.47750	Ford F250 XL Super Crew 2019	2019	1FT7W2BT0KEF37392
334	Pickup Truck 4WD	33.47790	Ford F250 XL Super Crew 2019	2019	1FT7W2BT9KEF68138
334	Pickup Truck 4WD	33.48020	Ford F150 XLT Super Crew 2020	2020	1FTEW1E59LKE46705
334	Pickup Truck 4WD	33.48030	Ford F150 XL Super Cab 2020	2020	1FTFX1E58LKE46664
334	Pickup Truck 4WD	33.48040	Ford F150 XL Super Cab 2020	2020	1FTFX1E52LKE46708
334	Pickup Truck 4WD	33.48050	Ford F150 XLT Super Cab 2020	2020	1FTFX1E54LKE46709
334	Pickup Truck 4WD	33.48060	Ford F150 XLT Super Cab 2020	2020	1FTFX1E5XLKE46665
334	Pickup Truck 4WD	33.48250	Ford F150 XL Super Cab 2020	2020	1FTFX1E52LKD86431
334	Pickup Truck 4WD	33.48260	Ford F150 XL Super Cab 2020	2020	1FTEX1E5XLKE77846
334	Pickup Truck 4WD	33.48280	Ford F150 XL Super Cab 2021	2021	1FTFX1E59MKD26230
334	Pickup Truck 4WD	33.48290	Ford F150 XLT Super Crew 2020	2020	1FTEW1E49LKF51929
334	Pickup Truck 4WD	33.48310	Ford Ranger XLT SCew 2021	2021	1FTER4FH7MLD33395
334	Pickup Truck 4WD	33.48390	Ford F150 XL Super Cab 2021	2021	1FTFX1E51MKE05570
334	Pickup Truck 4WD	33.48490	Ford F150 XLT Super Crew 2018	2018	1FTEW1E55JKE93954-1
334	Pickup Truck 4WD	33.48500	Ford F250 XL Supercrew 2019	2019	1FT7W2B67KEE41639
334	Pickup Truck 4WD	33.48690	Ford F150 XL Super Cab 2022	2022	1FTFX1E57NKD52102
334	Pickup Truck 4WD	33.48700	Ford F150 XL Super Cab 2022	2022	1FTFX1E59NKD52103
334	Pickup Truck 4WD	33.48710	Ford F150 XL Super Cab 2022	2022	1FTFX1E58NKD24339

334	Pickup Truck 4WD	33.48720	Ford F150 XL Super Cab 2022	2022	1FTFX1E50NKD52104
334	Pickup Truck 4WD	33.48730	Ford F150 XL Super Cab 2022	2022	1FTFX1E52NKD52105
334	Pickup Truck 4WD	33.48740	Ford F150 XL Super Cab 2022	2022	1FTFX1E54NKD52106
334	Pickup Truck 4WD	33.48750	Ford F150 XL Super Cab 2022	2022	1FTFX1E56NKD52107
334	Pickup Truck 4WD	33.48760	Ford F150 XL Super Cab 2022	2022	1FTFX1E58NKD52108
334	Pickup Truck 4WD	33.48770	Ford F150 XL Super Cab 2022	2022	1FTFX1E54NKD24340
334	Pickup Truck 4WD	33.48780	Ford F150 XL Super Cab 2022	2022	1FTFX1E56NKD24341
334	Pickup Truck 4WD	33.48790	Ford F150 XL Super Cab 2022	2022	1FTFX1E5XNKD52109
334	Pickup Truck 4WD	33.48800	Ford F150 XL Super Cab 2022	2022	1FTFX1E56NKD52110
334	Pickup Truck 4WD	33.48810	Ford F150 XL Super Cab 2022	2022	1FTFX1E58NKD24342
334	Pickup Truck 4WD	33.48820	Ford F150 XL Super Cab 2022	2022	1FTFX1E5XNKD24343
334	Pickup Truck 4WD	33.48830	Ford F150 XL Super Cab 2022	2022	1FTFX1E51NKD24344
334	Pickup Truck 4WD	33.48840	Ford F150 XL Super Cab 2022	2022	1FTFX1E53NKD24345
334	Pickup Truck 4WD	33.48850	Ford F150 XL Super Cab 2022	2022	1FTFX1E55NKD24346
334	Pickup Truck 4WD	33.48860	Ford F150 XL Super Cab 2022	2022	1FTFX1E58NKD52111
334	Pickup Truck 4WD	33.48870	Ford F-150 XLT 4x4 SuperCab 22	2022	1FTFX1E57NKD24347
334	Pickup Truck 4WD	33.48880	Ford F-150 XLT 4x4 SuperCab 22	2022	1FTFX1E50NKD98452
334	Pickup Truck 4WD	33.48890	Ford F-150 XLT 4x4 SuperCab 22	2022	1FTFX1E59NKD24348
334	Pickup Truck 4WD	33.48900	Ford F-150 XLT 4x4 SuperCab 22	2022	1FTFW1E52NKD24324
334	Pickup Truck 4WD	33.48920	Ford F150 XLT 4x4 SuperCrew 22	2022	1FTFW1E56NKD24326
334	Pickup Truck 4WD	33.49340	Ford F-150 XL SuperCab 2022	2022	1FTFX1E5XNKD27212
335	Survey Vehicles	33.46500	Ford F250 XL Super Cab 2016	2016	1FT7X2B66GEB18364
335	Survey Vehicles	33.46790	Ford F150 XL Super Cab 2017	2017	1FTEX1EF6HKD19889
335	Survey Vehicles	33.47430	Ford F150 XLT Super Cab 2018	2018	1FTFX1E59JKF83044
335	Survey Vehicles	33.47680	Ford F150 XL Super Cab 2019	2019	1FTEX1EP7KKD02650
335	Survey Vehicles	33.47690	Ford F150 XL Super Cab 2019	2019	1FTEX1EP6KKD42864
335	Survey Vehicles	33.47800	Ford F150 XL Super Cab 2019	2019	1FTFX1E58KKC18856
335	Survey Vehicles	33.48190	Ford F150 XL Super Cab 2021	2021	1FTFX1E55MKD08646
335	Survey Vehicles	33.48400	Ford F150 XL Super Cab 2021	2021	1FTFX1E53MKE05571
337	QC Vehicles	33.25240	Ford F150 XL Super Cab 2015	2015	1FTEX1CF5FKD82921
337	QC Vehicles	33.25690	Ford F150 XL Super Cab 2016	2016	1FTEX1C86GFA09236
337	QC Vehicles	33.25700	Ford F150 XL Super Cab 2017	2017	1FTEX1CF5HFA21250
337	QC Vehicles	33.25810	Ford F150 XL Super Cab 2017	2017	1FTEX1CF8HKD83774
337	QC Vehicles	33.26020	Ford F150 XL Super Cab 2018	2018	1FTEX1C5XJKD46254
337	QC Vehicles	33.26030	Ford F150 XL Super Cab 2018	2018	1FTEX1C51JKD46255
337	QC Vehicles	33.26130	Ford F150 XL Super Cab 2018	2018	1FTEX1C5XJKE77085
337	QC Vehicles	33.26200	Ford F150 XL Super Cab 2018	2018	1FTEX1C53JKF83040
337	QC Vehicles	33.46650	Ford F150 XL Super Cab 2016	2016	1FTFX1EF0GFD34805
337	QC Vehicles	33.46660	Ford F150 XL Super Cab 2017	2017	1FTFX1EF5HFA21251
337	QC Vehicles	33.47440	Ford F150 XLT Super Cab 2018	2018	1FTFX1E53JKF83038
353	Truck Tractor 3 Axle	35.30120	CXTractor Kenworth T800 98	1998	1XKDD29XXWJ772210
353	Truck Tractor 3 Axle	35.30180	Tractor Kenworth T800 13	2013	1XKDP4EX6EJ404047
353	Truck Tractor 3 Axle	35.30190	Tractor Kenworth T800 13	2013	1XKDP4EX8EJ404048
353	Truck Tractor 3 Axle	35.30240	Tractor Kenworth T800 15	2015	1XKDP4EX4FJ437470
353	Truck Tractor 3 Axle	35.30250	Tractor Kenworth T800 15	2015	1XKDP4EX6FJ437471
353	Truck Tractor 3 Axle	35.30260	Tractor Kenworth T680 14	2014	1XKYDP9X2EJ400566
353	Truck Tractor 3 Axle	35.30270	Tractor Kenworth T680 14	2014	1XKYD49X8EJ411540
353	Truck Tractor 3 Axle	35.30290	Tractor Kenworth T880 16	2016	1XKZD49X2GJ133208
353	Truck Tractor 3 Axle	35.30310	Tractor Kenworth T880 18	2018	1XKZP4EX3JJ194488
353	Truck Tractor 3 Axle	35.30320	Tractor Kenworth T880 19	2019	1XKZP4EXXKJ259094
353	Truck Tractor 3 Axle	35.30330	Tractor Kenworth T880 19	2019	1XKZP4EX1KJ259095
353	Truck Tractor 3 Axle	35.30340	Tractor Freightliner Cascadia	2020	1FUJHLDR7LLLU9160
353	Truck Tractor 3 Axle	35.30350	Tractor Freightliner Cascadia	2020	1FUJHLDR9LLLU9161
353	Truck Tractor 3 Axle	35.30370	Tractor Freightliner Cascadia	2022	3AKJHLDR2NSNL6409
353	Truck Tractor 3 Axle	35.30380	Tractor Freightliner Cascadia	2022	3AKJHLDR9NSNL6410
353	Truck Tractor 3 Axle	35.30420	HD Tractor Mack CXU613 14	2014	1M1AW21Y8EM041818
353	Truck Tractor 3 Axle	35.30430	HD Tractor Mack CXU613 14	2014	1MIAW07Y7EM037237
353	Truck Tractor 3 Axle	35.30440	HD Tractor Mack CXU613 18	2018	1M1AW07Y0JM086760
363	Dump Truck 3 Axle	36.31820	Dump Kenworth T800 Alum 13	2013	1NKDX70X3EJ398775
363	Dump Truck 3 Axle	36.31830	Dump Kenworth T800 Alum 13	2013	1NKDX70X5EJ398776
363	Dump Truck 3 Axle	36.31840	Dump Kenworth T800 Alum 13	2013	1NKDX70X0EJ398777
363	Dump Truck 3 Axle	36.31850	Dump Kenworth T800 Alum 13	2013	1NKDX70X9EJ398778
363	Dump Truck 3 Axle	36.31870	Dump Kenworth T800 Alum 13	2013	1NKDX70X7EJ398780
363	Dump Truck 3 Axle	36.31880	Dump Kenworth T800 Alum 13	2013	1NKDX70X9EJ398781
363	Dump Truck 3 Axle	36.31890	Dump Kenworth T800 Steel 13	2013	1NKDX70X8EJ398772
363	Dump Truck 3 Axle	36.31900	Dump Kenworth T800 Steel 13	2013	1NKDX70XXEJ398773

363	Dump Truck 3 Axle	36.31910	Dump Kenworth T880 Alum 15	2015	1NKZX7EX0FJ439010
363	Dump Truck 3 Axle	36.31920	Dump Kenworth T880 Alum 15	2015	1NKZX7EX2FJ439011
363	Dump Truck 3 Axle	36.31930	Dump Kenworth T800 Alum 15	2015	1NKDX7EX7FJ437443
363	Dump Truck 3 Axle	36.31940	Dump Kenworth T800 Alum 15	2015	1NKDX7EX9FJ437444
363	Dump Truck 3 Axle	36.31950	Dump Kenworth T800 Alum 15	2015	1NKDX7EX0FJ437445
363	Dump Truck 3 Axle	36.31960	Dump Kenworth T800 Alum 15	2015	1NKDX7EX2FJ437446
363	Dump Truck 3 Axle	36.31970	Dump Kenworth T800 Alum 15	2015	1NKDX7EX4FJ437447
363	Dump Truck 3 Axle	36.31980	Dump Kenworth T800 Alum 15	2015	1NKDX7EX6FJ437448
363	Dump Truck 3 Axle	36.31990	Dump Kenworth T800 Steel 15	2015	1NKDX7EX5FJ437439
363	Dump Truck 3 Axle	36.32000	Dump Kenworth T800 Steel 15	2015	1NKDX7EX1FJ437440
363	Dump Truck 3 Axle	36.32010	Dump Kenworth T800 Steel 15	2015	1NKDX7EX3FJ437441
363	Dump Truck 3 Axle	36.32030	Dump Kenworth T880 Steel 16	2016	1NKZX7EX8GJ498663
363	Dump Truck 3 Axle	36.32040	Dump Kenworth T880 Steel 16	2016	1NKZX7EXXGJ498664
363	Dump Truck 3 Axle	36.32050	Dump Kenworth T880 Steel 16	2016	1NKZX7EX1GJ498665
363	Dump Truck 3 Axle	36.32060	Dump Kenworth T880 Steel 16	2016	1NKZX7EX3GJ498666
363	Dump Truck 3 Axle	36.32070	Dump Kenworth T880 Steel 16	2016	1NKZX7EX5GJ498667
363	Dump Truck 3 Axle	36.32080	Dump Kenworth T880 Steel 16	2016	1NKZX7EX7GJ498668
363	Dump Truck 3 Axle	36.32090	Dump Kenworth T880 Alum 16	2016	1NKZX7EX2GJ498657
363	Dump Truck 3 Axle	36.32100	Dump Kenworth T880 Alum 16	2016	1NKZX7EX4GJ498658
363	Dump Truck 3 Axle	36.32110	Dump Kenworth T880 Alum 16	2016	1NKZX7EX6GJ498659
363	Dump Truck 3 Axle	36.32120	Dump Kenworth T880 Alum 16	2016	1NKZX7EX2GJ498660
363	Dump Truck 3 Axle	36.32130	Dump Kenworth T880 Alum 16	2016	1NKZX7EX4GJ498661
363	Dump Truck 3 Axle	36.32140	Dump Kenworth T880 Alum 16	2016	1NKZX7EX6GJ498662
363	Dump Truck 3 Axle	36.32150	Dump Kenworth T880 Steel 17	2017	1NKZX7EX7HJ149186
363	Dump Truck 3 Axle	36.32160	Dump Kenworth T880 Steel 17	2017	1NKZX7EX9HJ149187
363	Dump Truck 3 Axle	36.32170	Dump Kenworth T880 Steel 17	2017	1NKZX7EX0HJ149188
363	Dump Truck 3 Axle	36.32180	Dump Kenworth T880 Steel 17	2017	1NKZX7EX2HJ149189
363	Dump Truck 3 Axle	36.32190	Dump Kenworth T880 Steel 17	2017	1NKZX7EX9HJ149190
363	Dump Truck 3 Axle	36.32200	Dump Kenworth T880 Steel 17	2017	1NKZX7EX0HJ149191
363	Dump Truck 3 Axle	36.32210	Dump Kenworth T880 Steel 17	2017	1NKZX7EX2HJ149192
363	Dump Truck 3 Axle	36.32220	Dump Kenworth T880 Alum 17	2017	1NKZX7EXXHJ149179
363	Dump Truck 3 Axle	36.32230	Dump Kenworth T880 Alum 17	2017	1NKZX7EX6HJ149180
363	Dump Truck 3 Axle	36.32240	Dump Kenworth T880 Alum 17	2017	1NKZX7EX8HJ149181
363	Dump Truck 3 Axle	36.32250	Dump Kenworth T880 Alum 17	2017	1NKZX7EXXHJ149182
363	Dump Truck 3 Axle	36.32260	Dump Kenworth T880 Alum 17	2017	1NKZX7EX1HJ149183
363	Dump Truck 3 Axle	36.32270	Dump Kenworth T880 Alum 17	2017	1NKZX7EX3HJ149184
363	Dump Truck 3 Axle	36.32280	Dump Kenworth T880 Alum 17	2017	1NKZX7EX5HJ149185
363	Dump Truck 3 Axle	36.32310	Dump Mack CV713 05	2005	1M2AG11C45M031438
363	Dump Truck 3 Axle	36.32360	HD Dump Mack GU813 15	2015	1M2AX13C5FM027381
363	Dump Truck 3 Axle	36.32370	HD Dump Mack GU813 15	2015	1M2AX13C7FM028158
363	Dump Truck 3 Axle	36.32380	HD Dump Mack GU813 16	2016	1M2AX13C4GM032539
363	Dump Truck 3 Axle	36.32390	HD Dump Mack GU813 16	2016	1M2AX13C2GM032541
363	Dump Truck 3 Axle	36.32400	HD Dump Mack GU813 17	2017	1M2AX13C7HM037879
363	Dump Truck 3 Axle	36.32410	HD Dump Mack GU813 18	2018	1M2AX13C5JM040818
380	Trailers Other	38.40800	Trailer Straight Edge 01	2001	NOVIN0200186660
380	Trailers Other	38.40880	Trailer Rolling Str. Edge 04	2004	NOVIN0200392181
380	Trailers Other	38.40890	Trailer Straight Edge 04	2004	NOVIN0200394515
380	Trailers Other	38.41490	Trailer Pace JT716TA2 07	2007	4FPUB16248G124215
380	Trailers Other	38.41540	Trailer Custom 82	1982	B231430C1B1T045
380	Trailers Other	38.41600	Rolling Straight Edge S/B 07	2007	NOVIN0200720626
380	Trailers Other	38.41610	Rolling Straight Edge S/B 07	2007	NOVIN0200720630
380	Trailers Other	38.41820	Trailer Straight Edge 16	2016	NOVIN0201118180
380	Trailers Other	38.41840	Trailer Straight Edge 16	2016	NOVIN0201158628
380	Trailers Other	38.41850	Trailer Straight Edge 16	2016	NOVIN0201158630
380	Trailers Other	38.41870	Trailer Utility 6'4"x16'	2017	1XNU616B1H1074250
380	Trailers Other	38.41910	Trailer Straight Edge 18	2018	5JW1U1018J1224517
380	Trailers Other	38.41980	Trailer Signal Tech	2016	5A3C612D5HL000076
380	Trailers Other	38.42120	Trailer Straight Edge 20	2020	
380	Trailers Other	38.42130	Trailer Straight Edge 20	2020	
380	Trailers Other	41.00840	Trailer Straight Edge 11	2011	
381	Lowboy Trailer	38.10250	Trailer Trail King TK100 98	1998	1TKJ05534WM079963
381	Lowboy Trailer	38.10260	Trailer Load King Lowboy 00	2000	5LKL47352Y1022929
381	Lowboy Trailer	38.10270	Trailer 35' Trailboss 02	2002	4S0DK482521000711
381	Lowboy Trailer	38.10310	Trailer Trailboss Lowboy 97	1997	1T9DK4828V1118298
381	Lowboy Trailer	38.10330	Flip Axle Trailking TK100 04	2004	1TKS00S1948068309
381	Lowboy Trailer	38.10390	Trailer Etnyre RTN55ETD3-P 04	2004	1E928S5774E111206
381	Lowboy Trailer	38.10400	Trailer Terex LoadKing 08	2008	5LKL5135591027652
381	Lowboy Trailer	38.10410	Trailer Load King Lowboy SS3	2014	5LKL51352E1028946

381	Lowboy Trailer	38.10430	Trailer Trailboss KW48DTA 35 T	2017	4SODK4828H1003708
381	Lowboy Trailer	38.10440	Trailer Trailboss KW48DTA 35 T	2017	4SODK4821H1003727
381	Lowboy Trailer	38.10450	Trailer Eager Beaver 55GSL/3	2019	112SD5538LL084202
384	Tag Trailer	38.40040	Trailer Custom 82	1982	B321338C1B1T027
384	Tag Trailer	38.40370	Trailer Hudson 8'x24' 91	1991	10HHTR185M1000052
384	Tag Trailer	38.40440	Trailer A-OK 5x8 Tag 97	1997	EN0508AOK97327801
384	Tag Trailer	38.40510	Trailer Cherokee 6x12 98	1998	MES1211VF976174
384	Tag Trailer	38.40530	Trailer Rolling Straight Edge	Unknown	1ZJBE1218XM060583
384	Tag Trailer	38.40550	Trailer Shop Built 79	1979	FLT9152P
384	Tag Trailer	38.40850	Trailer Anderson EQ7187Tag 04	2004	4YNBN18224C023122
384	Tag Trailer	38.40920	Trailer 4x6 Single Axle 05	2005	4YMUL06195G049704
384	Tag Trailer	38.41020	Trailer Cargo Mate 610SDV 06	2006	5NHUFT0176U211284
384	Tag Trailer	38.41190	Trailer Carry-On 5x8 06	2006	4YMUL08106G063442
384	Tag Trailer	38.41480	Trailer Emerson 5X8 07	2007	1E9AL12227L252017
384	Tag Trailer	38.41520	Trailer Rayside Tandem 08	2008	16VEX182382395180
384	Tag Trailer	38.41530	Trailer Big Tex 12ET-18BK 07	2007	16VEX182272379034
384	Tag Trailer	38.41550	Trailer Straight Edge 01	2001	1CAUS041X1T318983
384	Tag Trailer	38.41570	Trailer Shop Built 88	1981	HMDE
384	Tag Trailer	38.41620	Trailer Pace Utility 09	2009	4FPFB06109G138642
384	Tag Trailer	38.41630	Trailer Road Runner 6x10 10	2010	1Z9BC1019AF147992
384	Tag Trailer	38.41640	Trailer Shop Built 10	2010	NOVIN0200849112
384	Tag Trailer	38.41670	Trailer Triple Crown 6X16 11	2010	1XNU6167B1033807
384	Tag Trailer	38.41680	Trailer Straight Edge	2000	NOVIN0200903318
384	Tag Trailer	38.41700	Trailer Straight Edge	2013	NOVIN0201007533
384	Tag Trailer	38.41710	Trailer Haulmark KD7X16 14	2014	575PB1628EG101387
384	Tag Trailer	38.41720	Trailer Big Tex 70SP	2013	16VNX1225D3E98164
384	Tag Trailer	38.41730	Trailer Express 7X16	2013	5GLBE1622DC000409
384	Tag Trailer	38.41740	Trailer Big Tex 70SP	2014	16VNX1222E3E25352
384	Tag Trailer	38.41780	Trailer Straight Edge	2014	NOVIN0201047472
384	Tag Trailer	38.41790	Trailer Big Tex 70SP	2015	16VNX1223F3004237
384	Tag Trailer	38.41810	Trailer Tripple Crown 6x16x4	2015	1XNU616BF1062345
384	Tag Trailer	38.41830	Trailer Enclosed Cargo7x16	2017	53BCTEA23UU023201
384	Tag Trailer	38.41960	Trailer GN Big Tex 22GN 25+5	2018	16VGX2527J2079984
384	Tag Trailer	38.41990	Trailer GN Big Tex 22GN 25+5	2018	16VGX2523H6081086
384	Tag Trailer	38.42000	Trailer Cargo 7x16	2018	7H2BE1622KD007962
384	Tag Trailer	38.42010	Trailer Cargo 7x16	2018	7H2BE1624KD007963
384	Tag Trailer	38.42020	Trailer GN Big Tex 22GN 35+5	2018	16VGX352XJ6026923
384	Tag Trailer	38.42030	Trailer Rock Solid 6x14	2018	7H2BE1415KD009487
384	Tag Trailer	38.42050	Trailer Big Tex 60PI-12BK4RG	2019	16VNX1223K2004397
384	Tag Trailer	38.42060	Trailer Big Tex 60PI-12BK4RG	2019	16VNX1220K2002073
384	Tag Trailer	38.42150	Trailer Big Tex 14LP-14BK6-P4	2022	16V1D1924N5109434
386	Tanker Trailer	38.60220	Tanker Etnyre 7000 gal 04	2004	E9CFR173247
386	Tanker Trailer	38.60230	Tanker Etnyre 7250 gal 14	2014	1E9T75174EE007044
386	Tanker Trailer	38.60240	Tanker Etnyre 7250 gal 14	2014	1E9T75185EE007045
386	Tanker Trailer	38.60250	Tanker Etnyre 7250 gal 14	2014	1E9T75196EE007046
386	Tanker Trailer	38.60260	Tanker Etnyre 7250 gal 16	2016	1E9T82027HE007027
386	Tanker Trailer	38.60270	HD Tanker Etnyre 7250 gal 02	2002	1E9T465462E007167
386	Tanker Trailer	38.60280	HD Tanker Etnyre 7250 gal 17	2017	1E9T8418JE007013
386	Tanker Trailer	38.60290	HD Tanker Etnyre 7250 gal 21	2021	1E9T93108ME007211
387	Dump Trailer	38.70290	Trailer 12' Big Tex Dump 13	2013	16VDX1221D5371845
387	Dump Trailer	38.70300	Trailer 12' Big Tex Dump 13	2013	16VDX122XD5371777
387	Dump Trailer	38.70310	Trailer Spreader Streumaster S	2018	02BS1082
387	Dump Trailer	38.70410	HD Dump Trailer Etnyre LB240	2021	1E9V20684GE111192
387	Dump Trailer	38.70420	HD Dump Trailer Etnyre LB240	2021	1E9V20695GE111193
981	ATV's	41.00920	ATV John Deere Gator 4X2 13	2013	1M04X2SJADM082946
981	ATV's	41.01000	ATV Kubota RTVX900WL-H	2015	23668
981	ATV's	41.01080	ATV Kubota RTVX1140WL-H	2019	30434
981	ATV's	41.01090	ATV Kubota RTVX1140WL-H	2019	30432

Form **W-9**
(Rev. October 2018)
Department of the Treasury
Internal Revenue Service

Request for Taxpayer Identification Number and Certification

▶ Go to *www.irs.gov/FormW9* for instructions and the latest information.

Give Form to the requester. Do not send to the IRS.

Print or type. See Specific Instructions on page 3.

1 Name (as shown on your income tax return). Name is required on this line; do not leave this line blank.
Vecellio Group, Inc.

2 Business name/disregarded entity name, if different from above
Ranger Construction Industries, Inc.

3 Check appropriate box for federal tax classification of the person whose name is entered on line 1. Check only one of the following seven boxes.

☐ Individual/sole proprietor or single-member LLC ☐ C Corporation ☑ S Corporation ☐ Partnership ☐ Trust/estate

☐ Limited liability company. Enter the tax classification (C=C corporation, S=S corporation, P=Partnership) ▶

Note: Check the appropriate box in the line above for the tax classification of the single-member owner. Do not check LLC if the LLC is classified as a single-member LLC that is disregarded from the owner unless the owner of the LLC is another LLC that is not disregarded from the owner for U.S. federal tax purposes. Otherwise, a single-member LLC that is disregarded from the owner should check the appropriate box for the tax classification of its owner.

☐ Other (see instructions) ▶

4 Exemptions (codes apply only to certain entities, not individuals; see instructions on page 3):

Exempt payee code (if any)

Exemption from FATCA reporting code (if any)

(Applies to accounts maintained outside the U.S.)

5 Address (number, street, and apt. or suite no.) See instructions.
1645 N Congress Ave

Requester's name and address (optional)

6 City, state, and ZIP code
West Palm Beach, FL 33409

7 List account number(s) here (optional)

Part I Taxpayer Identification Number (TIN)

Enter your TIN in the appropriate box. The TIN provided must match the name given on line 1 to avoid backup withholding. For individuals, this is generally your social security number (SSN). However, for a resident alien, sole proprietor, or disregarded entity, see the instructions for Part I, later. For other entities, it is your employer identification number (EIN). If you do not have a number, see *How to get a TIN*, later.

Note: If the account is in more than one name, see the instructions for line 1. Also see *What Name and Number To Give the Requester* for guidelines on whose number to enter.

Social security number
☐☐☐ – ☐☐ – ☐☐☐☐

or

Employer identification number
5 9 – 2 0 9 8 6 6 2

Part II Certification

Under penalties of perjury, I certify that:

1. The number shown on this form is my correct taxpayer identification number (or I am waiting for a number to be issued to me); and
2. I am not subject to backup withholding because: (a) I am exempt from backup withholding, or (b) I have not been notified by the Internal Revenue Service (IRS) that I am subject to backup withholding as a result of a failure to report all interest or dividends, or (c) the IRS has notified me that I am no longer subject to backup withholding; and
3. I am a U.S. citizen or other U.S. person (defined below); and
4. The FATCA code(s) entered on this form (if any) indicating that I am exempt from FATCA reporting is correct.

Certification instructions. You must cross out item 2 above if you have been notified by the IRS that you are currently subject to backup withholding because you have failed to report all interest and dividends on your tax return. For real estate transactions, item 2 does not apply. For mortgage interest paid, acquisition or abandonment of secured property, cancellation of debt, contributions to an individual retirement arrangement (IRA), and generally, payments other than interest and dividends, you are not required to sign the certification, but you must provide your correct TIN. See the instructions for Part II, later.

Sign Here Signature of U.S. person ▶ Pamela Passaming Date ▶ 10/03/2022

General Instructions

Section references are to the Internal Revenue Code unless otherwise noted.

Future developments. For the latest information about developments related to Form W-9 and its instructions, such as legislation enacted after they were published, go to *www.irs.gov/FormW9*.

Purpose of Form

An individual or entity (Form W-9 requester) who is required to file an information return with the IRS must obtain your correct taxpayer identification number (TIN) which may be your social security number (SSN), individual taxpayer identification number (ITIN), adoption taxpayer identification number (ATIN), or employer identification number (EIN), to report on an information return the amount paid to you, or other amount reportable on an information return. Examples of information returns include, but are not limited to, the following.

- Form 1099-INT (interest earned or paid)
- Form 1099-DIV (dividends, including those from stocks or mutual funds)
- Form 1099-MISC (various types of income, prizes, awards, or gross proceeds)
- Form 1099-B (stock or mutual fund sales and certain other transactions by brokers)
- Form 1099-S (proceeds from real estate transactions)
- Form 1099-K (merchant card and third party network transactions)
- Form 1098 (home mortgage interest), 1098-E (student loan interest), 1098-T (tuition)
- Form 1099-C (canceled debt)
- Form 1099-A (acquisition or abandonment of secured property)

Use Form W-9 only if you are a U.S. person (including a resident alien), to provide your correct TIN.

If you do not return Form W-9 to the requester with a TIN, you might be subject to backup withholding. See What is backup withholding, *later.*

Florida Department of Transportation

RON DESANTIS
GOVERNOR

605 Suwannee Street
Tallahassee, FL 32399-0450

JARED W. PERDUE, P.E.
SECRETARY

April 25,2023

RANGER CONSTRUCTION INDUSTRIES, INC.
1645 N CONGRESS AVE
WEST PALM BEACH, FLORIDA 33409

RE: CERTIFICATE OF QUALIFICATION

The Department of Transportation has qualified your company for the type of work indicated below.

FDOT APPROVED WORK CLASSES:
DEBRIS REMOVAL (EMERGENCY), DRAINAGE, ELECTRICAL WORK, FENCING, FLEXIBLE PAVING, GRADING, GRASSING, SEEDING AND SODDING, GUARDRAIL, HOT PLANT-MIXED BITUM. COURSES, INTERMEDIATE BRIDGES, MINOR BRIDGES, PORTLAND CEMENT CONCRETE ROADWAY PAVING, ROADWAY SIGNING, SIDEWALK, TRAFFIC SIGNAL, UNDERGROUND UTILITY AND RIP RAP.

Unless notified otherwise, this Certificate of Qualification will expire **6/30/2024**.

In accordance with Section 337.14(4), Florida Statutes, changes to Ability Factor or Maximum Capacity Rating will not take effect until after the expiration of the current certificate of prequalification (if applicable).

In accordance with Section 337.14(1), Florida Statutes, an application for qualification must be filed within (4) months of the ending date of the applicant's audited annual financial statements.

If the company's maximum capacity has been revised, it may be accessed by logging into the Contractor Prequalification Application System via the following link:
HTTPS://fdotwp1.dot.state.fl.us/ContractorPreQualification

Once logged in, select "View" for the most recently approved application, and then click the "Manage" and "Application Summary" tabs.

The company may apply for a Revised Certificate of Qualification at any time prior to the expiration date of this certificate according to Section 14-22.0041(3), Florida Administrative Code (F.A.C.), by accessing the most recently approved application as shown above and choosing "Update" instead of "View." If certification in additional classes of work is desired, documentation is needed to show that the company has performed such work.

All prequalified contractors are required by Section 14-22.006(3), F.A.C., to certify their work underway monthly in order to adjust maximum bidding capacity to available bidding capacity. You can find the link to this report at the website shown above.

Sincerely,

James E. Taylor II

James E. Taylor II, Prequalification Supervisor
Contracts Administration Office

JTII:cg

Ron DeSantis, Governor

Melanie S. Griffin, Secretary

Florida dbpr

STATE OF FLORIDA
DEPARTMENT OF BUSINESS AND PROFESSIONAL REGULATION

CONSTRUCTION INDUSTRY LICENSING BOARD

THE GENERAL CONTRACTOR HEREIN IS CERTIFIED UNDER THE PROVISIONS OF CHAPTER 489, FLORIDA STATUTES

KRACUNAS, MICHAEL B

RANGER CONSTRUCTION INDUSTRIES, INC.
1645 NORTH CONGRESS AVENUE
WEST PALM BEACH FL 33409

LICENSE NUMBER: CGC031554

EXPIRATION DATE: AUGUST 31, 2024

Always verify licenses online at MyFloridaLicense.com

Do not alter this document in any form.

This is your license. It is unlawful for anyone other than the licensee to use this document.

CITY OF WINTER GARDEN
300 WEST PLANT STREET
WINTER GARDEN, FL 34787
P. 407.656.4111
WWW.WINTERGARDEN-FL.GOV

WINTER GARDEN • Where good things grow

LOCAL BUSINESS TAX RECEIPT FOR CITY OF WINTER GARDEN

Business Name:	RANGER CONSTRUCTION INDUSTRIES	**Location:**	**1200 ELBOC WAY**
Receipt No:	24-00000189	**Class:**	MANUFACTURER/FABRTR/ASMBLR - > 30 EMPLOY
Tax/Add'tl Tax:	**$ 286.66 $**	**Issue Date:**	August 09, 2023
Late Penalty:	**$ 0.00**	**Expires:**	**September 30, 2024**
Total Paid:	**$0.00**	**Restrictions:**	**MUST COMPLY WITH LOCAL BUSINESS TAX REQUIREMENTS**
		Comments:	

RANGER CONSTRUCTION INDUSTRIES
1645 NORTH CONGRESS AVE

WEST PALM BEACH FL 33409

BUSINESS TAX RECEIPT MUST BE POSTED IN CONSPICUOUS PLACE AT ALL TIMES.

*****PLEASE NOTE THE TOP PORTION IS YOUR LOCAL BUSINESS TAX RECEIPT AND IS PAID THRU SEPTEMBER 30th OF NOTED YEAR ABOVE *****

1. Business Tax Year is from October 1st through September 30th. Tax fees are prorated after April 1st as a half-year fee.

2. All **new** commercial business tax **must** be inspected by the Fire Department to meet all applicable state and city code requirements. You will be contacted to make arrangements for your inspection by the City Fire Inspector.

3. An Orange County Business Tax must be registered and paid **AFTER YOU HAVE BEEN ISSUED THE WINTER GARDEN BUSINESS TAX RECEIPT**. They are located at 200 S. Orange Ave, 16th Floor- Suite 1600, Orlando, FL 32801 and their office phone number is (407) 434-0312.

Tax Collector Scott Randolph **Local Business Tax Receipt** **Orange County, Florida**

2023 **EXPIRES** **9/30/2024** 2600-0049122

2600 MFG-ASPHALT $140.00 75 EMPLOYEES

TOTAL TAX	$140.00
REGULATED WASTE	$50.00
PREVIOUSLY PAID	$190.00
TOTAL DUE	$0.00

VECELLIO JR LEO A CEO

RANGER CONSTRUCTION
INDUSTRIES INC
1645 N CONGRESS AVE
WEST PALM BCH FL 33409

1200 ELBOC WY
C - WINTER GARDEN, 34787

PAID: $190.00 0098-01111639 7/19/2023

Tax Collector Scott Randolph **Local Business Tax Receipt** **Orange County, Florida**

This local Business Tax Receipt is in addition to and not in lieu of any other tax required by law or municipal ordinance. Businesses are subject to regulation of zoning, health and other lawful authorities. This receipt is valid from October 1 through September 30 of receipt year. **Delinquent penalty is added October 1.**

2023 **EXPIRES** **9/30/2024** 2600-0049122

2600 MFG-ASPHALT $140.00 75 EMPLOYEES

TOTAL TAX	$140.00
REGULATED WASTE	$50.00
PREVIOUSLY PAID	$190.00
TOTAL DUE	$0.00

VECELLIO JR LEO A CEO

RANGER CONSTRUCTION
INDUSTRIES INC
1645 N CONGRESS AVE
WEST PALM BCH FL 33409

1200 ELBOC WY
C - WINTER GARDEN, 34787

PAID: $190.00 0098-01111639 7/19/2023

SCOTT RANDOLPH, TAX COLLECTOR • ORANGE COUNTY, FLORIDA •

This receipt is official when validated by the Tax Collector.

Orange County Code requires this local Business Tax Receipt to be displayed conspicuously at the place of business in public view. It is subject to inspection by all duly authorized officers of the County.

CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY): 4/20/2023

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER
George H. Friedlander Company
1566 Kanawha Blvd. E.
Charleston WV 25311

CONTACT NAME: William Phelps
PHONE (A/C, No, Ext): 561-762-5118 FAX (A/C, No): 321-988-0209
E-MAIL ADDRESS: billphelps@friedlandercompany.com

INSURER(S) AFFORDING COVERAGE	NAIC #
INSURER A: TRAVELERS IND CO OF CT	25682
INSURER B: Travelers Property Casualty Co of Amer	25674
INSURER C: CHARTER OAK FIRE INS CO	25615
INSURER D:	
INSURER E:	
INSURER F:	

INSURED
Ranger Construction
Industries, Inc.
1200 Elboc Way
Winter Garden FL 33411

RANG002

COVERAGES **CERTIFICATE NUMBER:** 1304687740 **REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
C	X COMMERCIAL GENERAL LIABILITY			CO-5807B217-23	4/1/2023	4/1/2024	EACH OCCURRENCE	$ 1,000,000
	CLAIMS-MADE X OCCUR						DAMAGE TO RENTED PREMISES (Ea occurrence)	$ 500,000
							MED EXP (Any one person)	$ 10,000
							PERSONAL & ADV INJURY	$ 1,000,000
	GEN'L AGGREGATE LIMIT APPLIES PER:						GENERAL AGGREGATE	$ 2,000,000
	POLICY PRO-JECT LOC						PRODUCTS - COMP/OP AGG	$ 2,000,000
	OTHER:							$
A	AUTOMOBILE LIABILITY			CAP-5807B186-23	4/1/2023	4/1/2024	COMBINED SINGLE LIMIT (Ea accident)	$ 1,000,000
	X ANY AUTO						BODILY INJURY (Per person)	$
	OWNED AUTOS ONLY / SCHEDULED AUTOS						BODILY INJURY (Per accident)	$
	X HIRED AUTOS ONLY / X NON-OWNED AUTOS ONLY						PROPERTY DAMAGE (Per accident)	$
								$
B	X UMBRELLA LIAB / X OCCUR			CUP-5809B407-23	4/1/2023	4/1/2024	EACH OCCURRENCE	$ 5,000,000
	EXCESS LIAB / CLAIMS-MADE						AGGREGATE	$ 5,000,000
	DED RETENTION $							$
C	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY			UB-8L888782-23	4/1/2023	4/1/2024	X PER STATUTE / OTH-ER	
	ANYPROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) Y/N: N	N/A					E.L. EACH ACCIDENT	$ 1,000,000
	If yes, describe under DESCRIPTION OF OPERATIONS below						E.L. DISEASE - EA EMPLOYEE	$ 1,000,000
							E.L. DISEASE - POLICY LIMIT	$ 1,000,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

CERTIFICATE HOLDER

Evidence of Insurance

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

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The ACORD name and logo are registered marks of ACORD

State of Florida

Department of State

I certify the attached is a true and correct copy of the Articles of Incorporation, as amended to date, of RANGER CONSTRUCTION INDUSTRIES, INC., a corporation organized under the laws of the State of Florida, as shown by the records of this office.

The document number of this corporation is F40180.

Given under my hand and the Great Seal of the State of Florida, at Tallahassee, the Capital, this the Seventeenth day of April, 1996

Sandra B. Mortham

Sandra B. Mortham
Secretary of State

CR2E022 (2-95)

Detail by Entity Name

Florida Profit Corporation
RANGER CONSTRUCTION INDUSTRIES, INC.

Filing Information

Document Number	F40180
FEI/EIN Number	59-2098662
Date Filed	06/10/1981
Effective Date	06/08/1981
State	FL
Status	ACTIVE
Last Event	CORPORATE MERGER
Event Date Filed	12/27/2010
Event Effective Date	12/31/2010

Principal Address

1645 N CONGRESS AVE
WEST PALM BCH, FL 33409

Changed: 10/04/2022

Mailing Address

1645 N CONGRESS AVE
WEST PALM BCH, FL 33409

Changed: 10/04/2022

Registered Agent Name & Address

BROWNING, DOUGLAS
101 SANSBURY'S WAY
WEST PALM BEACH, FL 33411

Name Changed: 08/25/2010

Address Changed: 01/27/2009

Officer/Director Detail

Name & Address

Title ST

BROWNING, DOUGLAS J

1645 N CONGRESS AVE
WEST PALM BCH, FL 33411

Title PRESIDENT

SCHAFER, ROBERT
1645 N CONGRESS AVE
WEST PALM BCH, FL 33409

Title VP

FRANK, SCOTT
1645 N CONGRESS AVE
WEST PALM BEACH, FL 33409

Title CHAIRMAN, CEO

VECELLIO JR, LEO A
1645 N CONGRESS AVE
WEST PALM BEACH, FL 33409

Title VP

Fowler, Frank Scott
101 SANSBURY'S WAY
WEST PALM BCH, FL 33411

Title VP

VECELLIO, MICHAEL A
1645 N CONGRESS AVE
WEST PALM BCH, FL 33409

Title VP

VECELLIO, CHRISTOPHER S
1645 N CONGRESS AVE
WEST PALM BCH, FL 33409

Title VP

VECELLIO, KATHRYN C
1645 N CONGRESS AVE
WEST PALM BCH, FL 33409

Title SR VICE PRESIDENT-FINANCE

SMITH, ROBERT D
1645 N CONGRESS AVE
WEST PALM BCH, FL 33409

Title CHIEF ESTIMATOR-CENTRAL, ASST. SECRETARY

SKUBAL, STEVE
1645 N CONGRESS AVE
WEST PALM BCH, FL 33409

Title ASST SECRETARY

FOWLER, RICHARD
1645 N CONGRESS AVE
WEST PALM BCH, FL 33409

Title ASST SECRETARY

YODER, WILLIAM
1645 N CONGRESS AVE
WEST PALM BCH, FL 33409

Title ASST TREASURER, ASST SECRETARY

GWINN, L.L.
1645 N CONGRESS AVE
WEST PALM BCH, FL 33409

Title ASST. SECRETARY

KRACUNAS, MICHAEL
1645 N CONGRESS AVE
WEST PALM BCH, FL 33409

Title BRANCH OPERATIONS MANAGER

FLYNN, PATRICK
1645 N CONGRESS AVE
WEST PALM BCH, FL 33409

Title CHIEF ESTIMATOR-SOUTH, ASST SECRETARY

ELLIS, BRIAN
1645 N CONGRESS AVE
WEST PALM BCH, FL 33409

Title VP

TIMMING, JAMIE R
1645 N CONGRESS AVE
WEST PALM BEACH, FL 33409

Title ASST. SECRETARY

MERRICK, MAUREEN F
1645 N CONGRESS AVE
WEST PALM BCH, FL 33409

Title ASST. SECRETARY

SULLIVAN, MICHAEL
1645 N CONGRESS AVE
WEST PALM BCH, FL 33409

Annual Reports

Report Year	Filed Date
2020	05/15/2020
2021	04/28/2021
2022	04/27/2022

Document Images

04/27/2022 -- ANNUAL REPORT	View image in PDF format
04/28/2021 -- ANNUAL REPORT	View image in PDF format
10/27/2020 -- AMENDED ANNUAL REPORT	View image in PDF format
05/15/2020 -- ANNUAL REPORT	View image in PDF format
01/30/2019 -- ANNUAL REPORT	View image in PDF format
04/23/2018 -- ANNUAL REPORT	View image in PDF format
08/02/2017 -- AMENDED ANNUAL REPORT	View image in PDF format
01/18/2017 -- ANNUAL REPORT	View image in PDF format
01/23/2016 -- ANNUAL REPORT	View image in PDF format
03/26/2015 -- ANNUAL REPORT	View image in PDF format
01/08/2014 -- ANNUAL REPORT	View image in PDF format
01/28/2013 -- ANNUAL REPORT	View image in PDF format
04/30/2012 -- ANNUAL REPORT	View image in PDF format
02/24/2011 -- ANNUAL REPORT	View image in PDF format
12/27/2010 -- Merger	View image in PDF format
08/25/2010 -- Reg. Agent Change	View image in PDF format
01/08/2010 -- ANNUAL REPORT	View image in PDF format
01/27/2009 -- ANNUAL REPORT	View image in PDF format
03/03/2008 -- ANNUAL REPORT	View image in PDF format
03/26/2007 -- ANNUAL REPORT	View image in PDF format
02/22/2007 -- ANNUAL REPORT	View image in PDF format
02/17/2006 -- ANNUAL REPORT	View image in PDF format
02/16/2005 -- ANNUAL REPORT	View image in PDF format
03/01/2004 -- ANNUAL REPORT	View image in PDF format
02/19/2003 -- ANNUAL REPORT	View image in PDF format
02/19/2002 -- ANNUAL REPORT	View image in PDF format
01/31/2001 -- ANNUAL REPORT	View image in PDF format
02/14/2000 -- ANNUAL REPORT	View image in PDF format
03/22/1999 -- ANNUAL REPORT	View image in PDF format
03/12/1998 -- ANNUAL REPORT	View image in PDF format
02/11/1997 -- ANNUAL REPORT	View image in PDF format
03/07/1996 -- ANNUAL REPORT	View image in PDF format

03/22/1995 -- ANNUAL REPORT

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Florida Department of State, Division of Corporations

Ranger Construction

0

DRUG AND ALCOHOL-FREE WORKPLACE POLICY

Ranger Construction Industries, Inc ("Ranger"), is committed to maintaining a work environment that is free from the influence of both illegal drugs and Alcohol. This commitment is designed to help protect the health, safety, and wellbeing of our employees, visitors, customers, applicants for employment, temporary/contingent workers, and the like. This policy applies to all employees and applicants for employment (hereinafter collectively "Covered Persons"). In support of this effort, Ranger has adopted this Drug and Alcohol-Free Workplace Policy for all non-DOT full-time, part-time, hourly, salaried, temporary, and contingent workers at all Ranger locations. Because substance abuse at or away from work can seriously endanger the safety of employees and render it impossible to supply top-quality products and service, Ranger has also implemented a formal Employee Assistance Program to help employees in this capacity.

To this end, Ranger has adopted a comprehensive list of guidelines designed to maintain a drug and Alcohol-free workplace and to ensure compliance with all applicable regulations and requirements. Facets of this program may also extend to contractors and other persons conducting work on behalf of the Company.

Ranger will enforce this policy in a manner that is consistent with applicable federal, state, and local law.

This policy is effective 11/01/21 and supersedes any prior policy as well as other written or oral statements or representations by Ranger that are inconsistent with this policy.

Please note: this policy in no way guarantees employment for a certain period of time or otherwise alters an at-will employment relationship with Ranger.

Definitions: For purposes of this policy, the following capitalized words and terms mean:

1. **Illegal Drug** - means any drug or controlled substance that is not legally obtainable under both applicable state and federal law without a valid prescription, including, but not limited to, amphetamines, barbiturates, benzodiazepines, cocaine, designer drugs, hallucinogens, marijuana, methaqualone, opioids (opiates, such as heroin, codeine, morphine, and semi-synthetic/synthetic opioids, such as hydrocodone, hydromorphone, oxycodone, oxymorphone, and methadone), phencyclidine (PCP), propoxyphene, and/or any substances and/or materials that are prohibited by federal or applicable state regulations.

2. **Alcohol** – means a colorless volatile flammable liquid that is produced by the natural fermentation of sugars or other substances and is the intoxicating constituent of wine, beer, spirits, and other drinks, and is an industrial solvent and as fuel. This definition includes any beverage in a liquid form which contains not less than one-half of one percent of Alcohol by volume and is intended for human consumption, as well as any surrogate Alcohol, homemade Alcohol, illicit Alcohol, unrecorded Alcohol, and non-beverage Alcohol not intended for human consumption but which are consumed for purposes of becoming intoxicated.

3. **Under the Influence** – means the presence of any Illegal Drugs, Unauthorized Substance, or Alcohol that has been consumed by a Covered Person, and includes actions, appearance, speech, or bodily odors that reasonably cause Ranger to conclude that a Covered Person is impaired because of Illegal Drug use, Alcohol use, or misuse of legal drugs (prescription and possibly over the counter drugs).

4. **Premises or Property** – means buildings, parking lots, vehicles owned or leased by Ranger or used for Ranger purposes, work facilities and plants, warehouses, equipment, or land used by Ranger, or its customers or suppliers.

5. **Safety-Sensitive Positions** - means positions that require tasks involving a potential risk of injury to self or others, or as otherwise defined by applicable federal, state, or local law. Any Covered Persons responsible for operating a company or stipend vehicle or for the health, safety, and welfare of Ranger employees are also considered to work in a Safety-Sensitive Position. *See* Appendix A.

6. **Unauthorized Substances** – means over-the-counter or prescription drugs used, possessed, purchased, obtained, transferred, dispensed, trafficked, sold, or distributed in violation of this policy. *See* "Prohibitions" number 4 (A) – (D) below. Unauthorized substances also include substances that cause drug-like effects, but which may not necessarily be illegal under applicable laws, used for a purpose other than their intended purpose (e.g. specifically including the inhalation of intoxicating substances, such as nitrous oxide, glue, cleaning products, etc.), and used in an unsafe manner or quantity so as to impair the employee's ability to safely and adequately perform his/her job responsibilities.

Prohibitions: Covered Persons are prohibited from engaging in the conduct outlined in this section:

1. Covered Persons are prohibited from reporting to work, being on Ranger Premises or Property, or performing work (on or off Ranger Premises or Property or Customer Premises or Property) while under the influence of Alcohol, Illegal Drugs, and/or Unauthorized Substances. The presence of any consumed Alcohol in Covered Person's system, regardless of when consumed, may be subject to disciplinary action in accordance with this policy.

2. Covered Persons are prohibited from applying for employment, reporting to work, being on Ranger Premises or Property, or performing work (on or off Ranger Premises or Property) with Alcohol in his/her system sufficient to yield a positive Alcohol test result and/or with Illegal Drugs (and/or drug metabolites) in his/her system which meets or exceeds nationally accepted standards for determining detectable levels of controlled substances as adopted by the federal Substance Abuse and Mental Health Services Administration or applicable state law.

3. Covered Persons are prohibited from using, possessing, purchasing, selling, manufacturing, transferring, dispensing, trafficking, or distributing (or attempting to use, possess, purchase, transfer, dispense, traffic, or distribute) Alcohol, Illegal Drugs, and/or Unauthorized Substances, including related paraphernalia, in any amount, in any manner, or at any time, on Ranger Premises or Property, or while performing work (on or off Ranger Premises or Property).

4. Covered Persons are prohibited from using, possessing, purchasing, transferring, dispensing, trafficking, or distributing (or attempting to use, possess, purchase, transfer, dispense, traffic, or distribute) over-the-counter, or prescription drugs on Ranger Premises or Property, or while performing work, as set forth below. Specifically, Covered Persons are prohibited from using, possessing, purchasing, selling, transferring, dispensing, trafficking, or distributing (or attempting to use, possess, purchase, sell, transfer, dispense, traffic, or distribute):
    a. prescription drugs that are not prescribed to the Covered Person and/or prescribed on an invalid or non-current prescription;
    b. prescription drugs that are prescribed to the Covered Person at non-therapeutic levels or used in a manner or quantity other than as set forth in the prescription;
    c. over-the-counter drugs in a manner or quantity other than set forth in the directions; or
    d. over-the-counter or prescription drugs in an unsafe manner.

5. Covered Persons are prohibited from refusing to provide an adequate drug or Alcohol test sample/specimen without a valid medical basis, refusing to cooperate during collection or testing, or failing to report (or report promptly) to the collection site without a legitimate reason.

6. Covered Persons are prohibited from providing an altered, adulterated, diluted, or substituted drug or Alcohol test sample or specimen. Covered Persons are prohibited from using a device or substance to interfere or attempt to interfere with a drug or Alcohol test.

7. Excepting the need for first-aid or emergency medical care (or where otherwise provided by law), Covered Persons asked to submit to a post-accident or reasonable suspicion Alcohol or drug test are prohibited from using Alcohol or drugs (including over-the-counter or prescription drugs) for eight (8) hours following the accident or

determination of reasonable suspicion, or until the Covered Person undergoes an Alcohol or drug test, whichever occurs first.

8. Covered Persons are prohibited from failing or refusing to report a conviction for a drug-related offense within five (5) days of such conviction, even if the activities giving rising to the conviction did not occur on Ranger Premises or Property, or while performing work for Ranger.

Marijuana: Note that it is Ranger's intention to comply with all applicable federal, state, and local laws. Where state and federal law differ, however, Ranger will comply with federal law, except where otherwise provided. For example, some state laws permit the use and possession of marijuana for medical and/or non-medical purposes, but federal law does not. In the absence of state law to the contrary, Ranger considers marijuana to be an Illegal Drug for purposes of this policy in *all* states – even those states that allow for medical and/or non-medical use.[1] Moreover, even if an individual's use of marijuana may otherwise be permissible under state law, the use or possession of marijuana or being under the influence or impaired by marijuana on Ranger Premises or Property or while on Ranger business is strictly prohibited.

Alcohol Use at Ranger Events: Alcohol is served at certain Ranger sponsored events and/or business-related activities. At those events, Alcohol consumption by Covered Persons (in moderation) does not violate the terms of this policy so long as the Covered Person exercises good judgment and so long as the Covered Person acts in a lawful, safe, professional, and responsible manner at all times.

Appropriate Use of Prescription Medication

Covered Persons' proper use of over-the-counter medication or medication that has been prescribed by a physician for that Covered Person is not prohibited by this policy. It is each Covered Person's responsibility to check with a physician regarding whether the use of any medication may adversely affect performance or safety at work. Ranger does not unlawfully discriminate against employees or applicants on the basis of disability. *Employees and applicants who seek a reasonable accommodation due to an underlying disability are encouraged to submit any requests to the Human Resources Department.*

A Covered Person who is using or tests positive for a prescription drug for which he/she has a valid prescription, but which drug use may pose a direct threat to the employee or others in the workplace (or which otherwise adversely affects the employee's job performance), may be subject to further assessment. In such cases, Ranger will conduct an individualized assessment of the individual's ability to perform the essential functions of the job in question while utilizing such drug without posing a direct threat to the health or safety of the employee or others in the workplace, before taking any further action related to the employee's employment.

Medication Disclosure

Covered Persons in Safety-Sensitive Positions who are taking a drug or medication which adversely affects, or which may reasonably be expected to adversely affect, the Covered Person's ability to perform work in a safe and productive manner, are required to promptly report the use of such drug and/or medication to the Safety Department using the Medications Disclosure Form and Authorization for Release of Information attached hereto. *See* Appendix B. When making such a disclosure, Covered Persons need not disclose any underlying medical condition unless specifically requested by safety personnel or the Human Resources Department for purposes of evaluating reasonable accommodations for a Covered Person's disability. Such disclosures will be, to the extent appropriate, treated confidentially by Ranger. This Medications Disclosure Form is job-related and consistent with business necessity.

[1] Ranger will not discriminate against Covered Persons based on their status as a patient enrolled in a medical cannabis registry program in those states where applicable and will not discriminate against patients enrolled in State authorized medical cannabis registry programs who test positive for cannabis components or metabolites. Notwithstanding, Covered Persons shall not use, possess, or be impaired by cannabis on Ranger Premises or Property during working hours.

Upon receipt of the completed Medications Disclosure Form, the Safety Department, and where appropriate, the Covered Person, the Covered Person's physician, Ranger's Medical Review Officer ("MRO"), and/or the Covered Person's supervisor(s), will determine the appropriate response consistent with applicable law.

Non-Discrimination

In accordance with the Americans with Disabilities Act and state anti-discrimination laws, Ranger does not discriminate against any Covered Person who is a qualified individual with a disability, who is not currently using Illegal Drugs, and who has either successfully completed a rehabilitation program, or who may be currently participating in a supervised rehabilitation program and is no longer using Illegal Drugs. A current disability of any kind, however, does not entitle an employee and/or job applicant to violate any provisions of this policy.

Drug and Alcohol Testing Procedures

Testing

Ranger will perform drug and Alcohol testing on Covered Persons in a manner consistent with applicable law. Ranger may test for the presence of some or all substances defined above as Illegal Drugs and/or Alcohol. The following are the types of testing that Ranger may employ:

1. **Pre-Employment/Post-Offer Testing:** Individuals extended a conditional offer of employment may, as a prerequisite to their employment with Ranger, be required to submit to a drug test.

2. **Post-Accident Testing:** Covered Persons will be subject to Post-accident drug testing when any accident results in a fatality, requires medical attention beyond first aid or results in lost work time, caused property damage (including damage to vehicles owned or leased by Ranger or being used for Ranger purposes) in a significant amount, or involved a Ranger customer or client. Covered Persons may be Alcohol tested when there is a reasonable suspicion that Alcohol use may have been a contributing factor to the injury or accident.

   Testing under this section will be undertaken as soon as practicable after the reported injury or accident and administered to Covered Persons who Ranger reasonably believes may have contributed to the injury or accident. Testing under this section will be applied in a neutral fashion, to foster a safe work environment, and will only be undertaken to identify drug or Alcohol use in the recent past. Testing under this section will not be undertaken to retaliate against employees for reporting workplace injuries. Employees who have been required to submit to a test as set forth above as a result of an accident will not be allowed to return to work until the results of the test become available to Ranger and it is determined by Ranger that those Employees may return to work in accordance with this policy.

3. **Reasonable Suspicion/For Cause Testing:** Covered Persons will be drug/Alcohol tested when there is a reasonable belief based on specific facts and rational inferences drawn from those facts that a Covered Person is engaged in the inappropriate or illegal use of drugs/Alcohol and/or has violated this policy (where permitted by applicable law). Such specific facts and reasonable inferences would include, but are not limited to, contemporaneous, articulable observations concerning the appearance, behavior, speech, or body odors of a Covered Person. Such specific facts and reasonable inferences should, when possible, be observed by two (2) or more people. Such persons will not be allowed to drive themselves to a clinic for drug/Alcohol testing or return to work until the results of the drug/Alcohol test become available to Ranger.

4. **Random Testing:** Covered Persons will be subject to random, unannounced drug and Alcohol testing, in accordance with applicable state and/or federal law. *See* Appendix A. All Covered Persons subject to the above testing are selected randomly by an independent contractor and will have an equal probability of being neutrally selected for such testing.

Testing Procedures
Drug or Alcohol test samples/specimens (typically breath in the case of Alcohol and typically urine, oral fluid, or hair in the case of drugs) will be collected in private by a certified collector approved by Ranger.[2] The collector will maintain appropriate chain of custody procedures and documentation. All reasonable attempts will be made to protect the privacy of individuals providing drug/Alcohol samples/specimens and sample collection shall be conducted in accordance with applicable federal, state, or local law.[3]

Immediately after Ranger determines that a Covered Person shall be tested, a Ranger representative will direct or escort the Covered Person to a collection site or certified collector to facilitate the collection of the appropriate specimen.

Ranger will pay the full cost of any testing it has requested or required of a Covered Person.

Ranger will normally schedule testing of currently employed Covered Persons during, or immediately before or after, a regular work period. Time spent complying with testing required by Ranger under this policy is considered work time for purposes of compensation and benefits.

Testing Results
A Covered Person shall not be deemed to be positive on a drug or Alcohol test until the Covered Person's sample/specimen has been subject to confirmatory testing. The confirmatory test will be by gas chromatography mass spectrometry where required by applicable law or by another comparably reliable analytical method.[4] Confirmatory testing will be conducted by a laboratory certified in accordance with applicable federal, state, or local law.

A drug test will be considered positive when the screening levels established by the testing laboratory are exceeded.[5] Information regarding the screening cutoff levels for various drugs will be made available upon request.

Positive test results (or results determined to be adulterated, diluted, or substituted) will be communicated to Ranger's Medical Review Officer (MRO). On receipt of positive test results (or results determined to be adulterated, diluted, or substituted), the MRO will inform the Covered Person of the positive test results and discuss the results with the Covered Person. In this discussion, the MRO will provide the Covered Person with an opportunity, in confidence, to provide a medical explanation for the result (including the opportunity to identify prescription and non-prescription drug use), the opportunity to contest/rebut the positive test result, and/or the opportunity to provide any information the Covered Person feels is relevant.[6] After speaking with the Covered Person, the MRO will report the results to Ranger as appropriate. Ranger will then make a determination regarding the appropriate response to the positive test results, which may include disciplinary action, up to and including termination of employment.

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[2] In North Carolina, Covered Persons will receive written notice of their rights under the State's controlled substance testing statute and regulations at the time the individual provides any sample for controlled substance testing.

[3] In Virginia, testing shall be performed, and a sample collected, in accordance with scientifically recognized standards by a laboratory accredited by the United States Department of Health and Human Services, the College of American Pathology, or the American Association for Clinical Chemistry, or the equivalent.

[4] Screening, testing, and confirmation procedures for all Covered Persons subject to controlled substance testing under North Carolina law will comply with the requirements of the U.S. Department of Health and Human Services, 59 Federal Register No. 110, pages 29908 through 29931 (June 9, 1994), the requirements of the College of American Pathologists' (CAP) Forensic Urine Drug Test Inspection Checklist, and/or alternative procedures that meet the requirements of North Carolina's CSERA. Further, confirmation testing for all Covered Persons subject to controlled substance testing under North Carolina law will be done by the use of gas chromatography with mass spectrometry or an equivalent scientifically accepted method.

[5] In North Carolina, a Covered Person has the right to retest a confirmed positive sample of a controlled substance test at the same or another approved laboratory during the time which the sample is required to be retained under North Carolina law. The Covered Person must request the release of the sample in writing specifying to which approved laboratory the sample is to be sent. The Covered Person incurs all reasonable expenses for chain of custody procedures, shipping, and retesting of positive samples related to this request. Covered Persons in West Virginia have a right to request that a split sample be tested at another laboratory at the Covered Person's expense.

[6] In Alabama, a Covered Person who receives a positive confirmed test result may contest or explain the result to Ranger within five (5) working days after written notification of the positive test result. In Tennessee, a Covered Person may contest the results of a positive drug test within five (5) days of receiving written notice of the positive drug test result.

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Covered Persons wishing to contest/rebut a positive test result must utilize the process explained by the MRO. Covered Persons, at their own expense, may request another test be performed utilizing the original specimen submitted at the time the initial sample was collected. No new samples may be submitted. If the result of the retest is determined to be negative, the Company will reimburse the cost of the retest and reinstate the Covered Person's employment status.

The results of any and all drug or Alcohol tests will be maintained in secure (locked), confidential medical files, separate from personnel files. Ranger will not release any information regarding the test results outside of Ranger without the written consent of the individual tested, except as otherwise authorized or required by law. Covered Persons may obtain copies of all information and records relating to the Covered Persons' testing.

Forfeiture of Benefits
It is a condition of employment for all Covered Persons to comply with this policy and its prohibitions on the use of Alcohol, Illegal Drugs, and/or Unauthorized Substances.

Covered Persons are hereby on notice that those who are discharged for violating this policy may be ineligible for unemployment compensation benefits.

Covered Persons are further on notice that those who test positive on a drug or Alcohol test after suffering a workplace accident and those who refuse to submit to a drug and/or Alcohol test after suffering a workplace accident may be ineligible for workers' compensation benefits relating to any injury sustained as a result of the workplace accident.

Education and Training
To help employees and supervisors better understand the nature of the substance abuse problem and how it affects the workplace, as well as the terms and conditions of this policy, Ranger makes available educational materials and training sessions on an as-needed basis.

Employee Assistance Program
Ranger provides its employees with access to an Employee Assistance Program ("EAP") that can offer assistance for substance use. Specifically, the EAP can provide confidential information concerning the dangers of substance abuse and to help in obtaining counseling, treatment, and/or rehabilitation for drug or Alcohol abuse. Note that, unless required by law, Ranger does not pay for drug/Alcohol treatment and/or counseling services. Please refer to your medical provider for any benefits that may be offered for treatment and/or counseling services.

EAP eligibility information and EAP contact information can be obtained from Ranger's Human Resource Department.

Note that a Covered Person's first request for assistance from the EAP *before* drug or Alcohol testing required under this policy will not itself be used as the basis for disciplinary action. A Covered Person's request for assistance from the EAP *after* drug or Alcohol testing will not be a defense to the imposition of disciplinary action where a violation of this policy has already occurred.

Notification of Policy
Ranger will notify Covered Persons of this policy by: (a) statements in all recruiting ads; (b) notices posted at all hiring locations; (c) notices in all online career pages; (d) distributing this policy; and (e) making copies of this policy available for inspection by Covered Persons during regular business hours.

Acknowledgment and Consent
Any Covered Person subject to testing under this policy will be asked to sign a form acknowledging the procedures governing testing, and consenting to (1) the test for the purpose of determining the presence of Alcohol or drugs, and (2) the release to Ranger of medical information regarding the test results. *See* Appendix C. Refusal to sign the agreement and consent form, or to submit to the drug test, will result in the revocation of an applicant's job offer, or will subject an employee to disciplinary action, up to and including termination.

Reservation of Rights
Ranger reserves the right to administer this policy and interpret, change, or rescind the policy in whole or in part, with or without notice or consideration. In addition, changes to the applicable state and federal laws or regulations may require Ranger to modify or supplement the policy.

Questions
Covered Persons shall direct any questions about this policy to the Safety Department Safety Administrator at (561) 784-3541.

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APPENDIX A

Safety-Sensitive Positions identified, but not limited to:

Accountant-Accounting
Accountant-Finance
Administrator-3D Machine Cntrl
Administrator-Accounting
Administrator-Accounts Payable
Administrator-Contracts
Administrator-Cost
Administrator-Environmental
Administrator-Facilities
Administrator-Human Resources
Administrator-Payroll
Administrator-Purchasing
Administrator-Safety
Administrator-Trucking
Analyst-Marketing
Area Manager-Grade
Area Manager-Operations
Asphalt Raker
Assistant Controller-Finance
Asst Manager Dispatch-Scale Op
Asst Manager-Administration
Backhoe Operator-Grade
Backhoe Operator-Pipe
Backhoe Operator-Pit
Backhoe Operator-Pump Station
Beltman-Plant
Broom Operator-Asphalt
Bulldozer Operator-Grade
Carpenter
Carpenter Trainee-Bridge
Carpenter-Bridge
Carpenter-Lift Station
Carpenter-Seawall
Chief Estimator
Clerk-Accounting
Clerk-Accounts Payable
Clerk-Accounts Receivable
Clerk-Administration
Clerk-Contracts
Clerk-Estimating
Clerk-General
Clerk-Parts
Clerk-Payroll
Clerk-Purchasing

Clerk-Safety
Concrete Finisher
Controller-Finance
Coordinator-Accounts Payable
Coordinator-Estimating
Coordinator-Human Resources
Coordinator-Operations
Coordinator-Payroll
Coordinator-Project
Coordinator-Safety
Crane Operator-Bridge
Crane Operator-Sea Wall
Crusher Operator-Pit
Director-Asphalt Plant Ops
Director-Bio Diesel Marketing
Director-Business Development
Director-Communications
Director-Environmental
Director-Equipment
Director-Family Office
Director-Internal Audit
Director-Mechanical Services
Director-Operations
Director-Operations & Bus Dev
Director-Safety
Director-Terminal
Director-Training
Dispatcher-Scale Operations
Distributor Operator-Asphalt
Dock Man
Dock Man-CL I
Dock Man-CL II
Dragline Operator-Pit
Driver-Operations
Dump Truck Driver-Trucking
Earth MSE Wall Erector-Grade
Electrical Manager-Plant
Electrician Helper-Plant
Electrician-Plant
Electrician-Plant
Engineer-Estimating
Engineer-Field
Engineer-Project
Engineer-Quarries
Estimator
Estimator-Engineering
Excavator Rough-Grade

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Excavator-CL II Operator
Excavator-Grade
Executive Assistant
Flagger-Traffic Control
Flat Bed Driver-Trucking
Foreman-Asphalt
Foreman-Bridge
Foreman-Equipment
Foreman-Grade
Foreman-Milling
Foreman-Pipe
Foreman-Pit
Foreman-Plant
Foreman-Project
Foreman-Rail
Foreman-Shop
Foreman-Traffic Control
Foreman-Working Foreman
Foreman-Working Foreman
Fuel Truck Driver-Equipment
Fuel Truck Driver-Shop
General Counsel
Generalist-Human Resources
Gradall Operator-Grade
Greaser-Maintenance
Handyman-Maintenance
Industrial Painter
Instrument Person-Survey
Intern-Engineering
Janitor
Junior Project Manager
Laborer-Asphalt
Laborer-Bridge
Laborer-Carpenter Trainee
Laborer-CL III
Laborer-Facilities
Laborer-Grade
Laborer-Lift Station
Laborer-Mechanical Services
Laborer-Pipe
Laborer-Plant
Laborer-Pump Station
Laborer-Seawall
Laborer-Shop
Laborer-Terminal
Laborer-Traffic Control
Landscaper-General

Lead Carpenter
Lead Mechanic-Shop
Lead Operator-Terminal
Lead Person In Charge
Lead-Asphalt
Lead-Bridge
Lead-Grade
Lead-Lift Station
Lead-Mechanical Services
Lead-Pipe
Lead-Plant
Lead-Pump Station
Lead-Seawall
Lead-Trucking
Loader Operator-Asphalt
Loader Operator-Grade
Loader Operator-Pipe
Loader Operator-Pit
Loader Operator-Plant
Loader Operator-Rail
Loader Operator-Scale Ops
Lowboy Driver-Shop
Lowboy Driver-Trucking
Lubeman-Equipment
Maintenance Manager-Plant
Manager- Sales
Manager-Accounting
Manager-Accounts Payable
Manager-Accounts Receivable
Manager-Asphalt
Manager-Branch
Manager-Business Development
Manager-Commercial Services
Manager-Drone Surveying
Manager-Engineering
Manager-Environmental
Manager-Equipment
Manager-Facilities
Manager-Fleet
Manager-General
Manager-Human Resources
Manager-Marketing
Manager-Operations
Manager-Payroll
Manager-Plant
Manager-Project
Manager-Project

Manager-Quality Control
Manager-Safety
Manager-Shop
Manager-Terminal
Manager-Trucking
Mechanic Helper-Equipment
Mechanic Helper-Maintenance
Mechanic Helper-Plant
Mechanic Helper-Shop
Mechanic-Equipment
Mechanic-Field
Mechanic-Field-Shop
Mechanic-Plant
Mechanic-PM-Shop
Mechanic-Shop
Mill Operator-Asphalt
Motor Grader Op Trainee
Motor Grader Operator
Off Highway Truck Driver
Off Hwy Rear DumpTruck Driver
Off Road Driver-Trucking
Partsman-Shop
Party Chief-Survey
Paver Operator-Asphalt
Person In Charge
Pile Driver Operator-Bridge
Pilot
Pipelayer-CL II Laborer
Pipelayer-Pipe
Plant Operator
Plant Operator Trainee
Plant Operator-Asphalt
Presidenmt-Ranger Construction
President
President-Corporate
President-Hal Jones Contractor
President-Ranger Construction
President-Sharpe Brothers
President-Vecellio & Grogan
President-White Rock Quarries
Receptionist
Roller Operator-Asphalt
Roller Operator-Grade
Sales Representative
Screed Op Trainee-Asphalt
Screed Operator-Asphalt
Screenman-Plant

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Secretary&Treasurer-Corporate
Senior Manager-Project
Service Driver-Shop
Service Truck Driver-Asphalt
Service Truck Driver-Shop
Shuttle Buggy-Asphalt
Specialist-Traffic Control
Sr Accountant-Tax
Sr Clerk-Accounts Payable
Sr Crane Operator-Bridge
Sr Director-Engineering
Sr Estimator
Sr Manager-Plant
Sr Superintendent-Asphalt
Sr Technical Architect-IT Tech
Sr Technical Business Analyst
Sr Technical Manager-IT Tech
Sr Terminal Operator
Sr Vice President-Finance
Sr Vice President-Vecenergy
Steam Jenny-Equipment
Superintendent-Asphalt
Superintendent-Bridge
Superintendent-Equipment
Superintendent-Grade
Superintendent-Operations
Superintendent-Pipe
Superintendent-Plant
Superintendent-Project
Supervisor-General
Supervisor-Operations
Supervisor-Quality Control
Supervisor-Terminal
Systems Coordinator-IT Tech
Tanker Driver-Trucking
Tech Trainee-Quality Control
Technical Architect-IT Tech
Technical Business Analyst
Technical IT Support Manager
Technical Manager-IT Tech
Technical Support Specialist
Technical Trainer
Technician-Facilities
Technician-Field
Technician-Lab
Technician-Preventive Maint
Technician-Quality Control

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Terminal Operator
Testing Tech-Mech Services
Truck Driver GVWR >26,000 lbs
Truck Driver-Pit
Utility Operator-Asphalt
Utility Operator-Grade
Utility Operator-Pit
Utility Operator-Pump Station
Utility Operator-Seawall
Vice President-Asphalt Marketing
Vice President-Asphalt Plant Operations
Vice President-Corporate
Vice President-Corporate
Vice President-Finance
Vice President-Human Resources
Vice President-IT Technology
Vice President-Operations
Vice President-Quarry Operations
Vice President-Safety & Risk Management
Welder-Bridge
Welder-Field
Welder-Mechanical Services
Welder-Pit
Welder-Plant
Welder-Shop
Working Foreman-Bridge
Working Foreman-Carpenter
Working Foreman-Grade
Working Foreman-Lift Station
Working Foreman-Pipe
Working Foreman-Pump Station
Working Foreman-Seawall

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APPENDIX B

Medications Disclosure Form for Safety-Sensitive Positions

You are required to disclose information about prescription drugs or over-the-counter medications you are taking which adversely effect, or which may reasonably be expected to adversely effect, your ability to safely and effectively perform your job. This disclosure will be kept confidential and will only be released to others on a need-to-know basis.

Employee Name: _____

Supervisor's Name: _____

Prescribing Physician's Name: _____

Name of Drug: _____

Date of Prescription: _____

Length of Time on Prescription: _____

Over-the-Counter Medication Name: _____

Describe the safety-related side effect(s) you have been warned about or you have had as a result of using this drug or over-the-counter medication:

_____

Authorization for Release of Information
To be completed by Covered Persons who submit a Medications Disclosure Form

To: Custodian of Records

I hereby authorize the use or disclosure of my health information as described below.

Name: _____ Last four digits of SSN:_____ DOB: _____

Persons authorized to provide information: Any HIPAA-covered entity including, but not limited to, any doctor, hospital, pharmacy, or other medical service provider, health plan, health maintenance organization, or insurer.

Persons authorized to receive information: Ranger's Human Resources Department.

Specific description of information (including date(s) of service): Regarding the Medications Disclosure Form for Safety-Sensitive Positions that I completed for my work for Ranger, I hereby authorize and request you to permit Ranger's Human Resources Department to examine any and all information, documents, files, records, charts, progress notes, diagnoses, and the like, in your possession, custody or control, concerning your care, evaluation, treatment, and billing pertaining to me, including, but not limited to, any and all information concerning matters of a physical, mental, emotional, psychological, and psychiatric nature, but shall exclude any or all psychotherapy notes kept and maintained separately from other medical records. I further authorize and request you to permit said representative to copy or reproduce the desired portions of your documents, files, records, charts, progress notes, evaluations, and the like pertaining to such care, evaluation, treatment, and billing. Records obtained pursuant to this authorization will be used for purposes of determining my ability to undertake safety-sensitive work for Ranger only.

I understand that I have the right to examine any mental health records that are disclosed pursuant to this authorization at any time upon request to Ranger.

A photocopy of this authorization is to be treated as an original.

Purpose of the use or disclosure: Determining the ability to undertake safety-sensitive work for Ranger.

I understand that I am entitled to a copy of this form when I sign it. Initials: _____

I understand that this authorization will expire 30 days from the date it is signed below.

I understand that I have the right to revoke this authorization at any time by notifying any covered entity in writing. The revocation will be effective only from the date it is received, will not apply retroactively, and will not be effective to the extent the covered entity has already relied on this authorization.

I understand that this authorization is voluntary and that the plan or service provider will not condition treatment or other services, enrollment in a group health plan, eligibility for benefits, or payment of claims on giving this authorization.

I understand this authorization may allow the information specified herein to be disclosed to persons or organizations that are not health plans, covered healthcare providers, or healthcare clearinghouses subject to federal privacy laws governing health information. I understand that the information authorized to be disclosed pursuant to this authorization may be subject to further disclosure by the recipient(s) and is no longer protected by federal privacy regulations.

By signing this form, I authorize the disclosure of the information specified to the person or persons identified above.

Signature of Individual or Legal Representative: _____ Date: _____

Printed name of Individual or Legal Representative: _____

Relationship to Individual: _____

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APPENDIX C

Acknowledgement and Consent

I certify that I have received and understand Ranger's Drug and Alcohol-Free Workplace Policy.

I agree to comply with Ranger's Drug and Alcohol-Free Workplace Policy and understand that failure to comply is grounds for disciplinary action, up to and including termination.

I voluntarily consent to submit to drug and/or Alcohol testing as outlined in Ranger's policy.

I consent to provide specimens at the assigned collection site(s) and further consent to have urine and/or breath specimens tested for drugs, Alcohol, and/or controlled substances (and their metabolites) at a certified laboratory.

Further, if I enroll or participate in a substance abuse rehabilitation program ("Program"), which is approved by Ranger, I freely and voluntarily consent and authorize the Program to communicate, verbally or in writing, with Ranger, and to release to Ranger any verbal or written recommendations, findings, conclusions, or results from the program, upon Ranger's verbal or written request. I agree to release the Program, including its agents, officers, directors, or employees, from any and all liability of whatever kind as a result of the release of information to Ranger.

In order to provide information to Ranger, I agree to execute authorizations, release forms, or other documentation as may be required under federal, state, or local law, including but not limited to, the Substance Abuse regulations codified at 42 C.F.R. Part 2 and the Privacy Regulations promulgated pursuant to the Health Insurance Portability and Accountability Act of 1996.

I understand and agree that my at-will employment status cannot be altered by any verbal statement or alleged verbal agreement. It can only be changed by a legally-binding, written contract covering employment status. An example of this would be a written employment agreement for a specific duration of time. I understand and agree that nothing contained in this Acknowledgement and Consent or in Ranger's Drug and Alcohol-Free Workplace Policy shall be considered an employment contract for a definite term.

Print Name: _____

Signature: _____

Date: _____

Florida Department of Transportation

RON DESANTIS
GOVERNOR

605 Suwanee Street
Tallahassee, FL 32399-0450

KEVIN J. THIBAULT, P.E.
SECRETARY

9/16/2021

RE: DBE AFFIRMATIVE ACTION PLAN APPROVAL

The Disadvantaged Business Enterprise Affirmative Action Plan submitted by:

RANGER CONSTRUCTION INDUSTRIES INC

has been approved for a period of three years. Please update and submit a new plan before the expiration date shown below. If you do not plan to work on any Florida Department of Transportation Projects, it will not be necessary for you to submit a new plan.

If you need any additional information, please contact me at (850) 414-4747.

Sincerely,

Stefan Kulakowski
State Contract Compliance Administrator
Equal Opportunity Office

AFFIRMATIVE ACTION PLAN EXPIRATION: 9/16/2024

This plan is one of the requirements to bid on contracts for the Florida Department of Transportation. This is not approval for Unified Certification Program Disadvantaged Business Enterprise (UCP/DBE) Certification. For additional information in becoming a DBE, contact the Certification Section at (850)414-4747.

DBE AFFIRMATIVE ACTION PLAN

POLICY STATEMENT

It is the policy of Ranger Construction Industries, Inc. that disadvantaged businesses, as defined by 49 CFR **Part 26, Subpart D** and implemented under Rule Chapter 14-78, F.A.C., shall have the **opportunity** to participate as subcontractors and suppliers on all contracts awarded by the Florida Department of Transportation.

The requirements of Rule Chapter 14-78, F.A.C., shall apply to all contracts entered into between the Florida Department of Transportation and Ranger Construction Industries, Inc. . Subcontractors and/or suppliers to Ranger Construction Industries, Inc. will also be bound by the requirements of Rule Chapter 14-78 F.A.C.

Ranger Construction Industries, Inc., and it's subcontractors shall take all necessary and reasonable steps in accordance with Chapter 14-78, F.A.C., to ensure that disadvantaged businesses have the **opportunity** to compete and perform work contracted with the Florida Department of Transportation.

Ranger Construction Industries, Inc., and its subcontractors shall not discriminate on the basis of race, color, religion, national origin, disability, sex, or age in the administration of contracts with the Department of Transportation.

Robert Schafer, has designated and appointed a Liaison Officer to develop, maintain, and monitor the DBE Affirmative Action Plan implementation. The Liaison Officer will be responsible for disseminating this policy statement throughout Ranger Construction Industries, Inc. and to disadvantaged controlled businesses. The statement is posted on notice boards of the Company.

x Bob Schafer, President

x 15 Sep 2021
Date

I. DESIGNATION OF LIAISON OFFICER

Ranger Construction Industries, Inc. will aggressively recruit disadvantaged businesses as subcontractors and suppliers for all contracts with the Florida Department of Transportation. The Company has appointed a Liaison Officer to develop and maintain this Affirmative Action Plan in accordance with the requirements of Rule Chapter 14-78, F.A.C.

The Liaison Officer will have primary responsibility for developing, maintaining, and monitoring the Company's utilization of disadvantaged subcontractors in addition to the following specific duties:

(1) The Liaison Officer shall aggressively solicit bids from disadvantaged business subcontractors for all Florida Department of Transportation contracts;

(2) The Liaison Officer will submit all records, reports, and documents required by the Florida Department of Transportation, and shall maintain such records for a period of not less than three years, or as directed by any specific contractual requirements of the Florida Department of Transportation.

The following individual has been designated Liaison Officer with responsibility for implementing the Company's affirmative action program in accordance with the requirements of the Florida Department Transportation.

Robert Schafer
Ranger Construction Industries, Inc.
101 Sansbury's Way West Palm Beach, Fl 33411
561-793-9400
59- 2098662

II. AFFIRMATIVE ACTION METHODS

In order to formulate a realistic Affirmative Action Plan, Ranger Construction Industries, Inc. has identified the following known barriers to participation by disadvantaged subcontractors, before describing its proposed affirmative action methods:

1. Lack of qualified disadvantaged subcontractors in our specific geographical areas of work;
2. Lack of certified disadvantaged subcontractors who seek to perform Florida Department of Transportation work;
3. Lack of interest in performing on Florida Department of Transportation contracts;
4. Lack of response when requested to bid;
5. Limited knowledge of Florida Department of Transportation plans and specifications to prepare a responsible bid.

In view of the barriers to disadvantaged businesses stated above, it shall be the policy of Ranger Construction Industries, Inc. to provide opportunity by utilizing the following affirmative action methods to ensure participation on the contracts with the Florida Department of Transportation. Ranger Construction Industries, Inc. will:

1. Provide written notice to all certified DBE subcontractors in the geographical area where the work is to be subcontracted by the Company;
2. Advertise in minority focused media concerning subcontract opportunities with the Company;
3. Select portions of work to be performed by DBEs in order to increase the likelihood of meeting contract goals (including, where appropriate, breaking down contracts into economically feasible units to facilitate DBE participation);

4. Provide adequate information about the plans, specifications, and requirements of the contract, not rejecting subcontractors without sound reasons based on a thorough investigation of their capabilities;

5. Waive requirements of performance bonds where it is practical to do so;

6. Attend pre-bid meetings held by the Florida Department of Transportation to apprise disadvantaged subcontractors of opportunities with the Company;

7. Follow up on initial solicitations of interest to DBE subcontractors to determine with certainty whether the DBE company is interested in the subcontract opportunity.

Ranger Construction Industries, Inc. understands that this list of affirmative action methods is not exhaustive and will include additional approaches after having established familiarity with the disadvantaged subcontracting community and/or determined the stated approaches to be ineffective.

III. IMPLEMENTATION

On contracts with specific DBE goals, Ranger Construction Industries, Inc. will make every effort to meet contract goals as stated by utilizing its affirmative action methods. On projects with no specific goals, the Company will, as an expression of good faith, seek to utilize DBE subcontractors where work is to be subcontracted.

IV. REPORTING

Ranger Construction Industries, Inc. shall keep and maintain such records as are necessary to determine the Company's compliance with its DBE Affirmative Action Plan.

The Company will design its record keeping system to indicate:

1. The number of DBE subcontractors and suppliers used by the Company, identifying the items of work, materials and services provided;

2. The efforts and progress being made in obtaining DBE subcontractors through local and community sources;

3. Documentation of all contracts, to include correspondence, telephone calls, newspaper advertisements, etc., to obtain DBE participation on all Florida Department of Transportation projects;

4. **The Company shall comply with Florida Department of Transportation's requirements regarding payments to subcontractors including DBEs for each month (estimate period) in which the companies have worked.**

V. DBE DIRECTORY

Ranger Construction Industries, Inc. will utilize the DBE Directory published by the Florida Department of Transportation.

The Company will distribute Form Number 275-030-01, Schedule A Certification Form Number 1, to potential DBE contractors and assist in their completion.

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THE E-VERIFY PROGRAM FOR EMPLOYMENT VERIFICATION MEMORANDUM OF UNDERSTANDING

ARTICLE I

PURPOSE AND AUTHORITY

This Memorandum of Understanding (MOU) sets forth the points of agreement between the Department of Homeland Security (DHS) and **Ranger Construction Industries, Inc.** (Employer) regarding the Employer's participation in the Employment Eligibility Verification Program (E-Verify). This MOU explains certain features of the E-Verify program and enumerates specific responsibilities of DHS, the Social Security Administration (SSA), and the Employer. E-Verify is a program that electronically confirms an employee's eligibility to work in the United States after completion of the Employment Eligibility Verification Form (Form I-9). For covered government contractors, E-Verify is used to verify the employment eligibility of all newly hired employees and all existing employees assigned to Federal contracts or to verify the entire workforce if the contractor so chooses.

Authority for the E-Verify program is found in Title IV, Subtitle A, of the Illegal Immigration Reform and Immigrant Responsibility Act of 1996 (IIRIRA), Pub. L. 104-208, 110 Stat. 3009, as amended (8 U.S.C. § 1324a note). Authority for use of the E-Verify program by Federal contractors and subcontractors covered by the terms of Subpart 22.18, "Employment Eligibility Verification", of the Federal Acquisition Regulation (FAR) (hereinafter referred to in this MOU as a "Federal contractor with the FAR E-Verify clause") to verify the employment eligibility of certain employees working on Federal contracts is also found in Subpart 22.18 and in Executive Order 12989, as amended.

ARTICLE II

FUNCTIONS TO BE PERFORMED

A. RESPONSIBILITIES OF SSA

1. SSA agrees to provide the Employer with available information that allows the Employer to confirm the accuracy of Social Security Numbers provided by all employees verified under this MOU and the employment authorization of U.S. citizens.

2. SSA agrees to provide to the Employer appropriate assistance with operational problems that may arise during the Employer's participation in the E-Verify program. SSA agrees to provide the Employer with names, titles, addresses, and telephone numbers of SSA representatives to be contacted during the E-Verify process.

3. SSA agrees to safeguard the information provided by the Employer through the E-Verify program procedures, and to limit access to such information, as is appropriate by law, to individuals responsible for the verification of Social Security Numbers and for evaluation of the E-Verify program or such other persons or entities who may be authorized by SSA as governed

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by the Privacy Act (5 U.S.C. § 552a), the Social Security Act (42 U.S.C. 1306(a)), and SSA regulations (20 CFR Part 401).

4. SSA agrees to provide a means of automated verification that is designed (in conjunction with DHS's automated system if necessary) to provide confirmation or tentative nonconfirmation of U.S. citizens' employment eligibility within 3 Federal Government work days of the initial inquiry.

5. SSA agrees to provide a means of secondary verification (including updating SSA records as may be necessary) for employees who contest SSA tentative nonconfirmations that is designed to provide final confirmation or nonconfirmation of U.S. citizens' employment eligibility and accuracy of SSA records for both citizens and non-citizens within 10 Federal Government work days of the date of referral to SSA, unless SSA determines that more than 10 days may be necessary. In such cases, SSA will provide additional verification instructions.

B. RESPONSIBILITIES OF DHS

1. After SSA verifies the accuracy of SSA records for employees through E-Verify, DHS agrees to provide the Employer access to selected data from DHS's database to enable the Employer to conduct, to the extent authorized by this MOU:

- Automated verification checks on employees by electronic means, and
- Photo verification checks (when available) on employees.

2. DHS agrees to provide to the Employer appropriate assistance with operational problems that may arise during the Employer's participation in the E-Verify program. DHS agrees to provide the Employer names, titles, addresses, and telephone numbers of DHS representatives to be contacted during the E-Verify process.

3. DHS agrees to make available to the Employer at the E-Verify Web site and on the E-Verify Web browser, instructional materials on E-Verify policies, procedures and requirements for both SSA and DHS, including restrictions on the use of E-Verify. DHS agrees to provide training materials on E-Verify.

4. DHS agrees to provide to the Employer a notice, which indicates the Employer's participation in the E-Verify program. DHS also agrees to provide to the Employer anti-discrimination notices issued by the Office of Special Counsel for Immigration-Related Unfair Employment Practices (OSC), Civil Rights Division, U.S. Department of Justice.

5. DHS agrees to issue the Employer a user identification number and password that permits the Employer to verify information provided by employees with DHS's database.

6. DHS agrees to safeguard the information provided to DHS by the Employer, and to limit access to such information to individuals responsible for the verification of employees' employment eligibility and for evaluation of the E-Verify program, or to such other persons or entities as may be authorized by applicable law. Information will be used only to verify the accuracy of Social Security Numbers and employment eligibility, to enforce the Immigration and

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Nationality Act (INA) and Federal criminal laws, and to administer Federal contracting requirements.

7. DHS agrees to provide a means of automated verification that is designed (in conjunction with SSA verification procedures) to provide confirmation or tentative nonconfirmation of employees' employment eligibility within 3 Federal Government work days of the initial inquiry.

8. DHS agrees to provide a means of secondary verification (including updating DHS records as may be necessary) for employees who contest DHS tentative nonconfirmations and photo non-match tentative nonconfirmations that is designed to provide final confirmation or nonconfirmation of the employees' employment eligibility within 10 Federal Government work days of the date of referral to DHS, unless DHS determines that more than 10 days may be necessary. In such cases, DHS will provide additional verification instructions.

C. RESPONSIBILITIES OF THE EMPLOYER

1. The Employer agrees to display the notices supplied by DHS in a prominent place that is clearly visible to prospective employees and all employees who are to be verified through the system.

2. The Employer agrees to provide to the SSA and DHS the names, titles, addresses, and telephone numbers of the Employer representatives to be contacted regarding E-Verify.

3. The Employer agrees to become familiar with and comply with the most recent version of the E-Verify User Manual.

4. The Employer agrees that any Employer Representative who will perform employment verification queries will complete the E-Verify Tutorial before that individual initiates any queries.

A. The Employer agrees that all Employer representatives will take the refresher tutorials initiated by the E-Verify program as a condition of continued use of E-Verify.

B. Failure to complete a refresher tutorial will prevent the Employer from continued use of the program.

5. The Employer agrees to comply with current Form I-9 procedures, with two exceptions:

• If an employee presents a "List B" identity document, the Employer agrees to only accept "List B" documents that contain a photo. (List B documents identified in 8 C.F.R. § 274a.2(b)(1)(B)) can be presented during the Form I-9 process to establish identity.) If an employee objects to the photo requirement for religious reasons, the Employer should contact E-Verify at 888-464-4218.

• If an employee presents a DHS Form I-551 (Permanent Resident Card) or Form I-766 (Employment Authorization Document) to complete the Form I-9, the Employer agrees to make a photocopy of the document and to retain the photocopy with the employee's Form I-9. The photocopy must be of sufficient quality to allow for verification of the photo

and written information. The employer will use the photocopy to verify the photo and to assist DHS with its review of photo non-matches that are contested by employees. Note that employees retain the right to present any List A, or List B and List C, documentation to complete the Form I-9. DHS may in the future designate other documents that activate the photo screening tool.

6. The Employer understands that participation in E-Verify does not exempt the Employer from the responsibility to complete, retain, and make available for inspection Forms I-9 that relate to its employees, or from other requirements of applicable regulations or laws, including the obligation to comply with the antidiscrimination requirements of section 274B of the INA with respect to Form I-9 procedures, except for the following modified requirements applicable by reason of the Employer's participation in E-Verify: (1) identity documents must have photos, as described in paragraph 5 above; (2) a rebuttable presumption is established that the Employer has not violated section 274A(a)(1)(A) of the Immigration and Nationality Act (INA) with respect to the hiring of any individual if it obtains confirmation of the identity and employment eligibility of the individual in good faith compliance with the terms and conditions of E-Verify; (3) the Employer must notify DHS if it continues to employ any employee after receiving a final nonconfirmation, and is subject to a civil money penalty between $550 and $1,100 for each failure to notify DHS of continued employment following a final nonconfirmation; (4) the Employer is subject to a rebuttable presumption that it has knowingly employed an unauthorized alien in violation of section 274A(a)(1)(A) if the Employer continues to employ an employee after receiving a final nonconfirmation; and (5) no person or entity participating in E-Verify is civilly or criminally liable under any law for any action taken in good faith based on information provided through the confirmation system. DHS reserves the right to conduct Form I-9 and E-Verify system compliance inspections during the course of E-Verify, as well as to conduct any other enforcement activity authorized by law.

7. The Employer agrees to initiate E-Verify verification procedures for new employees within 3 Employer business days after each employee has been hired (but after the Form I-9 has been completed), and to complete as many (but only as many) steps of the E-Verify process as are necessary according to the E-Verify User Manual, or in the case of Federal contractors with the FAR E-Verify clause, the E-Verify User Manual for Federal Contractors. The Employer is prohibited from initiating verification procedures before the employee has been hired and the Form I-9 completed. If the automated system to be queried is temporarily unavailable, the 3-day time period is extended until it is again operational in order to accommodate the Employer's attempting, in good faith, to make inquiries during the period of unavailability. Employers may initiate verification by notating the Form I-9 in circumstances where the employee has applied for a Social Security Number (SSN) from the SSA and is waiting to receive the SSN, provided that the Employer performs an E-Verify employment verification query using the employee's SSN as soon as the SSN becomes available.

8. The Employer agrees not to use E-Verify procedures for pre-employment screening of job applicants, in support of any unlawful employment practice, or for any other use not authorized by this MOU. Employers must use E-Verify for all new employees, unless an Employer is a Federal contractor that qualifies for the exceptions described in Article II.D.1.c. Except as provided in Article II.D, the Employer will not verify selectively and will not verify employees hired before the effective date of this MOU. The Employer understands that if the Employer

uses the E-Verify system for any purpose other than as authorized by this MOU, the Employer may be subject to appropriate legal action and termination of its access to SSA and DHS information pursuant to this MOU.

9. The Employer agrees to follow appropriate procedures (see Article III. below) regarding tentative nonconfirmations, including notifying employees in private of the finding and providing them written notice of the findings, providing written referral instructions to employees, allowing employees to contest the finding, and not taking adverse action against employees if they choose to contest the finding. Further, when employees contest a tentative nonconfirmation based upon a photo non-match, the Employer is required to take affirmative steps (see Article III.B. below) to contact DHS with information necessary to resolve the challenge.

10. The Employer agrees not to take any adverse action against an employee based upon the employee's perceived employment eligibility status while SSA or DHS is processing the verification request unless the Employer obtains knowledge (as defined in 8 C.F.R. § 274a.1(l)) that the employee is not work authorized. The Employer understands that an initial inability of the SSA or DHS automated verification system to verify work authorization, a tentative nonconfirmation, a case in continuance (indicating the need for additional time for the government to resolve a case), or the finding of a photo non-match, does not establish, and should not be interpreted as evidence, that the employee is not work authorized. In any of the cases listed above, the employee must be provided a full and fair opportunity to contest the finding, and if he or she does so, the employee may not be terminated or suffer any adverse employment consequences based upon the employee's perceived employment eligibility status (including denying, reducing, or extending work hours, delaying or preventing training, requiring an employee to work in poorer conditions, refusing to assign the employee to a Federal contract or other assignment, or otherwise subjecting an employee to any assumption that he or she is unauthorized to work) until and unless secondary verification by SSA or DHS has been completed and a final nonconfirmation has been issued. If the employee does not choose to contest a tentative nonconfirmation or a photo non-match or if a secondary verification is completed and a final nonconfirmation is issued, then the Employer can find the employee is not work authorized and terminate the employee's employment. Employers or employees with questions about a final nonconfirmation may call E-Verify at 1-888-464-4218 or OSC at 1-800-255-8155 or 1-800-237-2515 (TDD).

11. The Employer agrees to comply with Title VII of the Civil Rights Act of 1964 and section 274B of the INA, as applicable, by not discriminating unlawfully against any individual in hiring, firing, or recruitment or referral practices because of his or her national origin or, in the case of a protected individual as defined in section 274B(a)(3) of the INA, because of his or her citizenship status. The Employer understands that such illegal practices can include selective verification or use of E-Verify except as provided in part D below, or discharging or refusing to hire employees because they appear or sound "foreign" or have received tentative nonconfirmations. The Employer further understands that any violation of the unfair immigration-related employment practices provisions in section 274B of the INA could subject the Employer to civil penalties, back pay awards, and other sanctions, and violations of Title VII could subject the Employer to back pay awards, compensatory and punitive damages. Violations of either section 274B of the INA or Title VII may also lead to the termination of its participation in E-

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Verify. If the Employer has any questions relating to the anti-discrimination provision, it should contact OSC at 1-800-255-8155 or 1-800-237-2515 (TDD).

12. The Employer agrees to record the case verification number on the employee's Form I-9 or to print the screen containing the case verification number and attach it to the employee's Form I-9.

13. The Employer agrees that it will use the information it receives from SSA or DHS pursuant to E-Verify and this MOU only to confirm the employment eligibility of employees as authorized by this MOU. The Employer agrees that it will safeguard this information, and means of access to it (such as PINS and passwords) to ensure that it is not used for any other purpose and as necessary to protect its confidentiality, including ensuring that it is not disseminated to any person other than employees of the Employer who are authorized to perform the Employer's responsibilities under this MOU, except for such dissemination as may be authorized in advance by SSA or DHS for legitimate purposes.

14. The Employer acknowledges that the information which it receives from SSA is governed by the Privacy Act (5 U.S.C. § 552a(i)(1) and (3)) and the Social Security Act (42 U.S.C. 1306(a)), and that any person who obtains this information under false pretenses or uses it for any purpose other than as provided for in this MOU may be subject to criminal penalties.

15. The Employer agrees to cooperate with DHS and SSA in their compliance monitoring and evaluation of E-Verify, including by permitting DHS and SSA, upon reasonable notice, to review Forms I-9 and other employment records and to interview it and its employees regarding the Employer's use of E-Verify, and to respond in a timely and accurate manner to DHS requests for information relating to their participation in E-Verify.

D. RESPONSIBILITIES OF FEDERAL CONTRACTORS WITH THE FAR E-VERIFY CLAUSE

1. The Employer understands that if it is a subject to the employment verification terms in Subpart 22.18 of the FAR, it must verify the employment eligibility of any existing employee assigned to the contract and all new hires, as discussed in the Supplemental Guide for Federal Contractors. Once an employee has been verified through E-Verify by the Employer, the Employer may not reverify the employee through E-Verify.

a. Federal contractors with the FAR E-Verify clause agree to become familiar with and comply with the most recent versions of the E-Verify User Manual for Federal Contractors and the E-Verify Supplemental Guide for Federal Contractors.

b. Federal contractors with the FAR E-Verify clause agree to complete a tutorial for Federal contractors with the FAR E-Verify clause.

c. Federal contractors with the FAR E-Verify clause not enrolled at the time of contract award: An Employer that is not enrolled in E-Verify at the time of a contract award must enroll as a Federal contractor with the FAR E-Verify clause in E-Verify within 30 calendar days of contract award and, within 90 days of enrollment, begin to use E-Verify to initiate verification of employment eligibility of new hires of the Employer who are working in the United States,

whether or not assigned to the contract. Once the Employer begins verifying new hires, such verification of new hires must be initiated within 3 business days after the date of hire. Once enrolled in E-Verify as a Federal contractor with the FAR E-Verify clause, the Employer must initiate verification of employees assigned to the contract within 90 calendar days from the time of enrollment in the system and after the date and selecting which employees will be verified in E-Verify or within 30 days of an employee's assignment to the contract, whichever date is later.

d. Employers that are already enrolled in E-Verify at the time of a contract award but are not enrolled in the system as a Federal contractor with the FAR E-Verify clause: Employers enrolled in E-Verify for 90 days or more at the time of a contract award must use E-Verify to initiate verification of employment eligibility for new hires of the Employer who are working in the United States, whether or not assigned to the contract, within 3 business days after the date of hire. Employers enrolled in E-Verify as other than a Federal contractor with the FAR E-Verify clause, must update E-Verify to indicate that they are a Federal contractor with the FAR E-Verify clause within 30 days after assignment to the contract. If the Employer is enrolled in E-Verify for 90 calendar days or less at the time of contract award, the Employer must, within 90 days of enrollment, begin to use E-Verify to initiate verification of new hires of the contractor who are working in the United States, whether or not assigned to the contract. Such verification of new hires must be initiated within 3 business days after the date of hire. An Employer enrolled as a Federal contractor with the FAR E-Verify clause in E-Verify must initiate verification of each employee assigned to the contract within 90 calendar days after date of contract award or within 30 days after assignment to the contract, whichever is later.

e. Institutions of higher education, State, local and tribal governments and sureties: Federal contractors with the FAR E-Verify clause that are institutions of higher education (as defined at 20 U.S.C. 1001(a)), State or local governments, governments of Federally recognized Indian tribes, or sureties performing under a takeover agreement entered into with a Federal agency pursuant to a performance bond may choose to only verify new and existing employees assigned to the Federal contract. Such Federal contractors with the FAR E-Verify clause may, however, elect to verify all new hires, and/or all existing employees hired after November 6, 1986. The provisions of Article II.D, paragraphs 1.a and 1.b of this MOU providing timeframes for initiating employment verification of employees assigned to a contract apply to such institutions of higher education, State, local and tribal governments, and sureties.

f. Verification of all employees: Upon enrollment, Employers who are Federal contractors with the FAR E-Verify clause may elect to verify employment eligibility of all existing employees working in the United States who were hired after November 6, 1986, instead of verifying only new employees and those existing employees assigned to a covered Federal contract. After enrollment, Employers must elect to do so only in the manner designated by DHS and initiate E-Verify verification of all existing employees within 180 days after the election.

g. Form I-9 procedures for existing employees of Federal contractors with the FAR E-Verify clause: Federal contractors with the FAR E-Verify clause may choose to complete new Forms I-9 for all existing employees other than those that are completely exempt from this process. Federal contractors with the FAR E-Verify clause may also update previously completed Forms I-9 to initiate E-Verify verification of existing employees who are not completely exempt as long as that Form I-9 is complete (including the SSN), complies with

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Article II.C.5, the employee's work authorization has not expired, and the Employer has reviewed the information reflected in the Form I-9 either in person or in communications with the employee to ensure that the employee's stated basis in section 1 of the Form I-9 for work authorization has not changed (including, but not limited to, a lawful permanent resident alien having become a naturalized U.S. citizen). If the Employer is unable to determine that the Form I-9 complies with Article II.C.5, if the employee's basis for work authorization as attested in section 1 has expired or changed, or if the Form I-9 contains no SSN or is otherwise incomplete, the Employer shall complete a new I-9 consistent with Article II.C.5, or update the previous I-9 to provide the necessary information. If section 1 of the Form I-9 is otherwise valid and up-to-date and the form otherwise complies with Article II.C.5, but reflects documentation (such as a U.S. passport or Form I-551) that expired subsequent to completion of the Form I-9, the Employer shall not require the production of additional documentation, or use the photo screening tool described in Article II.C.5, subject to any additional or superseding instructions that may be provided on this subject in the Supplemental Guide for Federal Contractors. Nothing in this section shall be construed to require a second verification using E-Verify of any assigned employee who has previously been verified as a newly hired employee under this MOU, or to authorize verification of any existing employee by any Employer that is not a Federal contractor with the FAR E-Verify clause.

2. The Employer understands that if it is a Federal contractor with the FAR E-Verify clause, its compliance with this MOU is a performance requirement under the terms of the Federal contract or subcontract, and the Employer consents to the release of information relating to compliance with its verification responsibilities under this MOU to contracting officers or other officials authorized to review the Employer's compliance with Federal contracting requirements.

ARTICLE III

REFERRAL OF INDIVIDUALS TO SSA AND DHS

A. REFERRAL TO SSA

1. If the Employer receives a tentative nonconfirmation issued by SSA, the Employer must print the notice as directed by the E-Verify system and provide it to the employee so that the employee may determine whether he or she will contest the tentative nonconfirmation. The Employer must review the tentative nonconfirmation with the employee in private.

2. The Employer will refer employees to SSA field offices only as directed by the automated system based on a tentative nonconfirmation, and only after the Employer records the case verification number, reviews the input to detect any transaction errors, and determines that the employee contests the tentative nonconfirmation. The Employer will transmit the Social Security Number to SSA for verification again if this review indicates a need to do so. The Employer will determine whether the employee contests the tentative nonconfirmation as soon as possible after the Employer receives it.

3. If the employee contests an SSA tentative nonconfirmation, the Employer will provide the employee with a system-generated referral letter and instruct the employee to visit an SSA office within 8 Federal Government work days. SSA will electronically transmit the result of the referral to the Employer within 10 Federal Government work days of the referral unless it

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determines that more than 10 days is necessary. The Employer agrees to check the E-Verify system regularly for case updates.

4. The Employer agrees not to ask the employee to obtain a printout from the Social Security Number database (the Numident) or other written verification of the Social Security Number from the SSA.

B. REFERRAL TO DHS

1. If the Employer receives a tentative nonconfirmation issued by DHS, the Employer must print the tentative nonconfirmation notice as directed by the E-Verify system and provide it to the employee so that the employee may determine whether he or she will contest the tentative nonconfirmation. The Employer must review the tentative nonconfirmation with the employee in private.

2. If the Employer finds a photo non-match for an employee who provides a document for which the automated system has transmitted a photo, the employer must print the photo non-match tentative nonconfirmation notice as directed by the automated system and provide it to the employee so that the employee may determine whether he or she will contest the finding. The Employer must review the tentative nonconfirmation with the employee in private.
3. The Employer agrees to refer individuals to DHS only when the employee chooses to contest a tentative nonconfirmation received from DHS automated verification process or when the Employer issues a tentative nonconfirmation based upon a photo non-match. The Employer will determine whether the employee contests the tentative nonconfirmation as soon as possible after the Employer receives it.

4. If the employee contests a tentative nonconfirmation issued by DHS, the Employer will provide the employee with a referral letter and instruct the employee to contact DHS through its toll-free hotline (as found on the referral letter) within 8 Federal Government work days.

5. If the employee contests a tentative nonconfirmation based upon a photo non-match, the Employer will provide the employee with a referral letter to DHS. DHS will electronically transmit the result of the referral to the Employer within 10 Federal Government work days of the referral unless it determines that more than 10 days is necessary. The Employer agrees to check the E-Verify system regularly for case updates.

6. The Employer agrees that if an employee contests a tentative nonconfirmation based upon a photo non-match, the Employer will send a copy of the employee's Form I-551 or Form I-766 to DHS for review by:

- Scanning and uploading the document, or
- Sending a photocopy of the document by an express mail account (paid for at employer expense).

7. If the Employer determines that there is a photo non-match when comparing the photocopied List B document described in Article II.C.5 with the image generated in E-Verify, the Employer must forward the employee's documentation to DHS using one of the means described in the preceding paragraph, and allow DHS to resolve the case.

Company ID Number: 403857

ARTICLE IV

SERVICE PROVISIONS

SSA and DHS will not charge the Employer for verification services performed under this MOU. The Employer is responsible for providing equipment needed to make inquiries. To access E-Verify, an Employer will need a personal computer with Internet access.

ARTICLE V

PARTIES

A. This MOU is effective upon the signature of all parties, and shall continue in effect for as long as the SSA and DHS conduct the E-Verify program unless modified in writing by the mutual consent of all parties, or terminated by any party upon 30 days prior written notice to the others. Any and all system enhancements to the E-Verify program by DHS or SSA, including but not limited to the E-Verify checking against additional data sources and instituting new verification procedures, will be covered under this MOU and will not cause the need for a supplemental MOU that outlines these changes. DHS agrees to train employers on all changes made to E-Verify through the use of mandatory refresher tutorials and updates to the E-Verify User Manual, the E-Verify User Manual for Federal Contractors or the E-Verify Supplemental Guide for Federal Contractors. Even without changes to E-Verify, DHS reserves the right to require employers to take mandatory refresher tutorials. An Employer that is a Federal contractor with the FAR E-Verify clause may terminate this MOU when the Federal contract that requires its participation in E-Verify is terminated or completed. In such a circumstance, the Federal contractor with the FAR E-Verify clause must provide written notice to DHS. If an Employer that is a Federal contractor with the FAR E-Verify clause fails to provide such notice, that Employer will remain a participant in the E-Verify program, will remain bound by the terms of this MOU that apply to participants that are not Federal contractors with the FAR E-Verify clause, and will be required to use the E-Verify procedures to verify the employment eligibility of all newly hired employees.

B. Notwithstanding Article V, part A of this MOU, DHS may terminate this MOU if deemed necessary because of the requirements of law or policy, or upon a determination by SSA or DHS that there has been a breach of system integrity or security by the Employer, or a failure on the part of the Employer to comply with established procedures or legal requirements. The Employer understands that if it is a Federal contractor with the FAR E-Verify clause, termination of this MOU by any party for any reason may negatively affect its performance of its contractual responsibilities.

C. Some or all SSA and DHS responsibilities under this MOU may be performed by contractor(s), and SSA and DHS may adjust verification responsibilities between each other as they may determine necessary. By separate agreement with DHS, SSA has agreed to perform its responsibilities as described in this MOU.

Company ID Number: 403857

D. Nothing in this MOU is intended, or should be construed, to create any right or benefit, substantive or procedural, enforceable at law by any third party against the United States, its agencies, officers, or employees, or against the Employer, its agents, officers, or employees.

E. Each party shall be solely responsible for defending any claim or action against it arising out of or related to E-Verify or this MOU, whether civil or criminal, and for any liability wherefrom, including (but not limited to) any dispute between the Employer and any other person or entity regarding the applicability of Section 403(d) of IIRIRA to any action taken or allegedly taken by the Employer.

F. The Employer understands that the fact of its participation in E-Verify is not confidential information and may be disclosed as authorized or required by law and DHS or SSA policy, including but not limited to, Congressional oversight, E-Verify publicity and media inquiries, determinations of compliance with Federal contractual requirements, and responses to inquiries under the Freedom of Information Act (FOIA).

G. The foregoing constitutes the full agreement on this subject between DHS and the Employer.

H. The individuals whose signatures appear below represent that they are authorized to enter into this MOU on behalf of the Employer and DHS respectively.

E-Verify

Company ID Number: 403857

To be accepted as a participant in E-Verify, you should only sign the Employer's Section of the signature page. If you have any questions, contact E-Verify at 888-464-4218.

Employer Ranger Construction Industries, Inc.	
C Leadbetter	
Name (Please Type or Print)	Title
Electronically Signed	**03/25/2011**
Signature	Date
Department of Homeland Security – Verification Division	
USCIS Verification Division	
Name (Please Type or Print)	Title
Electronically Signed	**03/25/2011**
Signature	Date

Information Required for the E-Verify Program

Information relating to your Company:

Company Name:	**Ranger Construction Industries, Inc.**
Company Facility Address:	**101 Sansburys Way**
	West Palm Beach, FL 33411
Company Alternate Address:	
County or Parish:	**PALM BEACH**
Employer Identification Number:	**592098662**

Company ID Number: 403867

North American Industry Classification Systems Code:	237
Administrator:	
Number of Employees:	100 to 499
Number of Sites Verified for:	5

Are you verifying for more than 1 site? If yes, please provide the number of sites verified for in each State:

- FLORIDA 5 site(s)

Information relating to the Program Administrator(s) for your Company on policy questions or operational problems:

Name: Ann Popoff
Telephone Number: (561) 784 - 3519 Fax Number: (561) 792 - 1408
E-mail Address: apopoff@rangerconstruction.com

Name: C R Leadbetter
Telephone Number: (561) 784 - 3535 Fax Number: (561) 784 - 3465
E-mail Address: rleadbetter@vecelliogroup.com

Name: Monique Gors
Telephone Number: (561) 784 - 3548 Fax Number: (561) 792 - 1408
E-mail Address: monique.gors@vecelliogroup.com

EXHIBIT B
BID FORM (Page 1 of 5)

ITB #24-004 ASPHALT PAVING PROJECTS FOR FY 2024

BID SUBMITTED BY Middlesex Paving, LLC. **FL CONTRACTOR LICENSE #** CGC1525524

ITEM NO. 1	OLD WINTER GARDEN (MAGUIRE TO BLUFORD) MILLING AND RESURFACING	UNIT	QTY	UNIT PRICE	ITEM TOTAL
1.01	Mobilization/Demobilization & General Construction Requirements & Restoration (5% of Base Bid plus add alternates)	LS	1	$18,500.00	$18,500.00
1.02	1.5" Milling (Max.)	SY	17,027	$4.50	$76,621.50
1.03	1.5" Resurface Type FC-12.5 Asphalt Paving	SY	17,027	$17.50	$15,000.00
1.04	Traffic Signal Loop System Restoration	LS	1	$15,000.00	$15,000.00
1.05	Temporary Striping and Thermoplastic Final Striping	LS	1	$35,000.00	$35,000.00
				SUB-TOTAL:	$443,094.00

ITEM NO. 2	OLD WINTER GARDEN (BLACKWOOD TO HEMPEL) MILLING AND RESURFACING	UNIT	QTY	UNIT PRICE	ITEM TOTAL
2.01	Mobilization/Demobilization & General Construction Requirements & Restoration (5% of Base Bid plus add alternates)	LS	1	$18,500.00	$18,500.00
2.02	1.5" Milling (Max.)	SY	19,624	$4.50	$88,308.00
2.03	1.5" Resurface Type FC-12.5 Asphalt Paving	SY	19,624	$17.50	$343,420.00
2.04	Traffic Signal Loop System Restoration	LS	1	$24,000.00	$24,000.00
2.05	Temporary Striping and Thermoplastic Final Striping	LS	1	$38,000.00	$38,000.00
				SUB-TOTAL:	$512,228.00

REVISED BID FORM (Page 2 of 5)

ITB #24-004 ASPHALT PAVING PROJECTS FOR FY 2024

BID SUBMITTED BY Middlesex Paving, LLC. **FL CONTRACTOR LICENSE #** CGC1525524

ITEM NO. 3	CLARKE RD (SILVER STAR TO AD MIMS) (1" FC 9.5, 1.5"SP 9.5)	UNIT	QTY	UNIT PRICE	ITEM TOTAL
3.01	Mobilization/Demobilization & General Construction Requirements & Restoration (5% of Base Bid plus add alternates)	LS	1	$35,610.00	$35,610.00
3.02	2" Milling (Max.)	SY	34,706	$5.00	$173,530.00
3.03	1" Resurface Type SP- 9.5 Asphalt Paving	SY	34,706	$11.50	$399,119.00
3.04	1" Resurface Type FC-9.5 Asphalt Paving	SY	34,706	$13.00	$451,178.00
3.05	Traffic Signal Loop System Restoration	1	1	$24,000.00	$24,000.00
3.06	Temporary Striping and Thermoplastic Final Striping	1	1	$75,000.00	$75,000.00
				SUB-TOTAL:	$1,158,437.00

ITEM NO. 4	LAKEWOOD HILLS SUBDIVISION (STARKE LAKE CIR, ALASKA DR, HAWAII DR)	UNIT	QTY	UNIT PRICE	ITEM TOTAL
4.01	Mobilization/Demobilization & General Construction Requirements & Restoration (5% of Base Bid plus add alternates)	LS	1	$1,500.00	$1,500.00
4.02	1.25" Milling (Max.)	SY	7520	$3.50	$26,320.00
4.03	1.25" Resurface Type SP-9.5 Asphalt Paving (Revised)	SY	7520	$12.00	$90,240.00
4.04	Temporary Striping and Thermoplastic Final Striping (6 stop bars)	LS	1	$1,500.00	$1,500.00
				SUB-TOTAL:	$119,560.00

REVISED BID FORM (Page 3 of 5)

ITB #24-004 ASPHALT PAVING PROJECTS FOR FY 2024

BID SUBMITTED BY Middlesex Paving, LLC. **FL CONTRACTOR LICENSE #** CGC1525524

ITEM NO. 5	MARSDEN ST / SULLIVAN AVE	UNIT	QTY	UNIT PRICE	ITEM TOTAL
5.01	Mobilization/Demobilization & General Construction Requirements & Restoration (5% of Base Bid plus add alternates)	LS	1	$2,800.00	$2,800.00
5.02	1.25" Milling (Max.)	SY	3,408	$3.50	$11,928.00
5.03	1.25" Resurface Type SP-9.5 Asphalt Paving (Revised)	SY	3,408	$12.00	$40,896.00
5.04	Temporary Striping and Thermoplastic Final Striping (2 stop bars)	LS	1	$5,000.00	$5,000.00
				SUB-TOTAL:	$60,624.00

ITEM NO. 6	MOORE ROAD (EASTERN MOST 300 FT To 7th Ave)	UNIT	QTY	UNIT PRICE	ITEM TOTAL
6.01	Mobilization/Demobilization & General Construction Requirements & Restoration (5% of Base Bid plus add alternates)	LS	1	$1,500.00	$1,500.00
6.02	1.5" Milling (Max.)	SY	1,280	$6.50	$8,320.00
6.03	1.5" Resurface Type SP-12.5 Asphalt Paving	SY	1,280	$15.50	$19,840.00
6.04	Temporary Striping and Thermoplastic Final Striping	LS	1	$5,000.00	$5,000.00
				SUB-TOTAL:	$34,660.00

BID FORM (Page 4 of 5)

ITB #24-004 ASPHALT PAVING PROJECTS FOR FY 2024

BID SUBMITTED BY Middlesex Paving, LLC. **FL CONTRACTOR LICENSE #** CGC1525524

ITEM NO.	TIGER MINOR SOUTH PARKING LOT	UNIT	QTY	UNIT PRICE	ITEM TOTAL
7.01	Mobilization/Demobilization & General Construction Requirements & Restoration (5% of Base Bid plus add alternates)	LS	1	$1,500.00	$1,500.00
7.02	1" Milling (Max.)	SY	1,945	$6.50	$12,642.50
7.03	1.5" Resurface Type SP-12.5 Asphalt Paving	SY	1,945	$15.50	$30,147.50
7.04	Temporary Striping and Thermoplastic Final Striping	LS	1	$3,500.00	$3,500.00
				SUB-TOTAL:	$47,790.00

`	ACTION PARK PARKING LOT	UNIT	QTY	UNIT PRICE	ITEM TOTAL
8.01	Mobilization/Demobilization & General Construction Requirements & Restoration (5% of Base Bid plus add alternates)	LS	1	$1,682.00	$1,682.00
8.02	1" Milling (Max.) (2' strip along curb)	SY	78	$70.00	$5,460.00
8.03	1" Overlay Type SP 9.5 Asphalt Paving	SY	1,805	$15.00	$27,075.00
8.04	Temporary Striping and Thermoplastic Final Striping	LS	1	$5,000.00	$5,000.00
				SUB-TOTAL:	$39,217.00

REVISED BID FORM (Page 5 of 5)

ITB #24-004 ASPHALT PAVING PROJECTS FOR FY 2024

BID SUBMITTED BY Middlesex Paving, LLC. **FL CONTRACTOR LICENSE #** CGC1525524

ITEM NO. 9	OCOEE CEMETERY DRIVE (ADD ALTERNATE)	UNIT	QTY	UNIT PRICE	ITEM TOTAL
9.01	Mobilization/Demobilization & General Construction Requirements & Restoration (5% of Base Bid plus add alternates)	LS	1	$16,000.00	$16,000.00
9.02	1.25" Milling (Max.)	SY	1,642	$3.50	$5,747.00
9.03	1.25" Resurface Type SP-9.5 Asphalt Paving (Revised)	SY	1,642	$12.00	$19,704.00
9.04	Stamped Asphalt (Brick Pattern - Red)	SY	130	$130.00	$16,900.00
9.05	Asphalt Berm (9" W x 6" H)	LF	300	$15.00	$4,500.00
				SUB-TOTAL:	$62,851.00

TOTAL BASE BID WITHOUT ITEM NO. 9 ADD ALTERNATE = $ 2,415,610.00

WRITTEN: Two Million Four Hundred Fifteen Thousand Six Hundred Ten Dollars.

TOTAL BID WITH ITEM NO. 9 ADD ALTERNATE = $ 2,478,461.00

WRITTEN: Two Million Four Hundred Seventy Eight Thousand Four Hundred Sixty One Dollars.

23. LIST OF SUBCONTRACTORS:

SUBCONTRACTOR and/or TEMPORARY WORKER AGENCY NAME/ADDRESS/FEDERAL I.D. NO./CONTACT PERSON/PHONE #:

Mill-it Corporation/9630 Discovery Court, Altamonte Springs, FL 32714/59-2326966/Brian Bortell/321-231-5058/Asphalt Milling

Tru-Mark, Inc./31719 Long Acres Drive, Sorrento, FL 32776/20-1385712/Norman Gaines/352-735-8394/Pavement Markings

Sweep-It, LLC./5300 Vista Club Run, Sanford, FL 32824/46-4551874/Lupe Aranda/407-915-5123/Clean-up Services

Better Paving, Inc./684 Shepard Rd, Orlando, FL 32833/59-2717249/Greg Sherlock/407-468-9777/Stamped Asphalt

(Attach additional sheets if necessary)

The Bidder certifies that the Bidder has investigated each subcontractor/temporary worker agency listed and has received and has in the Bidder's files evidence that each subcontractor/temporary worker agency maintains a fully-equipped organization capable, technically and financially, of performing the pertinent work and that the subcontractor/temporary agency has done similar work in a satisfactory manner. **It is further acknowledged by the contractor that any CHANGE or OMISSIONS in the subcontractors listed above shall require the City of Ocoee's approval before any work shall commence by the additional subcontractor on this project.**

24. EQUIPMENT LISTING:

Please list year, make & model of all equipment that will be used on City of Ocoee properties, including whether owned or leased. If leased please provide name of lessor.

Attached is a complete list of Middlesex Paving, LLC. owned equipment to support milling and asphalt paving work.

25. REFERENCES/EXPERIENCE OF RESPONDENT WITH SIMILAR WORK

The Bidder shall complete the following blanks regarding experience with similar type of work. Bidder must demonstrate ability to perform services of similar complexity, nature, and size of this project within past three years.

DATE OF CONTRACT/AMOUNT OF PROJECT/CLIENT'S NAME AND ADDRESS/ TELPHONE NUMBER/EMAIL ADDRESS/NAME OF CONTACT

See Attached

Have you any similar work in progress at this time? Yes X No ___.
Length of time in business 10 yrs under MPLLC
Have you ever failed to complete work awarded to you? If so, where and why?
No

Bank or other financial references:
Bank of America
One Federal Street
Boston, MA 02110
Contact: Thomas Brennan, Senior Vice President
(617) 434-4512

(Attach additional sheets if necessary)

26. SUMMARY OF LITIGATION:

Provide a summary of any litigation, claim(s), bid or contract dispute(s) filed by or against the Bidder in the past five (5) years which is related to the services that the Bidder provides in the regular course of business. The summary shall state the nature of the litigation, claim, or contact dispute, a brief description of the case, the outcome or projected outcome, and the monetary amounts involved. If none, please so state.

N/A

27. ACKNOWLEDGEMENT OF ADDENDA:

Bidder acknowledges receipt of the following addenda:

No. 1 Dated January 11, 2024
No._____ Dated _____
No._____ Dated _____
No._____ Dated _____
No._____ Dated _____

(remainder of page left blank intentionally)

MPLLC OWNED EQUIPMENT		
	504044	2013 MACK GU813 TRIAXLE DUMP
	504045	2013 MACK GU813 TRIAXLE DUMP
	504046	2013 MACK GU813 TRIAXLE DUMP
	504048	2016 MACK GU813 TRI-AXLE
	504049	2016 MACK GU813 TRI-AXLE
	504050	2016 MACK GU813 TRI-AXLE
	504051	2016 MACK GU813 TRI-AXLE
	504052	2017 MACK GU813 TRI-AXLE DUMP TRUCK
	504053	2017 MACK GU813 TRI-AXLE DUMP TRUCK
	504054	2017 MACK GU813 TRI-AXLE DUMP TRUCK
	504055	2017 MACK GU813 TRI-AXLE DUMP TRUCK
	504056	2017 MACK GU813 TRI-AXLE DUMP TRUCK
	504057	2017 MACK GU813 TRI-AXLE DUMP TRUCK
	504058	2017 MACK GU813 TRI-AXLE DUMP TRUCK
	504059	2017 MACK GU813 TRI-AXLE DUMP TRUCK
	504060	2017 MACK GU813 TRI-AXLE DUMP TRUCK
	504061	2017 MACK GU813 TRI-AXLE DUMP TRUCK
	504062	2019 Mack GR64B Dump Truck
	504063	2019 Mack GR64B Dump Truck
	504065	2019 Mack GR64B Dump Truck
	504066	2019 Mack GR64B dump truck
	504067	2019 Mack GR64B dump truck
	504068	2019 Mack GR64B dump truck
	504069	2019 Mack GR64B dump truck
	504070	2019 Mack GR64B live bottom truck
	504071	2019 Mack GR64B live bottom truck
	504072	2019 Mack GR64B live bottom truck
	504073	2019 Mack GR64B live bottom truck
	504074	2022 Mack GR84B Dump Truck
	504075	2022 Mack GR84B Dump Truck
	504076	2022 MACK GR84B Dump Truck
	504077	2022 MACK GR84B Dump Truck
	504078	2022 MACK GR84B Dump Truck
	504079	2022 MACK GR84B Dump Truck
	504080	2022 MACK GR84B Dump Truck
	504081	2022 MACK GR84B Dump Truck
	504082	2022 MACK GR84B Dump Truck
	504083	2022 MACK GR84B Dump Truck
	503533	2015 LEEBOY ROSCO MAXIMIZER II
	503534	2017 LEEBOY MAXIMIZER III DISTRIBUTOR TRUCK
	503535	2017 Freightliner Tack Distributor Truck MAX III
	503536	2018 TACK TRUCK
	503538	2020 ROSCO MAXIMIZER DISTRIBUTOR TRUCK

	T529	2005 EAGER BEAVER 50GS TRAILER
	T532	2009 INTERSTATE 12BST TRAILER
	T537	2016 TOWMASTER T-12DT TRAILER
	T538	2016 TOWMASTER T-12DT TRAILER
	T547	2017 EAGER BEAVER LOW BED TRAILER
	T548	2017 EAGER BEAVER LOW BED TRAILER
	505110	2015 MACK TRACTOR CHN613
	505111	2017 MACK CHU613 TRACTOR
	505112	2018 Mack CHU613 Low Bed Tractor
	505113	2019 Mack Pinnacle 64T Tractor
	504028	2005 MACK CV713 WATER TRUCK
	504040	2007 MACK CTP713B WATER TRUCK
	AGR207	2018 Roadtec RX700 Milling Machine
	AGR208	2022 WIRTGEN MILLING MACHINE
	P538	2016 8" ROADTEC RP-175E RUBBER TIRE PAVER
	P535	2015 ROADTEC RP-190 10' RUBBER TIRE PAVER
	P536	2016 ROADTECT RP190 10' RUBBER TIRE PAVER
	P537	2016 ROADTECT RP190 10' RUBBER TIRE PAVER
	P539	2018 ROADTEC RP195 TRACK PAVER
	P540	2019 RP-190E Tire Paver 225HP QSB6.7 T4F
	P541	Roadtec RP190 10 Rubber Tire Asphalt Paver
	P542	2022 ROADTEC R190 TIRE ASPHALT PAVER
	MTV502	2017 ROADTEC SB1500 SHUTTLE BUGGY
	MTV503	Roadtec SB-1500 Material Transfer Machine
	MTV504	2021 WEILER MATERIAL TRANSFER VEHICLE
	RS546	2014 WEILER C307 SPLIT DRUM ROLLER
	RS547	2016 WEILER C307 SPLIT DRUM COMPACTOR
	RS548	2018 Weiler C307 Steel Wheel Roller
	RS549	2019 WEILER C310A SPLIT DRUM ROLLER
	RT538	2007 ROSCO 915 COMPACTOR
	RT539	2013 BLAW-KNOX PTC15 RUBBER TIRE ROLLER
	RT540	2013 BLAW KNOX PTC15 RUBBER TIRE COMPACTOR
	RT541	2016 BLAW KNOX PTC15
	RT542	2016 BLAW-KNOX PTC15 RUBBER TIRE ROLLER
	RT537	2007 BOMAG BW24RH COMPACTOR
	SW538	2015 ROSCO CHALLENGER VI BROOM
	SW541	2015 CHALLENGER VI BROOM
	SW542	2015 CHALLENGER VI BROOM
	SW544	2016 Blaw Knox FB90
	SW545	2016 Blaw Knox FB90
	502507	2017 FORD F-750
	502508	2017 FORD F-750
	502509	2017 FORD F-750
	502510	2019 FORD F750 BOX TOOL TRUCK

	502511	2019 FORD F750 BOX TOOL TRUCK
	RSV201	CAT CB24B 2 TON ROLLER
	RSV202	2022 CAT CB2.7 Roller RPO
	RSV556	2017 CAT CB64B VIBRATORY ASPHALT COMPACTOR
	RSV557	2017 CAT CB64B VIBRATORY ASPHALT COMPACTOR
	RSV558	2017 CAT CB64B VIBRATORY ASPHALT COMPACTOR
	RSV559	2017 CAT CB64B VIBRATORY ASPHALT COMPACTOR
	RSV560	2017 CAT CB64B VIBRATORY ASPHALT COMPACTOR
	RSV561	2017 CAT CB64B VIBRATORY ASPHALT COMPACTOR
	RSV562	2018 Cat CB64B Paving Vibe Roller
	RSV563	2018 Cat CB64B Paving Vibe Roller
	RSV564	2018 Cat CB64B Paving Vibe Roller
	RSV565	2018 Cat CB64B Paving Vibe Roller
	RSV566	CAT CB13 ROLLER
	RSV567	2019 CAT CB13 ROLLER
	SKS528	2019 CAT 262D SKID STEER
	SKS529	CAT 262D SKID STEER
	SKS530	2020 CAT 262D SKID STEER
	SKS531	2020 CAT 262D SKID STEER
	SKS533	2022 CAT 262C SKID STEER
	SP501	2017 Roadtec SP100e Stealth Paver
	SW546	2018 BROOM BEAR TRUCK SWEEPER
	SW549	2020 ELGIN BROOM BEAR SWEEPER
	SW550	2022 Elgin Broom Bear Sweeper
	T534	2015 EAGER BEAVER 50GSL/PT
	T535	2016 TOWMASTER 16' SKIDSTEER TRAILER
	T536	2016 TOWMASTER 16' SKIDSTEER TRAILER
	T550	2016 TOWMASTER T-12DT 16' SKIDSTEER TRAILER
	T553	2019 TRAILBOSS KS48DTA PAVING RAMP TRAILER
	T556	2022 TOWMASTER 7-12DT 16'SKIDSTEER TRAILER
	T557	2023 EAGER BEAVER 60GSK-PT-BR LOWBOY
	201386	2016 FORD F150 XL SUPERCAB 4X4
	201399	2017 Ford F150 XLT Pickup
	201400	2017 Ford F150 XL Pickup
	503306	2011 International 4300SBA Durstar 2000 Gallon Water Truck
	503307	2011 International 4300SBA Durastar 2000 Gallon Water Truck
	504019	1999 MACK RD688S WATER TRUCK
	SERLT	Lightower
	5LHT16	2017 ALLMAND NLPRO VII LIGHT TOWER
	5LHT17	2017 ALLMAND NLPRO VII LIGHT TOWER
	5LHT18	2017 ALLMAND NLPRO VII LIGHT TOWER
	5LHT19	2017 ALLMAND NLPRO VII LIGHT TOWER
	5LHT20	2017 ALLMAND NLPRO VII LIGHT TOWER

	5LHT21	2017 ALLMAND NLPRO VII LIGHT TOWER
	5LHT22	2018 ALLMAND NL-V LIGHT TOWER
	5LHT23	2018 ALLMAND NL-V LIGHT TOWER
	5LHT24	2018 ALLMAND NL-V LIGHT TOWER
	5LHT25	2019 ALLMAND NL-V LIGHT TOWER
	5LHT26	2019 ALLMAND NL-V LIGHT TOWER
	5LHT27	2019 ALLMAND NL-V LIGHT TOWER
	5LHT28	2019 ALLMAND NL-V LIGHT TOWER
	5LHT29	2022 Allmand Night Lite Pro II
	5LHT30	2022 Allmand Night Lite Pro II
	5LHT31	2022 Allmand Night Lite Pro II
	5LHT32	2022 Allmand Night Lite Pro II
	5LHT33	2023 ALLMAND NIGHT LIFE PRO II

MIDDLESEX PAVING LLC

REFERENCES / EXPERIENCE

Project Name	Project Description	Completed Contract Amount	Owner	Contract Date	Completion Date
23-03, Asphalt Resurfacing of Various City Streets, 2021-2022 Oviedo, FL	Asphalt Milling and Resurfacing incl. Maintenance of Traffic and Striping	Original $963,719.00	City of Oviedo 400 Alexandria Blvd. Oviedo, FL 32765 Contact.: Alexis Stewart, P.E. City Engineer Ph: (407) 971-5651 Fax:(407) 971-5808 Email: astewart@cityofoviedo.net	5/15/2023	Active
Y20-1031, 3-year Term Contract for Axsphalt Milling and Resurfacing with Friction Course and Asphalt Berms	Asphalt Milling and Resurfacing incl. Maintenance of Traffic, Manhole/Valve Adjustments, and Striping	$7,363,013.35	Orange County Public Works Roads and Drainage Division 4200 South John Young Parkway Contact.: Gildo Pegado Contract Administrator Ph: (407) 836-7817 Email: Hermenegildo.PegadoCustodioRodri@ocfl.net	7/19/2020	June 2023
2023 Resurfacing Varoius Streets PO. 2023-00000837	Asphalt Milling and Paving, incl Maintenance of Traffiic	$1,684,492.75	City of Winter Springs 1126 E. SR434 Winter Springs, FL 32708 Contact.:Phillip Hursh Ph: (407) 327-5989 Fax:(407) 327-47535 Email: phursh@wintersprings.org	3/13/2023	July 2023
City of Winter Garden 2023 Street Resurfacing	Asphalt Milling and Resurfacing incl. Maintenance of Traffic and Striping	$1,703,528.75	City of Winter Garden 300 W. Plant Street Winter Garden, FL 34787 Contact.: Jon Williams Ph: (407) 656-4111 ext. 2267 Email: Jwilliams@cwgdn.com	2/9/2023	June 2023

MIDDLESEX PAVING LLC

REFERENCES / EXPERIENCE

Project Name	Project Description	Completed Contract Amount	Owner	Contract Date	Completion Date
Y20-1031, 3-year Term Contract for Axsphalt Milling and Resurfacing with Friction Course and Asphalt Berms	Asphalt Milling and Resurfacing incl. Maintenance of Traffic, Manhole/Valve Adjustments, and Striping	$7,363,013.35	Orange County Public Works Roads and Drainage Division 4200 South John Young Parkway Contact.: Gildo Pegado Contract Administrator Ph: (407) 836-7817 Email: Hermenegildo.PegadoCustodioRodri@ocfl.net	7/19/2020	June 2023
City of Belle Isle 2021-2022 Belle Isle, FL	Asphalt Milling and Resurfacing incl. Maintenance of Traffic	$378,848.15	City of Belle Isle 1600 Nela Ave Belle Isle, FL32809 Contact.: Bob Francis, ICMA-CM City Manager Ph: (407) 851-7730 Fax:(407) 450-6272 Email: bfrancis@belleislefl.gov	3/2/2022	October 2022
PW2022-021 Eastmonte Park Paving and other City Streets Altamonte Springs., FL	Asphalt Milling and Resurfacing incl. Maintenance of Traffic and Striping	$341,076.11	City of Altamonte Springs 950 Calabria Drive Altamonte Springs, FL 32714 Contact.: Lone "Trey" Sisk Construction Project Manager Ph: (407) 571-8572 Fax:(407) 571-8350 Email: Tsisk@altamonte.org	7/15/2022	August 2022
21-02, Asphalt Resurfacing of Various City Streets, 2020-2021 Oviedo, FL	Asphalt Milling and Resurfacing incl. Maintenance of Traffic and Striping	$2,069,957.56	City of Oviedo 400 Alexandria Blvd. Oviedo, FL 32765 Contact.: Alexis Stewart, P.E. City Engineer Ph: (407) 971-5651 Fax:(407) 971-5808 Email: astewart@cityofoviedo.net	1/4/2021	7/1/2021

EXHIBIT C
BID BOND

KNOW ALL MEN BY THESE PRESENTS, that we, the undersigned, Middlesex Paving, LLC _____, as Principal, and Travelers Casualty and Surety Company of America _____ as Surety, are hereby held and firmly bound unto the City of Ocoee, Florida, as Owner, in the penal sum of, (5 percent of the Contract Bid) $ Five Percent (5%) of Amount Bid

(written amount in dollars and cents)

for the payment of which, well and truly to be made, we hereby jointly and severally bind ourselves, successors and assigns.

Signed, this 12th _____ day of January _____, 2024 The Condition of the above obligation is such that whereas the Principal has submitted to the City of Ocoee, Florida a certain Bid, attached hereto and hereby made a part hereof to enter into a contract in writing, for the **ITB #24-004 Asphalt Paving Projects for FY 2024 (Project).**

NOW THEREFORE

1. Bidder and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to pay to Owner upon default of Bidder any damages, costs, or expenses, including attorney's fees, incurred by Owner that are proximately caused by such default. In no event shall Bidder's and Surety's obligation hereunder exceed the penal sum set forth on the face of this Bond.

2. Default of Bidder shall occur upon the failure of Bidder to deliver within the time required by the Bidding Documents (or any extension thereof agreed to in writing by Owner) the executed Agreement required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents and Contract Documents.

3. This obligation shall be null and void if:

   3.1 Owner accepts Bidder's bid and Bidder delivers within the time required by the Bidding Documents (or any extension thereof agreed to in writing by Owner) the executed Agreement required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents and Contract Documents, or

   3.2 All bids are rejected by Owner, or

   3.3 Owner fails to issue a Notice of Intent to Award to Bidder within ninety (90) days from the time and date fixed for the opening of Bids (or any extension thereof

agreed to in writing by Bidder and, if applicable, consented to by Surety when required by paragraph 5 hereof).

4. Payment under this Bond will be due and payable upon default by Bidder and within 30 calendar days after receipt by Bidder and Surety of written notice of default from Owner, which notice will be given with reasonable promptness, identifying this Bond and the Project and including a statement of the amount due.

5. Surety waives notice of and any and all defenses based on or arising out of any time extension to issue notice of award agreed to in writing by Owner and Bidder, provided that the total time for issuing notice of award including extensions shall not in the aggregate exceed 120 days from Bid Due Date without Surety's written consent.

6. No suit or action shall be commenced under this bond prior to 30 calendar days after the notice of default required in paragraph 4 above is received by Bidder and Surety and in no case later than one year after Bid Due Date.

7. Any suit or action under this Bond shall be commenced only in a court of competent jurisdiction located in the state in which the Project is located.

8. Notices required hereunder shall be in writing and sent to Bidder and Surety at their respective addresses shown on the face of this Bond. Such notices may be sent by personal delivery, commercial courier or by United States Registered or Certified Mail, return receipt requested, postage pre-paid, and shall be deemed to be effective upon receipt by the party concerned.

9. Surety shall cause to be attached to this Bond, a current and effective Power of Attorney evidencing the authority of the officer, agent or representative who executed this Bond on behalf of Surety to execute, seal and deliver such Bond and bind the Surety thereby.

10. This Bond is intended to conform to all applicable statutory requirements. Any applicable requirement of any applicable statute that has been omitted from this Bond shall be deemed to be included herein as if set forth at length. If any provision of this Bond conflicts with any applicable provision of any applicable statute, then the provision of said statute shall govern and the remainder of this Bond that is not in conflict therewith shall continue in full force and effect.

11. The term "bid" as used herein includes a bid, offer, or proposal as applicable.

IN WITNESS WHEREOF, the Principal and the Surety have hereunto set their hands and seals, and such of them as are corporations have caused their corporate seals to be hereto affixed and these presents to be signed by their proper officers, the day and year first set forth above.

BIDDER:	Strike out (X) non-applicable signature blocks and complete applicable block. All signatures must have their names printed or type below their signature.

If Bidder is **SOLE PROPRIETORSHIP**, complete this signature block.	
_____ (Individual's Signature)	(1) _____ (Witness)
_____ (Individual's Signature)	(2) _____ (Witness)
doing business as _____	
_____ (Business Address)	**(SEAL)**
_____ (Telephone No.) _____ (Florida License No.)	

If Bidder is **PARTNERSHIP**, complete this signature block.	
_____ (Partnership Name)	(1) _____ (Witness)
_____ (General Partner's Signature)	(2) _____ (Witness)
_____ (General Partner's Name)	**(SEAL)**
_____ (Business Address)	
_____ _____ (Telephone No.) (Florida License No.)	

If Bidder is **CORPORATION**, complete this signature block.	
Middlesex Paving, LLC (Corporation Name)	(1) Evelyn Sergent (Witness)
Florida (State of Incorporation)	(2) [illegible] (Witness)
By: Michael Iapaluccio (Name of Person Authorized to Sign - See Note 1)	
Vice President, Paving (Title)	(SEAL) MIDDLESEX PAVING LLC LIMITED LIABILITY COMPANY 2012 FLORIDA
[illegible] (Authorized Signature)	
Robert W. Pereira II (Corporation President)	
10801 Cosmonaut Blvd., Orlando, FL 32824 (Business Address)	
407-206-0077 (Telephone No.) CGC1525524 (Florida License No.)	

SURETY

Travelers Casualty and Surety Company of America (Surety Business Name)	Witness: (If agency is not a Corporation) (1) _____ (Witness)
One Tower Square, Hartford, CT 06183 (Principal Place of Business)	(2) _____ (Witness)
By: _____ (Surety Agent's Signature - See Note 2)	Attest: (If Agency is a Corporation)
Nicole Roy (Surety Agent's Name)	_____ (Corporate ~~Secretary~~ Signature) Witness
Attorney-in-Fact; FL Non-Resident License No. W051277 (Surety Agent's Title)	Gabriela Camacho (Corporate ~~Secretary~~ Name) Witness
Alliant Insurance Services, Inc. (Business Name of Local Agent for Surety)	
125 High Street, Suite 2205, Boston, MA 02110 (Business Address)	(Corporate Seal)
(617) 535-7200 (Telephone No.) N/A (Bond No.)	

NOTES:

(1) Complete and attach "Corporate Authority to Execute Documents" if executed by any corporate employee other than president or vice-president.

(2) Complete and attach a certified copy of "Power-of-Attorney" prepared by Surety appointing individual "Attorney-in-Fact" for execution of Bid Bond on behalf of Surety and corresponding notarized "Attorney-in-Fact".

(3) Above addresses are to be used for giving required notice.

(4) Any singular reference to Bidder, Surety, Owner or other party shall be considered plural where applicable.

(5) Surety companies executing bonds must appear on the Treasury Department's most current list (Circular 570 as amended) and be authorized to transact business in the state where the project is located.

ATTORNEY-IN-FACT AFFIDAVIT

STATE OR COMMONWEALTH OF Massachusetts)

COUNTY OR CITY OF Boston)

Before me, a Notary Public, personally came Nicole Roy known to me, and known to be the Attorney-in-Fact of Travelers Casualty and Surety Company of America (Surety Company), a Connecticut (State) Corporation, which

executed the attached bond as surety, who deposed and said that his signature and the corporate seal of said

Travelers Casualty and Surety Company of America (Surety Company) were affixed by order and authority of said Company's Board of Directors,

and that the execution of the attached bond is the free act and deed of Travelers Casualty and Surety Company of America (Surety Company).

Given under my hand and seal this 12th day of January, 2024

Sandra C. Lopes
(Notary Public)

My Commission Expires June 5, 2026.

SANDRA C. LOPES
Notary Public
COMMONWEALTH OF MASSACHUSETTS
My Commission Expires On
June 05, 2026

END OF SECTION

TRAVELERS

Travelers Casualty and Surety Company of America
Travelers Casualty and Surety Company
St. Paul Fire and Marine Insurance Company

POWER OF ATTORNEY

KNOW ALL MEN BY THESE PRESENTS: That Travelers Casualty and Surety Company of America, Travelers Casualty and Surety Company, and St. Paul Fire and Marine Insurance Company are corporations duly organized under the laws of the State of Connecticut (herein collectively called the "Companies"), and that the Companies do hereby make, constitute and appoint **NICOLE ROY** of **BOSTON**, **Massachusetts**, their true and lawful Attorney(s)-in-Fact to sign, execute, seal and acknowledge any and all bonds, recognizances, conditional undertakings and other writings obligatory in the nature thereof on behalf of the Companies in their business of guaranteeing the fidelity of persons, guaranteeing the performance of contracts and executing or guaranteeing bonds and undertakings required or permitted in any actions or proceedings allowed by law.

IN WITNESS WHEREOF, the Companies have caused this instrument to be signed, and their corporate seals to be hereto affixed, this **21st** day of **April, 2021**.

State of Connecticut

City of Hartford ss.

By: _____
Robert L. Raney, Senior Vice President

On this the **21st** day of **April, 2021**, before me personally appeared **Robert L. Raney**, who acknowledged himself to be the Senior Vice President of each of the Companies, and that he, as such, being authorized so to do, executed the foregoing instrument for the purposes therein contained by signing on behalf of said Companies by himself as a duly authorized officer.

IN WITNESS WHEREOF, I hereunto set my hand and official seal.

My Commission expires the **30th** day of **June, 2026**

_____
Anna P. Nowik, Notary Public

This Power of Attorney is granted under and by the authority of the following resolutions adopted by the Boards of Directors of each of the Companies, which resolutions are now in full force and effect, reading as follows:

RESOLVED, that the Chairman, the President, any Vice Chairman, any Executive Vice President, any Senior Vice President, any Vice President, any Second Vice President, the Treasurer, any Assistant Treasurer, the Corporate Secretary or any Assistant Secretary may appoint Attorneys-in-Fact and Agents to act for and on behalf of the Company and may give such appointee such authority as his or her certificate of authority may prescribe to sign with the Company's name and seal with the Company's seal bonds, recognizances, contracts of indemnity, and other writings obligatory in the nature of a bond, recognizance, or conditional undertaking, and any of said officers or the Board of Directors at any time may remove any such appointee and revoke the power given him or her; and it is

FURTHER RESOLVED, that the Chairman, the President, any Vice Chairman, any Executive Vice President, any Senior Vice President or any Vice President may delegate all or any part of the foregoing authority to one or more officers or employees of this Company, provided that each such delegation is in writing and a copy thereof is filed in the office of the Secretary; and it is

FURTHER RESOLVED, that any bond, recognizance, contract of indemnity, or writing obligatory in the nature of a bond, recognizance, or conditional undertaking shall be valid and binding upon the Company when (a) signed by the President, any Vice Chairman, any Executive Vice President, any Senior Vice President or any Vice President, any Second Vice President, the Treasurer, any Assistant Treasurer, the Corporate Secretary or any Assistant Secretary and duly attested and sealed with the Company's seal by a Secretary or Assistant Secretary; or (b) duly executed (under seal, if required) by one or more Attorneys-in-Fact and Agents pursuant to the power prescribed in his or her certificate or their certificates of authority or by one or more Company officers pursuant to a written delegation of authority; and it is

FURTHER RESOLVED, that the signature of each of the following officers: President, any Executive Vice President, any Senior Vice President, any Vice President, any Assistant Vice President, any Secretary, any Assistant Secretary, and the seal of the Company may be affixed by facsimile to any Power of Attorney or to any certificate relating thereto appointing Resident Vice Presidents, Resident Assistant Secretaries or Attorneys-in-Fact for purposes only of executing and attesting bonds and undertakings and other writings obligatory in the nature thereof, and any such Power of Attorney or certificate bearing such facsimile signature or facsimile seal shall be valid and binding upon the Company and any such power so executed and certified by such facsimile signature and facsimile seal shall be valid and binding on the Company in the future with respect to any bond or understanding to which it is attached.

I, **Kevin E. Hughes**, the undersigned, Assistant Secretary of each of the Companies, do hereby certify that the above and foregoing is a true and correct copy of the Power of Attorney executed by said Companies, which remains in full force and effect.

Dated this 12th day of January, 2024

_____
Kevin E. Hughes, Assistant Secretary

To verify the authenticity of this Power of Attorney, please call us at 1-800-421-3880.
Please refer to the above-named Attorney(s)-in-Fact and the details of the bond to which this Power of Attorney is attached.

MIDDLESEX PAVING LLC

At a meeting of the Board of Directors of MIDDLESEX PAVING, LLC held on May 8, 2023, at which all the Directors were present or waived notice, it was VOTED, that Robert W. Pereira, Chief Executive Officer & Managing Member; Robert W. Pereira II, President and Chief Operating Officer & Managing Member; David P. Socci, Senior Vice President, Assistant Secretary & Manager; Peter J. Martinkus, Senior Vice President Finance, CFO, Secretary & Manager and Michael J. Iapaluccio, Vice President Paving; be and they hereby are authorized to execute bids, contracts, bonds, and owners' payment requisitions in the name and on behalf of said Corporation, and affix its Corporate Seal thereto; and such execution of any contract or obligation in the Corporation's name on its behalf by such Chief Executive Officer, President, Vice President, and Secretary under seal of the Corporation, shall be valid and binding upon this Corporation.

A true copy

ATTEST: _____
Peter J. Martinkus
Secretary

MIDDLESEX PAVING LLC LIMITED LIABILITY COMPANY 2012 FLORIDA

Place of Business: 10801 Cosmonaut Blvd
Orlando, Florida 32824

Date: 1/16/2024

I hereby certify that I am the Secretary of MIDDLESEX PAVING, LLC, that Robert W. Pereira is the duly elected Chief Executive Officer & Managing Member, Robert W. Pereira II is the duly elected President, Chief Operating Officer & Managing Member, and David P. Socci is the duly elected Senior Vice President & Assistant Secretary & Manager, Peter J. Martinkus & Michael J. Iapaluccio, Vice President Paving is the duly elected Senior Vice President Finance, CFO, Secretary & Manager of said Corporation, and that the above vote has not been amended or rescinded and remains in full force and effect as of this date.

_____
Peter J. Martinkus
Secretary

MIDDLESEX PAVING LLC LIMITED LIABILITY COMPANY 2012 FLORIDA

Officers and Board Members of
Middlesex Paving, LLC.
Principal Office:
10801 Cosmonaut Blvd
Orlando, FL 32824

Name	Title	Office
Robert W. Pereira	Chief Executive Officer & Managing Member	10801 Cosmonaut Boulevard, Orlando, FL 32824
Robert W. Pereira II	President & Chief Operating Officer & Managing Member	One Spectacle Pond Road, Littleton, MA 01460
David Socci	Senior Vice President & Assistant Secretary & Manager	One Spectacle Pond Road, Littleton, MA 01460
Peter J. Martinkus	Senior Vice President Finance, CFO & Secretary & Manager	One Spectacle Pond Road, Littleton, MA 01460
Michael J. Iapaluccio	Vice President Paving	10801 Cosmonaut Boulevard, Orlando, FL 32824

Attachment A

EXHIBIT D - ITB #24-004 BID CONFLICT OF INTEREST DISCLOSURE FORM

The award of this contract is subject to the provisions of Chapter 112, Florida Statutes. All Bidders must disclose within their Bid: the name of any City of Ocoee employee, Mayor or City Commissioner, other City Official, or City Consultants, who owns assets or capital stock, directly or indirectly, in the Bidder's firm or any of its branches, or would directly or indirectly benefit by the profits or emoluments of this Bid. (Indirect ownership or benefit applies to any members of his or her immediate family.) Bidder certifies that no member of the entity's ownership or management is presently applying for an employee position or actively seeking an elected position with the City. In the event that a conflict of interest is identified in the provision of services, Bidder agrees to immediately notify the City in writing.

The purpose of this disclosure form is to give the City the information needed to identify potential conflicts of interest for the City Commission, Staff, and other key City employees and consultants involved in the award and administration of this contract.

According to Chapter 112, Florida Statutes, the term "conflict of interest" "means a situation in which regard for a private interest tends to lead to disregard of a public duty or interest", and refers to situations in which financial or other personal considerations may adversely affect, or have the appearance of adversely affecting, an employee's professional judgment in exercising any City duty or responsibility in administration, management, instruction, research, or other professional activities.

Please check one of the following statements and attach additional documentation if necessary:

X _____ To the best of our knowledge, the undersigned firm has no potential conflict of interest for this Bid.

_____ The undersigned firm, by attachment to this form, submits information which may be a potential conflict of interest for this Bid.

Acknowledged by:

Middlesex Paving, LLC.
Firm Name

Signature

MIDDLESEX PAVING LLC LIMITED LIABILITY COMPANY 2012 FLORIDA

Michael Iapaluccio, Vice President, Paving
Name and Title (Print or Type)

January 16, 2024
Date

EXHIBIT E
ITB #24-004 DRUG-FREE WORKPLACE CERTIFICATION

IDENTICAL TIE BIDS: Preference shall be given to businesses with drug-free workplace programs. Whenever two or more bids which are equal with respect to price, quantity, and service are received by the State or by any political subdivision for the procurement of commodities or contractual services, a bid received from a business that certifies that it has implemented a drug-free workplace program shall be given preference in the award process. Established procedures for processing tie bids will be followed if none of the tied vendors have a drug-free workplace program (Florida Statutes Section 287.087). In order to have a drug-free workplace program, a business shall:

1. Publish a statement notifying employees that the unlawful manufacture, distribution, dispensing, possession, or use of a controlled substance is prohibited in the workplace and specifying the actions that will be taken against employees for violations of such prohibition.

2. Inform employees about the dangers of drug abuse in the workplace, the business's policy of maintaining a drug-free workplace, and available drug counseling, rehabilitation, and employee assistance programs, and the penalties that may be imposed upon employees for drug abuse violations.

3. Give each employee engaged in providing the commodities or contractual services that are under bid a copy of the statement specified in subsection (1).

4. In the statement specified in subsection (1), notify the employees that, as a condition of working on the commodities or contractual services that are under bid, the employee will abide by the terms of the statement and will notify the employer of any conviction of, or pleas of guilty or *nolo contendere* to, any violation of Chapter 893 or of any controlled substance law of the United States or any state, for a violation occurring in the workplace no later than five (5) days after such conviction.

5. Impose a sanction on, or require the satisfactory participation in a drug abuse assistance or rehabilitation program is such is available in the employee's community, by any employee who is so convicted.

6. Make a good faith effort to continue to maintain a drug-free workplace through implementation of this section.

As the person authorized to sign the statement, I certify that this firm complies fully with the above requirements.

Bidder: Middlesex Paving, LLC.

Signed: _____

By: Michael Iapaluccio
(Print or Type Name)

Title: Vice President Paving

Date: January 16, 2024

MIDDLESEX PAVING LLC
LIMITED LIABILITY COMPANY
2012
FLORIDA

END OF SECTION

EXHIBIT F - BID # 24-004 COMPANY INFORMATION/SIGNATURE SHEET

FAILURE TO COMPLY WITH THESE BID INSTRUCTIONS WILL RESULT IN DISQUALIFICATION OF YOUR BID. PLEASE SIGN BELOW ATTESTING THAT YOU HAVE READ AND UNDERSTAND ALL BID INSTRUCTIONS AND THAT THE PRICES REFLECTED ON THE "SCOPE OF WORK/BID FORM" ARE ACCURATE AND WITHOUT COLLUSION. THE PERSON SIGNING THIS BID SHOULD HAVE THE LEGAL AUTHORITY TO BIND THE COMPANY INTO A LEGAL CONTRACT.

Middlesex Paving, LLC.
COMPANY NAME

407-632-4028
TELEPHONE (INCLUDE AREA CODE)

407-206-3558
FAX (INCLUDE AREA CODE)

mikei@middlesexco.com
E-MAIL ADDRESS

AUTHORIZED SIGNATURE (manual)

Michael Iapaluccio, Vice President,
NAME/TITLE (PLEASE PRINT)

IF REMITTANCE ADDRESS IS DIFFERENT FROM PURCHASE ORDER ADDRESS, PLEASE INDICATE BELOW:

N/A

10001 Cosmonaut Blvd
STREET ADDRESS

★ Orlando FL 32824
CITY STATE ZIP

MIDDLESEX PAVING, LLC LIMITED LIABILITY COMPANY 2012 FLORIDA

★ FEDERAL ID # 46-1625297

____ Individual ____ Corporation ____ Partnership X Other (Specify) LLC

Sworn to and subscribed before me by means of ☑ physical presence or ☐ online notarization this 16th day of January, 2024.

Personally Known X or

Produced Identification_____

(Type of Identification)

Notary Public - State of Florida
County of Orange

Signature of Notary Public

Evelyn S Sergeant
Printed, typed or stamped
Commissioned name of Notary Public

FLORIDA NOTARY ASSOCIATION SINCE 1978

EVELYN S. SERGEANT
Notary Public
State of Florida
Comm# HH425179
Expires 7/24/2027

EXHIBIT G
CONTRACTOR E-VERIFY AFFIDAVIT

I hereby certify that Middlesex Paving, LLC. [insert contractor company name] does not employ, contract with, or subcontract with an unauthorized alien, and is otherwise in full compliance with Section 448.095, Florida Statutes.

All employees hired on or after January 1, 2021 have had their work authorization status verified through the E-Verify system.

A true and correct copy of Middlesex Paving, LLC./Middlesex Corp [insert contractor company name] **proof of registration in the E-Verify system is attached to this Affidavit.**

MIDDLESEX PAVING LLC LIMITED LIABILITY COMPANY 2012 FLORIDA

Print Name: Michael Iapaluccio, Vice President, Paving

Date: January 16, 2024

STATE OF FLORIDA

COUNTY OF Orange

The foregoing instrument was acknowledged before me by means of ☑physical presence or ☐online notarization, this January 16, 2024 (date) by Michael Iapaluccio (name of officer or agent, title of officer or agent) of Middlesex Paving, LLC. (name of contractor company acknowledging), a Florida (state or place of incorporation) corporation, on behalf of the corporation. He/she is personally known to me or has produced _____ (type of identification) as identification.

[Notary Seal]

EVELYN S. SERGEANT
Notary Public
State of Florida
Comm# HH425179
Expires 7/24/2027

Notary Public

Evelyn S Sergeant
Name typed, printed or stamped

My Commission Expires: 7/24/2027

My Company Profile

Company Information

Company Name
The Middlesex Corporation, Inc.

Company ID
392284

Employer Identification Number (EIN)
042534615

DUNS Number
062185517

NAICS Code
237

Subsector
Heavy and Civil Engineering Construction

Doing Business As (DBA) Name

Enrollment Date
Feb 14, 2011

Unique Entity Identifier (UEI)

Total Number of Employees
500 to 999

Sector
Construction

Middlesex Paving, LLC.

Prequalification Certificates,

Licenses and

Affirmative Action Plan

Florida Department of Transportation

RON DESANTIS
GOVERNOR

605 Suwannee Street
Tallahassee, FL 32399-0450

JARED W. PERDUE, P.E.
SECRETARY

June 07,2023

MIDDLESEX PAVING, LLC
10801 COSMONAUT BOULEVARD
ORLANDO, FLORIDA 32824

RE: CERTIFICATE OF QUALIFICATION

The Department of Transportation has qualified your company for the type of work indicated below.

FDOT APPROVED WORK CLASSES:
FLEXIBLE PAVING, HOT PLANT-MIXED BITUM. COURSES, Driveways, Milling.

Unless notified otherwise, this Certificate of Qualification will expire **6/30/2024.**

In accordance with Section 337.14(4), Florida Statutes, changes to Ability Factor or Maximum Capacity Rating will not take effect until after the expiration of the current certificate of prequalification (if applicable).

In accordance with Section 337.14(1), Florida Statutes, an application for qualification must be filed within (4) months of the ending date of the applicant's audited annual financial statements.

If the company's maximum capacity has been revised, it may be accessed by logging into the Contractor Prequalification Application System via the following link:
HTTPS://fdotwp1.dot.state.fl.us/ContractorPreQualification

Once logged in, select "View" for the most recently approved application, and then click the "Manage" and "Application Summary" tabs.

The company may apply for a Revised Certificate of Qualification at any time prior to the expiration date of this certificate according to Section 14-22.0041(3), Florida Administrative Code (F.A.C.), by accessing the most recently approved application as shown above and choosing "Update" instead of "View." If certification in additional classes of work is desired, documentation is needed to show that the company has performed such work.

All prequalified contractors are required by Section 14-22.006(3), F.A.C., to certify their work underway monthly in order to adjust maximum bidding capacity to available bidding capacity. You can find the link to this report at the website shown above.

Sincerely,

James E. Taylor II

James E. Taylor II, Prequalification Supervisor
Contracts Administration Office

JTII

Ron DeSantis, Governor

Melanie S. Griffin, Secretary

STATE OF FLORIDA
DEPARTMENT OF BUSINESS AND PROFESSIONAL REGULATION

CONSTRUCTION INDUSTRY LICENSING BOARD

THE GENERAL CONTRACTOR HEREIN IS CERTIFIED UNDER THE
PROVISIONS OF CHAPTER 489, FLORIDA STATUTES

PEREIRA, ROBERT WILLIAM II

MIDDLESEX PAVING, LLC
10801 COSMONAUT BLVD
ORLANDO FL 32824

LICENSE NUMBER: CGC1525524

EXPIRATION DATE: AUGUST 31, 2024

Always verify licenses online at MyFloridaLicense.com

Do not alter this document in any form.

This is your license. It is unlawful for anyone other than the licensee to use this document.

CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY): 6/29/2023

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER
Alliant Insurance Services, Inc.
121 Oliver Street, 4th Floor
Boston MA 02110

CONTACT NAME: Heather Roe
PHONE (A/C, No, Ext): 561-214-6368 FAX (A/C, No):
E-MAIL ADDRESS: TMCCerts@alliant.com

INSURER(S) AFFORDING COVERAGE	NAIC #
INSURER A : Federal Insurance Company	20281
INSURER B : Executive Risk Indemnity Inc	35181
INSURER C : Chubb National Insurance Co	10052
INSURER D : Zurich American Insurance Co	16535
INSURER E :	
INSURER F :	

INSURED MIDSEXC-01
Middlesex Paving LLC
10801 Cosmonaut Boulevard
Orlando, FL 32824

COVERAGES **CERTIFICATE NUMBER:** 1461089453 **REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
B C	X **COMMERCIAL GENERAL LIABILITY** CLAIMS-MADE X OCCUR X Contractual Liab X XCU Included GEN'L AGGREGATE LIMIT APPLIES PER: POLICY X PRO-JECT X LOC OTHER:	Y	Y	54309974 (AOS) 54309975 (CT)	7/1/2023 7/1/2023	7/1/2024 7/1/2024	EACH OCCURRENCE DAMAGE TO RENTED PREMISES (Ea occurrence) MED EXP (Any one person) PERSONAL & ADV INJURY GENERAL AGGREGATE PRODUCTS - COMP/OP AGG	$ 2,000,000 $ 1,000,000 $ 10,000 $ 2,000,000 $ 4,000,000 $ 4,000,000 $
A	**AUTOMOBILE LIABILITY** X ANY AUTO OWNED AUTOS ONLY SCHEDULED AUTOS X HIRED AUTOS ONLY X NON-OWNED AUTOS ONLY	Y	Y	54309973	7/1/2023	7/1/2024	COMBINED SINGLE LIMIT (Ea accident) BODILY INJURY (Per person) BODILY INJURY (Per accident) PROPERTY DAMAGE (Per accident)	$ 1,000,000 $ $ $ $
A	**UMBRELLA LIAB** X OCCUR X **EXCESS LIAB** CLAIMS-MADE DED RETENTION $	Y	Y	9365-2728	7/1/2023	7/1/2024	EACH OCCURRENCE AGGREGATE	$ 5,000,000 $ 5,000,000 $
D	**WORKERS COMPENSATION AND EMPLOYERS' LIABILITY** ANYPROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? Y / N: N **(Mandatory in NH)** If yes, describe under DESCRIPTION OF OPERATIONS below	N / A	Y	WC0381368-08	7/1/2023	7/1/2024	X PER STATUTE OTH-ER E.L. EACH ACCIDENT E.L. DISEASE - EA EMPLOYEE E.L. DISEASE - POLICY LIMIT	 $ 1,000,000 $ 1,000,000 $ 1,000,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)
Evidence of Insurance Purposes Only

CERTIFICATE HOLDER

Middlesex Paving, LLC
10801 Cosmonaut Blvd.
Orlando FL 32824

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE
Rick Shrum

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AGENCY CUSTOMER ID: _____

LOC #: _____

ADDITIONAL REMARKS SCHEDULE

AGENCY		NAMED INSURED
Alliant Insurance Services, Inc.		Middlesex Entity Listed above
POLICY NUMBER		
CARRIER	NAIC CODE	EFFECTIVE DATE:

ADDITIONAL REMARKS

THIS ADDITIONAL REMARKS FORM IS A SCHEDULE TO ACORD FORM,

FORM NUMBER: _____ **FORM TITLE:** _____

ADDITIONAL POLICY INFORMATION

EXCESS LIABILITY

CARRIER: National Fire & Marine Insurance Company
POLICY #: 42-XSF-308038-05
POLICY TERM: 7/1/2023 to 7/1/2024
POLICY LIMIT: $5,000,000 EXCESS OF $5,000,000

CARRIER: Lexington Insurance Company
POLICY #: 23627748
POLICY TERM: 7/1/2023 to 7/1/2024
POLICY LIMIT: $15,000,000 EXCESS OF $10,000,000

CARRIER: Sirius Specialty Insurance Corporation
POLICY #: TSX-000107-23
POLICY TERM: 7/1/2023 to 7/1/2024
POLICY LIMIT: $10,000,000 EXCESS OF $25,000,000

CARRIER: Illinois Union Insurance Company
POLICY #: G72532910 003
POLICY TERM: 7/1/2023 to 7/1/2024
POLICY LIMIT: $15,000,000 EXCESS OF $35,000,000

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Florida Department of Transportation

RON DESANTIS
GOVERNOR

605 Suwanee Street
Tallahassee, FL 32399-0450

KEVIN J. THIBAULT, P.E.
SECRETARY

4/1/2022

RE: DBE AFFIRMATIVE ACTION PLAN APPROVAL

The Disadvantaged Business Enterprise Affirmative Action Plan submitted by:

MIDDLESEX PAVING, LLC

has been approved for a period of three years. Please update and submit a new plan before the expiration date shown below. If you do not plan to work on any Florida Department of Transportation Projects, it will not be necessary for you to submit a new plan.

If you need any additional information, please contact me at (850) 414-4747.

Sincerely,

Stefan Kulakowski
State Contract Compliance Administrator
Equal Opportunity Office

AFFIRMATIVE ACTION PLAN EXPIRATION: 4/1/2025

This plan is one of the requirements to bid on contracts for the Florida Department of Transportation. This is not approval for Unified Certification Program Disadvantaged Business Enterprise (UCP/DBE) Certification. For additional information in becoming a DBE, contact the Certification Section at (850)414-4747.

Middlesex Paving LLC hereafter referred to as "the Company" or "this Company" has adopted this policy and plan.

Date: March 31, 2022 By: Signature

Corporate FEID No.: 46-1625297 Robert W. Pereira, II, President & COO Printed name & title

DISADVANTAGED BUSINESS ENTERPRISE ('DBE') AFFIRMATIVE ACTION PLAN

POLICY STATEMENT

It is the policy of this Company that disadvantaged businesses, as defined by 49 CFR Part 26, Subpart D and implemented under Rule Chapter 14-78, F.A.C., shall have the opportunity to participate as subcontractors and suppliers on all contracts awarded by the Florida Department of Transportation (FDOT).

The requirements of Rule Chapter 14-78, F.A.C., shall apply to all contracts entered into between FDOT and the Company. Subcontractors and/or suppliers to the Company will also be bound by the requirements of Rule Chapter 14-78 F.A.C. and its subcontractors shall take all necessary and reasonable steps in accordance with Chapter 14-78, F.A.C., to ensure that disadvantaged businesses have the opportunity to compete and perform work contracted with FDOT. The Company and its subcontractors shall not discriminate on the basis of race, color, religion, national origin, disability, sex, or age in the administration of contracts with FDOT. The Company has designated and appointed a Liaison Officer to develop, maintain, and monitor the DBE Affirmative Action Plan implementation. The Liaison Officer will be responsible for disseminating this policy statement throughout the Company and to disadvantaged controlled businesses. This statement is posted on notice boards of the Company.

I. DESIGNATION OF LIAISON OFFICER

The Company will aggressively recruit disadvantaged businesses as subcontractors and suppliers for all contracts with FDOT. The Company has appointed a Liaison Officer to develop and maintain this Affirmative Action Plan in accordance with the requirements of Rule Chapter 14-78, F.A.C. The Liaison Officer will have primary responsibility for developing, maintaining, and monitoring the Company's utilization of disadvantaged subcontractors in addition to the following specific duties:

(1) The Liaison Officer shall aggressively solicit bids from disadvantaged business subcontractors for all FDOT contracts;
(2) The Liaison Officer will submit all records, reports, and documents required by FDOT, and shall maintain such records for a period of not less than three years, or as directed by any specific contractual requirements of FDOT.

The following individual has been designated Liaison Officer with responsibility for implementing the Company's affirmative action program in accordance with the requirements of FDOT.

DBE LIAISON OFFICER:

NAME: Evelyn Sergeant
TITLE: Coordinator-Estimating
EMAIL: eseargeant@middlesexco.com
ADDRESS: 10801 Cosmonaut Blvd Orlando FL 32824

II. AFFIRMATIVE ACTION METHODS

In order to formulate a realistic Affirmative Action Plan, the Company has identified the following known barriers to participation by disadvantaged subcontractors, before describing its proposed affirmative action methods:

1. Lack of qualified disadvantaged subcontractors in our specific geographical areas of work;
2. Lack of certified disadvantaged subcontractors who seek to perform FDOT work;
3. Lack of interest in performing on FDOT contracts;
4. Lack of response when requested to bid;
5. Limited knowledge of FDOT plans and specifications to prepare a responsible bid.

In view of the barriers to disadvantaged businesses stated above, it shall be the policy of the Company to provide opportunity by utilizing the following affirmative action methods to ensure participation on the contracts with FDOT will:

1. Provide written notice to all certified DBE subcontractors in the geographical area where the work is to be subcontracted by the Company;
2. Advertise in minority focused media concerning subcontract opportunities with the Company;
3. Select portions of work to be performed by DBEs in order to increase the likelihood of meeting the state's goals (including, where appropriate, breaking down contracts into economically feasible units to facilitate DBE participation);
4. Provide adequate information about the plans, specifications, and requirements of the contract, notrejecting subcontractors without sound reasons based on a thorough investigation of their capabilities;
5. Waive requirements of performance bonds where it is practical to do so;
6. Attend pre-bid meetings held by FDOT to apprise disadvantaged subcontractors of opportunities with the Company;
7. Follow up on initial solicitations of interest to DBE subcontractors to determine with certainty whether the DBE company is interested in the subcontract opportunity.
8. Utilize FDOT's DBE Supportive Services providers for assistance in identifying and notifying DBE's of contracting opportunities.

The Company understands that this list of affirmative action methods is not exhaustive and will include additional approaches after having established familiarity with the disadvantaged subcontracting community and/or determined the stated approaches to be ineffective.

III. IMPLEMENTATION

The Company will make every effort to

1. Meet state goals by utilizing its affirmative action methods.
2. Express good faith by seeking to utilize DBE subcontractors where work is to be subcontracted.
3. Ensuring that contracted DBE's perform a commercially useful function as evidenced by their execution of a distinct element of work with its own workforce and the carrying out responsibilities by actually performing, managing and supervising the work involved.

IV. REPORTING

The Company shall keep and maintain such records as are necessary to determine the Company's compliance with its DBE Affirmative Action Plan. The Company will design its record keeping system to indicate:

1. The number of DBE subcontractors and suppliers used by the Company, identifying the items of work, materials and services provided;
2. The efforts and progress being made in obtaining DBE subcontractors through local and community sources;
3. Documentation of all contracts, to include correspondence, telephone calls, newspaper advertisements, etc., to obtain DBE participation on all FDOT projects;
4. The Company shall comply with FDOT's requirements regarding payments to subcontractors including DBEs for each month (estimate period) in which the companies have worked.

V. DBE DIRECTORY

The Company will utilize the DBE Directory published by the FDOT.

THE MIDDLESEX CORPORATION

DRUG-FREE WORKPLACE

POLICY SUMMARY

September 2018

IMPORTANT: This document is only a summary of The Middlesex Corporation's official Drug-Free Workplace Policy. The official copy is available to all Team Members for their review and should be reviewed with respect to specific terms, definitions, or procedures. This policy does not create a binding employment contract or modify an existing contract.

Disclaimer & Statement of Copyright

This document has been prepared for The Middlesex Corporation with every effort made to ensure accuracy and completeness. Responsibility for any errors or omissions, or responsibility for any interpretations, applications, and changes made by The Middlesex Corporation are that of The Middlesex Corporation. The enclosed document is not intended to substitute for a labor attorney should legal advice or representation be necessary in protecting the company's legal rights. The Middlesex Corporation should consult and rely upon the advice of their own legal counsel when making decisions pertaining to their Team Members.

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PURPOSE

The Middlesex Corporation (TMC or "the company") is committed to providing a safe, healthy, and productive work environment. Therefore, to meet this objective, as well as our obligations under applicable federal and state laws, TMC has a Drug-free Workplace Policy and program that provides TMC with reasonable measures to ensure that a Team Member drug or alcohol problem does not jeopardize the successful operation of our business, or otherwise negatively affect TMC, our Team Members, or the general public.

While it is not TMC's intention to intrude into the private lives of its Team Members, TMC does expect Team Members to report to work in fit condition to perform their duties. We realize that Team Members with drug and alcohol problems make up only a small percentage of the workforce, and also recognize that having a Drug-free Workplace Policy will benefit all Team Members.

WHO IS COVERED

The drug-free workplace policy covers all temporary Team Members, part-time Team Members, and full-time Team Members, including independent contractors, subcontractors and interns of TMC. Team Members who are covered under the Department of Transportation (DOT) regulations must comply with the DOT regulated rules, as well as TMC's company policy and may contact a Site Safety Manager or the HSE Corporate Director for a copy of the DOT Rules.

AVAILABILITY OF TREATMENT

All eligible part-time, full-time, and temporary Team Members and their family members have access to the Employee (Team Member) Assistance Program (EAP) at no charge.

Should there be a need for treatment, coverage is based on the parameters set forth in the Team Member's medical benefits plan. Team Members who participate in another provider's plan should refer to that plan to determine what coverage is available. Team Members are responsible for all costs of treatment that are not covered by their applicable medical benefits plan.

SUPPORT FOR VOLUNTARILY SEEKING HELP

To assist Team Members in obtaining treatment, TMC offers the services of an EAP, which provides assessment, counseling, and referral services for eligible Team Members with substance abuse and other personal problems. This service may be accessed 24 hours a day, 365 days a year. The EAP provides experienced counselors to help with personal problems, including those related to drug and alcohol. Confidentiality is assured.

Team Members who undergo voluntary counseling or treatment that continue to work are subject to the same job performance and behavior standards as other Team Members. As is the case of all Team Members, those seeking voluntary counseling or treatment who fail to meet performance standards will be subject to disciplinary action.

When treatment is necessary, coverage is based on the parameters set forth in the medical benefits plan. Team Members are solely responsible for all costs of treatment not covered by their applicable medical benefits plan.

INTERVENTION

Due to the fact that substance abuse often involves denial of the problem, many abusers do not voluntarily seek treatment. In such cases, TMC reserves the right to intervene.

Intervention by a Supervisor or Manager: Whenever a supervisor or manager believes a Team Member or supervisor or manager's behavior and/or action(s) may be related to the use of drugs or alcohol, the supervisor or manager will take appropriate action, which may include a drug and alcohol test, as described in the Referral Procedures Section of this Policy. A supervisor or manager failing to take action when he/she believes a Team Member or supervisor or manager's behavior and/or action(s) may be related to the use of drugs or alcohol may lead to disciplinary action up to and including termination.

Intervention by a Team Member: Whenever a Team Member has reasonable suspicion, as defined in the Appendix, that the questionable behavior and/or action(s) of a fellow Team Member, supervisor, or manager may be related to the use of drugs or alcohol, the Team Member should contact a Department Manager or a Project Manager or a member of the Department. The information provided to the individual is confidential. He/she will pursue the situation based on appropriate procedures.

PROHIBITED CONDUCT

TMC has defined Team Member conduct that is prohibited on company property, on company business, and in company-supplied vehicles or personal vehicles being used for company business or during working hours. The policy lists the prohibited conduct, with the following as *only examples* of such prohibited conduct:

- Use, possession, manufacture, distribution, attempted distribution, dispensation, attempted dispensation, sale, attempted sale, purchase, attempted purchase, cultivation, or storage or being "under the influence" of illicit drugs (defined as a positive test result);

  IMPORTANT: In accordance with Federal law, TMC does not allow any Team Member to use, possess, cultivate, manufacture, distribute, dispense, sell, or store marijuana under any circumstance. Based on this, the company does not accept a medical marijuana card or a letter recommending/prescribing the use of marijuana for any reason.

  In addition, in accordance with Federal law, TMC does not allow any Team Member to use, possess, consume, distribute, store or be under the influence of any synthetic drugs simulating the effects of cannabinoid, cocaine or amphetamine products.

- Unauthorized use, possession, or being "under the influence" of alcohol (defined as a breath alcohol concentration of .01 or higher, unless otherwise specified in the Permitted Conduct section of this policy summary);

  In addition, TMC prohibits Team Members who leave company property during work hours to consume alcohol if they will be returning to work (e.g. meals, breaks, between sales or service calls), unless otherwise specified in the Permitted Conduct section of this policy summary.

- Conviction for any criminal drug or alcohol statute for a violation occurring in the workplace, while conducting company business, while driving company owned, rented or leased vehicles or personal vehicles being used for company business, or which is directly related to your job or creates an unreasonable risk of harm to property or to the welfare of Team Members or customers of the company or the general public.

- Failing to notify an HSE Director of any criminal drug or alcohol statute conviction or arrest within 24 hours or the next working day for a violation occurring in the workplace, while conducting company business, while driving company owned, rented or leased vehicles or personal vehicles being used for company business, or which is directly related to your job or creates an unreasonable risk of harm to property or to the welfare of Team Members or customers of the company or the general public.

- Failing to report any change in driver's license status (restrictions or loss of license), within 24 hours or the next working day, to his/her supervisor, if his/her job function may include driving a vehicle for company business.

- Taking a prescription drug that is not according to their physician's direction, as well as not following manufacturers' directions when taking over-the-counter drugs.

  Note: Team Members in safety-sensitive positions must report to his/her supervisor the use of a prescription drug that may alter the Team Member's physical or mental ability to perform his/her safety-sensitive function and must provide a note, based on the Team Member's job description, from the prescribing licensed physician that the Team Member is able to continue to perform his/her safety-sensitive job function for the term of the prescription, including any specified restrictions.

  The prescription is to be written in the Team Member's own name only and from a foreign country are not acceptable. The type of drug being taken and the purpose for taking the drug need not be reported. The Team Member's supervisor and an HSE Director or the Director of Human Resources will determine whether the Team Member's job assignment should be temporarily changed while the prescription is being administered. Sick leave, short-term disability, and/or vacation time may be use if available. All other leave will be unpaid.

- Refusing to consent to, remain ready for, cooperate with, submit to, or tampering with a drug and/or alcohol specimen or testing process when required under the policy including switching, substituting, adulterating, or diluting a specimen when collected for a drug or alcohol test;

- Refusing to sign the Drug-Free Workplace Policy Acknowledgment and Consent Form or the Rehabilitation Agreement when required is a violation of the policy;

- Failure to notify the designated manager when contacted to report for duty outside the Team Members scheduled shift – not previously scheduled, when the Team Member believes that he/she may be under the influence of drugs and/or alcohol, as defined above. The manager contacted by the Team Member will determine if the Team Member shall report to work.

- Having any drug or alcohol statute conviction or arrest or engaging in the following conduct, either off company premises or during off-duty hours:
  - Possession, use, manufacture, distribution, dispensation, cultivation or sale of controlled substances, illegally used drugs, or alcohol off company premises that may adversely affect the company, the Team Member's work performance, or the Team Member's safety, others' safety at work or the general public
  - Illegal use of legal substances off company premises or during off-duty hours that may adversely affect the company, the Team Member's work performance, the Team Member's safety or others' safety at work or the general public

PERMITTED CONDUCT

TMC never encourages the consumption of alcohol. However, TMC permits the consumption, possession and storage of alcohol under the following exceptions. *Nevertheless, these exceptions:*

- Do not permit any Team Member to be under the influence of alcohol, which is a BrAC of .04 or higher;

- Do not permit consumption of alcohol at any time by underage persons;

- Require all Team Members who are covered under the DOT/FMCSA regulations to comply with the DOT/FMCSA regulated rules pertaining to the consumption and storage of alcohol.

GUIDELINES:

For purposes of this policy, 1 drink equals 1.5-ounces of 80-proof alcohol, a 5-ounce glass of wine, or a 12-ounce beer. As a guideline, an individual weighing 180 pounds who consumes 2 drinks in one hour will have an approximate alcohol level of .04 BrAC. A 120-pound individual consuming 2 drinks in one hour will have an approximate alcohol level of .06 BrAC. Consuming the same number of drinks consuming higher proof liquor or higher gravity beers can cause a greater under-the-influence levels.

It is important for Team Members to note reaching the under-influence level, as defined in this policy, will vary individual by individual. It is related to a number of factors, such as the person's age, gender, amount of food in the stomach, prior experience with drinking, level of tolerance and the individual's weight.

In accordance with the conditions above, consumption of alcohol will be seen as a violation of the policy unless expressly permitted below.

- Consumption of alcohol is permitted while attending a mandatory or non-mandatory company-sponsored function, if consumption is authorized in advance by a member of the ELT of TMC.

  Consumption of alcohol is permitted while attending professional events, including professional association meetings. *However, consumption is not permitted during the normal working hours of 7:00 a.m. to 5:00 p.m. or until the official meeting and/or training sessions have concluded, unless otherwise authorized by a member of ELT.*

- Consumption of alcohol is permitted while conducting business-related entertainment <u>with non-company personnel</u>, including sales functions or while traveling on business.

- Consumption of alcohol is permitted while conducting business-related entertainment <u>with company personnel</u>, when authorized in advance by a member of the ELT of TMC.

- Consumption of alcohol is permitted, within the defined limits established above, by a Team Member who is authorized to operate a company supplied vehicle on personal time and using such vehicle on personal time.

  Refer to the company's "Use of Motor Vehicles Safety Policy" to determine who is authorized to operate a company supplied vehicle on personal time.

- Consumption of alcohol is permitted while residing at a project site. However, consumption is not permitted during the normal working hours of 7:00 a.m. to 5:00 p.m. or until the official work day has concluded.

NOTE: While traveling overnight on TMC business, the Team Member is to follow the appropriate conducts established in this policy from the time the Team Member begins travel until he/she returns from the travel, including after business sessions have concluded.

Based on the exceptions above, if a situation occurs where a Team Member believes that he/she may be "under the influence" of alcohol, or when a manager believes a Team Member may be "under the influence" of alcohol, the Team Member is not permitted to drive a vehicle. If a Team Member drives a vehicle against the direction of management, it will be considered a violation of the policy. When it is necessary for the Team Member, while conducting company business to take a taxicab, the reasonable costs shall be reimbursed by TMC.

Possession and storage of alcohol containers will be seen as a violation of the policy unless expressly permitted below.

- Storage of unopened, sealed alcohol containers which are not visible and are locked in a Team Member's vehicle, or company-supplied vehicle authorized for personal use, while the vehicle is on company property, being used for company business, or during working hours is permitted when authorized in advance by ELT of TMC. Storage of unsealed containers of alcohol will be seen as a violation of the policy .

- TMC will provide a storage facility to Team Members who need to store unopened, sealed containers of alcohol for company events during working hours. Arrangements for storage can be made with by the ELT of TMC.

NOTE: For the storage exceptions above, this does not apply to those company-owned vehicles with company insignias. No containers of alcohol, including those that are unopened and sealed, are to be placed or stored in vehicles with company insignias.

NOTE: For the consumption, possession and storage alcohol exceptions above, they do not apply to project sites.

NOTE: In addition, at no time is alcohol permitted to be transported in a DOT/FMCSA regulated vehicle (over 26,001 pounds or more), unless it is under manifest and is not permitted to be transported in a home delivery truck, unless authorized in advance by the President of TMC.

KINDS OF TESTING

The only way to know with certainty if a Team Member is under the influence of drugs or alcohol is to conduct a test. The methods used to determine the presence of alcohol or drugs in the system under this policy include a urine, saliva, blood, and/or breath test. Therefore, for the safety of all our Team Members, TMC tests for drugs and/or alcohol in the following circumstances:

- During the pre-employment period;
- Where there is reasonable suspicion of prohibited drug or alcohol use;
- After an accident;
- On a return after lay-off of 30 days or more;
- On a random basis;
- When required by a client or the government; and
- As a follow-up to treatment or assessment.

TMC has adopted procedures that respect Team Members' privacy and confidentiality to the greatest extent possible. For example, before TMC requests a reasonable-suspicion test, a supervisor must document all suspected behavior and confer with another supervisor/manager to discuss the situation and to receive authorization for a referral. Whenever possible, the supervisor will discuss the reasonable suspicion referral with the Team Member in a private location. Further, to ensure testing reliability, TMC has chosen a testing laboratory, which uses the most accurate and advanced testing methods available.

Finally, before a positive test result is reported to TMC, an outside Medical Review Officer (MRO), who is a licensed physician, will review the test result. The MRO will contact the Team Member for further information. If a Team Member has a legitimate medical explanation for the positive test and the MRO has verified the explanation, the test will be reported as negative to the company.

CONSEQUENCES

Any violation of the Drug-Free Workplace Policy, even a first offense, may be a basis for disciplinary action, up to and including termination. However, particularly serious violations, such as selling drugs at TMC, will normally result in immediate termination and referral for criminal prosecution. In addition, Team Members should be aware that:

- A positive pre-employment drug test will result in a no hire determination.
- A Team Member having a positive test result will normally result in immediate termination. The company may choose to rehire the Team Member. Should this occur, the Team Member will need to provide written proof of having received and completed assessment, counseling and/or treatment from a licensed substance abuse treatment facility and have a driver's license in good standing in the state in which he/she may be assigned, if a license is required for his/her job function. In addition, the individual reapplying for a safety-sensitive position will be required to submit to unannounced drug and/or alcohol testing for the first twelve (12) months of employment.
- A refusal to consent to or a refusal to submit to or tampering with or a failure to report for a test will result in a 'no hire' determination and/or immediate termination.
- A second positive drug or alcohol test result will result in automatic termination.

NOTE: Should the Medical Review officer report a negative drug test result and also report safety concerns for the Team Member based on the prescription being taken by the Team Member, the company reserves the option to contact the Team Member's prescribing licensed physician or the pharmacist directly for guidance as to the Team Member's ability to continue performing his/her safety-sensitive job function.

Team Members who violate the policy or whom TMC refers to assessment or treatment will be required to sign a rehabilitation agreement. Team Members must comply with all of the treatment conditions, or they may be terminated. Team Members are always required to meet the established standards of conduct and job performance while undergoing substance abuse treatment.

For the purposes of Worker's Compensation, should a Team Member produce a positive drug or alcohol test result or refuse to submit to a drug or alcohol test as required under this policy, his/her eligibility for compensation and benefits may be affected.

COST OF TESTING

TMC will pay for any drug and/or alcohol test that it requests or requires, in accordance with this policy. Should a Team Member request a retest, the cost is to be assumed by the Team Member unless otherwise required by state and/or federal law or if the cost is voluntarily assumed by the company. Should a Team Member request a retest, the cost is to be assumed by the Team Member unless otherwise stated.

RIGHT TO A RETEST

An Team Member who tests positive on a confirmatory drug test required by the company may consult with the Medical Review Officer to identify possible legitimate explanations for the positive result. In addition, the Team Member may request in writing a retest of the original specimen at his/her expense within 5 working days after the Team Member has been informed of the confirmed positive result. The retest is to be conducted at TMC's NIDA Certified Laboratory or another NIDA Certified Laboratory. An Team Member who tests positive for alcohol by breath is automatically given a retest, at the time of the original collection, as a confirmation. If a retest is requested by the Team Member, no final disciplinary action will be taken until the result of the re-analysis have been made available.

INSPECTIONS

Should TMC have reason to believe that a Team Member may be in possession of alcohol, drugs, or drug paraphernalia on company property or on company time in violation of this policy, TMC may search company property or may request that the Team Member empty the contents of his or her personal effects or personal vehicle on company property or on company time.

SAFETY-SENSITIVE POSITIONS

Any job position determined by TMC which by the nature of the work involved is accompanied by such risk, by the nature of the work involved, that even a momentary lapse of attention could have serious consequences to the safety of the co-worker, other co-workers, customers, the company, or the general public. For purposes of this policy, the following are the designated safety-sensitive positions:

All personnel driving company owned, rented or leased vehicles
All personnel driving personal vehicles being used for company business
All personnel receiving car allowances
All field personnel
All plant personnel
All shop personnel

The purpose of identifying these safety-sensitive positions is that it is Team Members in these positions that need to report a prescription drug that may affect their ability to do their job function. In addition, in some of the states in which TMC operates, state law restricts certain forms of testing to safety-sensitive positions

CONFIDENTIALITY

All information concerning drug or alcohol testing referrals and testing results, or treatment and rehabilitation of a Team Member will be kept confidential.

RESERVATION OF RIGHTS

The Middlesex Corporation reserves the right to right to amend, correct, edit, modify, rescind and/or revise the policy in whole or in part, with or without notice. In addition, changes to applicable federal or state laws or regulations may require TMC to modify or supplement the policy. This policy does not create a binding employment contract.

Drug-Free Workplace Policy Acknowledgment & Consent Form

for

The Middlesex Corporation

I have received the *summary* of the Drug-Free Workplace Policy of The Middlesex Corporation. In addition, I have been provided the opportunity to read the Drug-Free Workplace Policy in its entirety. I understand that I am required to follow this policy. I also understand that failure to comply with this policy is the basis for discipline, up to and including termination.

I understand the Drug-Free Workplace Policy of The Middlesex Corporation establishes conditions under which I may be required to provide a breath, blood, saliva, or urine sample for drug and/or alcohol testing. If this occurs, I hereby consent to such testing. I authorize the testing laboratory to release my test results to the Medical Review Officer (MRO) and/or to designated supervisors and managers on a need-to-know basis.

If there is a positive test result, I understand that the MRO may ask me to provide, and I agree to provide, information about any legal nonprescription drugs and other drugs for which I have a prescription that I take routinely or have taken within the last thirty days.

I understand that any communication I may have with the collection site personnel, testing laboratories or MRO does not create or imply a doctor/patient relationship.

_____ _____

Date *Applicant's/Team Member's Signature*

_____

Applicant's/Team Member's Name (Printed)

_____ _____

Date *Parent or Guardian's Signature (Required for Minor Team Members)*

Note: A determination of the definition of a minor is to be ascertained on a state-by-state basis.

Mayor
Rusty Johnson

City Manager
Robert Frank

Commissioners
Scott R. Kennedy, District 1
Rosemary Wilsen, District 2
Richard Firstner, District 3
Ages Hart, District 4

January 11, 2024

ADDENDUM NO. ONE (1)
CITY OF OCOEE
ITB No. 24-004
ASPHALT PAVING PROJECTS FOR FY 2024

This addendum shall modify and become a part of the original bid documents for the Asphalt Paving Projects for FY 2024. This addendum consists of twenty-two (22) pages, including Revised Bid Form and Plan Sheets. Bidders shall acknowledge receipt of this Addendum in the space provided on page 21 of the bid documents. Failure to do so may subject the bidder to disqualification. **The bid date remains the same.**

PLEASE BE AWARE THE TIME PERIOD FOR QUESTIONS HAS EXPIRED. NO FURTHER QUESITONS WILL BE ACCEPTED PRIOR TO THE BID OPENING.

Important Note: REVISED BID FORM, REVISED BID PLANS ATTACHED

In accordance with the information contained within this addendum, the Bid Form and Bid Plans have been revised. Bidders must use the attached revised Bid Form; or your bid will be disqualified for failure to use the revised Bid Form.

Answers to questions received and/or amendments to the bid documents are as follows:

Q1. The milling and resurfacing limits at several locations will damage additional loops at intersections that are not accounted for on the plans. Since the Traffic signal loops are LS, will all damaged loops within the mill and resurfacing limits need to be replaced?

A1. See revised plans. All damaged loops within the mill and resurfacing limits shall be replaced by the contractor. The City is not responsible for any damaged loops not identified on the plans and encourages all bidders to visit the sites.

Q2. Plans call out all F-loops, several locations have B-loops. Does the City want the existing type loops ("B" or "F") put back and not all "F"?

A2. See revised plans. All damaged loops within the mill and resurfacing limits shall be replaced by the contractor.

Q3. In the plans there is three locations that call for 1.25" of SP 12.5, per FDOT specifications the minimum depth for SP 12.5 is 1.5", please advise?

A3. See revised Bid Form and Plan Sheets. The asphalt type for those three areas (Marsden St/Sullivan Ave, Lakewood Hills Sub., and Ocoee Cemetery) shall be SP-9.5.

Q4. What traffic level is the SP 9.5, SP 12.5, and FC 12.5?

A4. Design Traffic Level is C.

Q5. Do all the bumper stops at Tiger Park and Action Park get replaced?

A5. Wheel stops at Tiger Minor Park and Action Park shall be removed and stockpiled on-site. Location for stockpile shall be coordinated with City Inspector.

Q6. Two locations tie into a railroad (Action Park/Clarke Rd), who is providing the cost of the flaggers for the railroad?

A6. Costs relating the railroad coordination would be the responsibility of the contractor.

Q7. Who is the owner of the railroad?

A7. Regional Rail – Florida Central Railroad (FCEN).

Q8. How many trains usually run per day?

A8. This information shall be obtained from Regional Rail – Florida Central Railroad (FCEN).

Q9. Is there a training class that must be taken for the railroad?

A9. This information shall be obtained from Regional Rail – Florida Central Railroad (FCEN).

Q10. Could you please provide an Excel version of the bid form?

A10. Not available, please use the Revised Bid Form that was provided in this Addendum.

Q11. Will the city cover the Railroad fee for the work on Clarke Road and Action Parking lot?

A11. The Contractor shall be responsible for any fee related to the Railroad coordination.

Q12. How soon after milling does the resurfacing need to take place? Does it have to be paved back the same day? Within 5 days?

A12. Areas that are milled shall be resurfaced within 5 days of the milling operation.

Olena Stokych

Olena Stokych
Purchasing Analyst

Attachments: Revised Bid Form
Revised Plans C2, C3, C4, C8, C9, C10, C14

cc: Steve Krüg, P.E., Public Works Director
Milen Womack, City Engineer

EXHIBIT B
BID FORM (Page 1 of 5)

ITB #24-004 ASPHALT PAVING PROJECTS FOR FY 2024

BID SUBMITTED BY _____FL CONTRACTOR LICENSE #_____

ITEM NO. 1	OLD WINTER GARDEN (MAGUIRE TO BLUFORD) MILLING AND RESURFACING	UNIT	QTY	UNIT PRICE	ITEM TOTAL
1.01	Mobilization/Demobilization & General Construction Requirements & Restoration (5% of Base Bid plus add alternates)	LS	1		
1.02	1.5" Milling (Max.)	SY	17,027		
1.03	1.5" Resurface Type FC-12.5 Asphalt Paving	SY	17,027		
1.04	Traffic Signal Loop System Restoration	LS	1		
1.05	Temporary Striping and Thermoplastic Final Striping	LS	1		
				SUB-TOTAL:	

ITEM NO. 2	OLD WINTER GARDEN (BLACKWOOD TO HEMPEL) MILLING AND RESURFACING	UNIT	QTY	UNIT PRICE	ITEM TOTAL
2.01	Mobilization/Demobilization & General Construction Requirements & Restoration (5% of Base Bid plus add alternates)	LS	1		
2.02	1.5" Milling (Max.)	SY	19,624		
2.03	1.5" Resurface Type FC-12.5 Asphalt Paving	SY	19,624		
2.04	Traffic Signal Loop System Restoration	LS	1		
2.05	Temporary Striping and Thermoplastic Final Striping	LS	1		
				SUB-TOTAL:	

REVISED BID FORM (Page 2 of 5)

ITB #24-004 ASPHALT PAVING PROJECTS FOR FY 2024

BID SUBMITTED BY _____**FL CONTRACTOR LICENSE #**_____

ITEM NO. 3	CLARKE RD (SILVER STAR TO AD MIMS) (1" FC 9.5, 1.5"SP 9.5)	UNIT	QTY	UNIT PRICE	ITEM TOTAL
3.01	Mobilization/Demobilization & General Construction Requirements & Restoration (5% of Base Bid plus add alternates)	LS	1		
3.02	2” Milling (Max.)	SY	34,706		
3.03	1” Resurface Type SP- 9.5 Asphalt Paving	SY	34,706		
3.04	1” Resurface Type FC-9.5 Asphalt Paving	SY	34,706		
3.05	Traffic Signal Loop System Restoration	1	1		
3.06	Temporary Striping and Thermoplastic Final Striping	1	1		
				SUB-TOTAL:	

ITEM NO. 4	LAKEWOOD HILLS SUBDIVISION (STARKE LAKE CIR, ALASKA DR, HAWAII DR)	UNIT	QTY	UNIT PRICE	ITEM TOTAL
4.01	Mobilization/Demobilization & General Construction Requirements & Restoration (5% of Base Bid plus add alternates)	LS	1		
4.02	1.25” Milling (Max.)	SY	7520		
4.03	1.25" Resurface Type SP-9.5 Asphalt Paving (Revised)	SY	7520		
4.04	Temporary Striping and Thermoplastic Final Striping (6 stop bars)	LS	1		
				SUB-TOTAL:	

REVISED BID FORM (Page 3 of 5)

ITB #24-004 ASPHALT PAVING PROJECTS FOR FY 2024

BID SUBMITTED BY _____FL CONTRACTOR LICENSE #_____

ITEM NO. 5	MARSDEN ST / SULLIVAN AVE	UNIT	QTY	UNIT PRICE	ITEM TOTAL
5.01	Mobilization/Demobilization & General Construction Requirements & Restoration (5% of Base Bid plus add alternates)	LS	1		
5.02	1.25” Milling (Max.)	SY	3,408		
5.03	1.25" Resurface Type SP-9.5 Asphalt Paving (Revised)	SY	3,408		
5.04	Temporary Striping and Thermoplastic Final Striping (2 stop bars)	LS	1		
				SUB-TOTAL:	

ITEM NO. 6	MOORE ROAD (EASTERN MOST 300 FT To 7th Ave)	UNIT	QTY	UNIT PRICE	ITEM TOTAL
6.01	Mobilization/Demobilization & General Construction Requirements & Restoration (5% of Base Bid plus add alternates)	LS	1		
6.02	1.5” Milling (Max.)	SY	1,280		
6.03	1.5” Resurface Type SP-12.5 Asphalt Paving	SY	1,280		
6.04	Temporary Striping and Thermoplastic Final Striping	LS	1		
				SUB-TOTAL:	

BID FORM (Page 4 of 5)

ITB #24-004 ASPHALT PAVING PROJECTS FOR FY 2024

BID SUBMITTED BY _____**FL CONTRACTOR LICENSE #**_____

ITEM NO.	TIGER MINOR SOUTH PARKING LOT	UNIT	QTY	UNIT PRICE	ITEM TOTAL
7.01	Mobilization/Demobilization & General Construction Requirements & Restoration (5% of Base Bid plus add alternates)	LS	1		
7.02	1” Milling (Max.)	SY	1,945		
7.03	1.5” Resurface Type SP-12.5 Asphalt Paving	SY	1,945		
7.04	Temporary Striping and Thermoplastic Final Striping	LS	1		
				SUB-TOTAL:	

`	ACTION PARK PARKING LOT	UNIT	QTY	UNIT PRICE	ITEM TOTAL
8.01	Mobilization/Demobilization & General Construction Requirements & Restoration (5% of Base Bid plus add alternates)	LS	1		
8.02	1” Milling (Max.) (2' strip along curb)	SY	78		
8.03	1" Overlay Type SP 9.5 Asphalt Paving	SY	1,805		
8.04	Temporary Striping and Thermoplastic Final Striping	LS	1		
				SUB-TOTAL:	

REVISED BID FORM (Page 5 of 5)

ITB #24-004 ASPHALT PAVING PROJECTS FOR FY 2024

BID SUBMITTED BY _____FL CONTRACTOR LICENSE #_____

ITEM NO. 9	OCOEE CEMETERY DRIVE (ADD ALTERNATE)	UNIT	QTY	UNIT PRICE	ITEM TOTAL
9.01	Mobilization/Demobilization & General Construction Requirements & Restoration (5% of Base Bid plus add alternates)	LS	1		
9.02	1.25" Milling (Max.)	SY	1,642		
9.03	1.25" Resurface Type SP-9.5 Asphalt Paving (Revised)	SY	1,642		
9.04	Stamped Asphalt (Brick Pattern - Red)	SY	130		
9.05	Asphalt Berm (9" W x 6" H)	LF	300		
				SUB-TOTAL:	

TOTAL BASE BID WITHOUT ITEM NO. 9 ADD ALTERNATE = $
WRITTEN:

TOTAL BID WITH ITEM NO. 9 ADD ALTERNATE = $
WRITTEN:

MATCH SHEET C2

GENERAL CONSTRUCTION NOTES:

1. CONTRACTOR IS REQUIRED TO MILL A MAXIMUM OF 1.5".
2. CONTRACTOR IS RESPONSIBLE TO REPLACE EXISTING PAVEMENT MARKINGS (MATCH TYPE AND COLOR), SAME SHALL APPLY TO REFLECTIVE PAVEMENT MARKERS.
3. TACK MUST BE APPLIED TO ALL CLEAN SURFACES CLEAR OF DEBRIS PRIOR TO PAVING OPERATIONS.
4. CONTRACTOR RESPONSIBLE FOR PROVIDE DESIGN MIX UPON REQUEST.
5. CONTRACTOR RESPONSIBLE FOR CORE SAMPLES, IF NEEDED, TO CHECK ASPHALT AS-BUILT DEPTH.
6. CONTRACTOR TO NOTIFY RESIDENCE AND BUSINESSES PRIOR TO PAVING OPERATIONS.
7. CONTRACTOR REQUIRED TO SET-UP AND MAINTAIN TEMPORARY TRAFFIC CONTROL.
8. CONTRACTOR TO INCLUDE ALL TRAFFIC SIGNAL LOOP SYSTEMS IN COST.

1.5" MILL AND
1.5" RESURFACE (FC-12.5)
OLD WINTER GARDEN ROAD
TOTAL SURFACE AREA = 17,027 SY

1" = 100'
GRAPHIC SCALE
0 50 100

DESIGNED BY: MDW
DRAWN BY: MDW
CHECKED BY: MJA
DATE CREATED: NOV 2023

ENGINEER OF RECORD
MILEN D WOMACK, P.E. # 94569

CITY OF OCOEE, FL
PUBLIC WORKS DEPARTMENT
301 MAGUIRE ROAD
OCOEE, FL 34761
PH: 407-905-3132 ext. 1305
FAX: 407-905-3176

PUBLIC WORKS PAVING PROJECTS

OLD WINTER GARDEN ROAD
(MAGUIRE TO BLUFORD)
MILL AND RESURFACING
PROJECT

FIGURE
C1

MATCH SHEET C1

GENERAL CONSTRUCTION NOTES:

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1.5" RESURFACE (FC-12.5)
OLD WINTER GARDEN ROAD
TOTAL SURFACE AREA = 17,027 SY

1" = 100'
GRAPHIC SCALE
0 50 100

REVISED

DESIGNED BY: MDW
DRAWN BY: MDW
CHECKED BY: MJA
DATE CREATED: NOV 2023

ENGINEER OF RECORD
MILEN D WOMACK, P.E. # 94569

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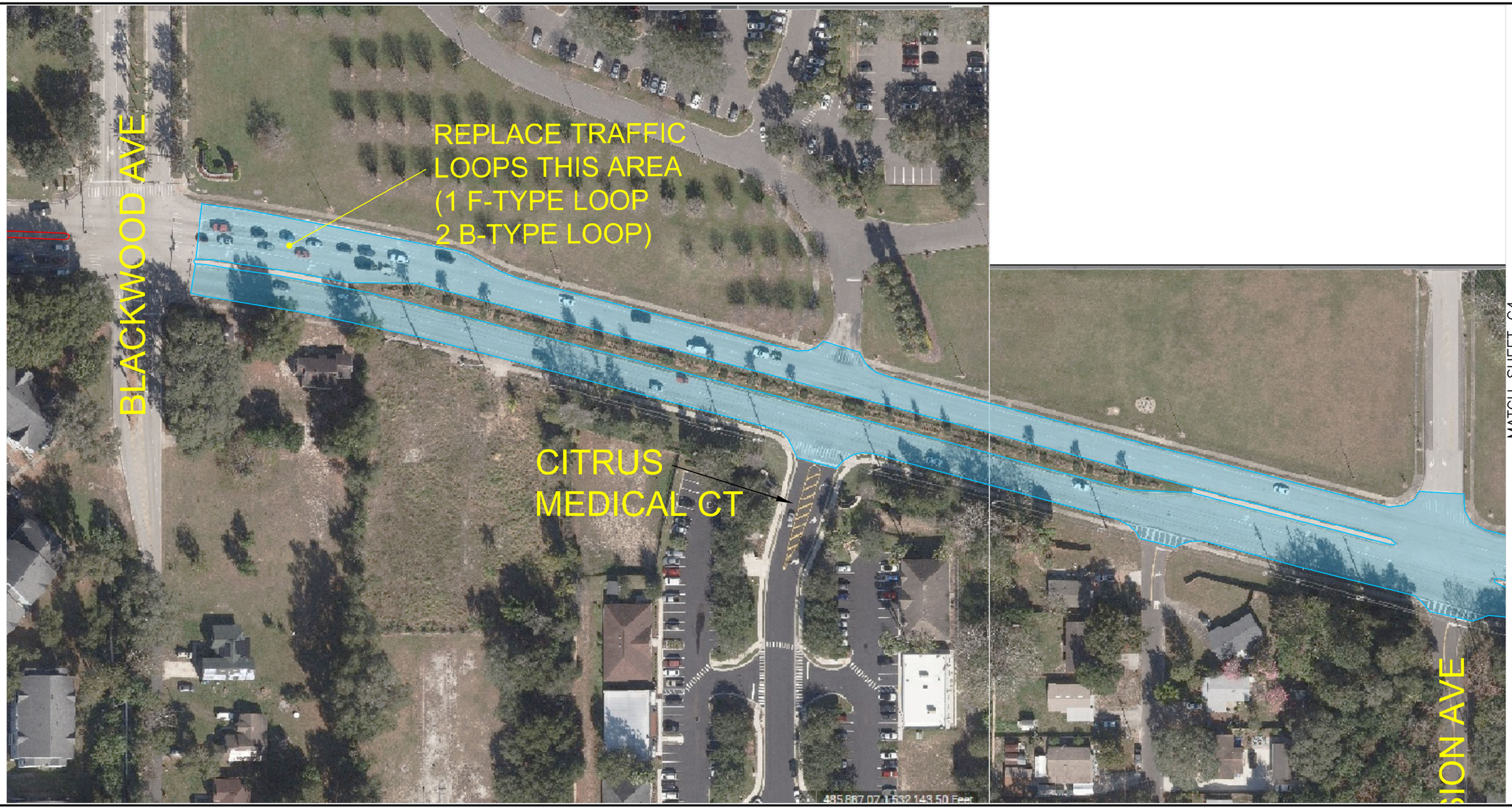
FAX: 407-905-3175

PUBLIC WORKS PAVING PROJECTS

OLD WINTER GARDEN ROAD
(MAGUIRE TO BLUFORD)
MILL AND RESURFACING
PROJECT

FIGURE
C2



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1.5" MILL AND
1.5" RESURFACE (FC-12.5)
OLD WINTER GARDEN ROAD
(BLACKWOOD TO HEMPEL)
TOTAL SURFACE AREA = 19,624 SY

1" = 100'
GRAPHIC SCALE
0 50 100

REVISED

DESIGNED BY: MDW
DRAWN BY: MDW
CHECKED BY: MJA
DATE CREATED: NOV 2023

ENGINEER OF RECORD
MILEN D WOMACK, P.E. # 94569

CITY OF OCOEE, FL
PUBLIC WORKS DEPARTMENT
301 MAGUIRE ROAD
OCOEE, FL 34761
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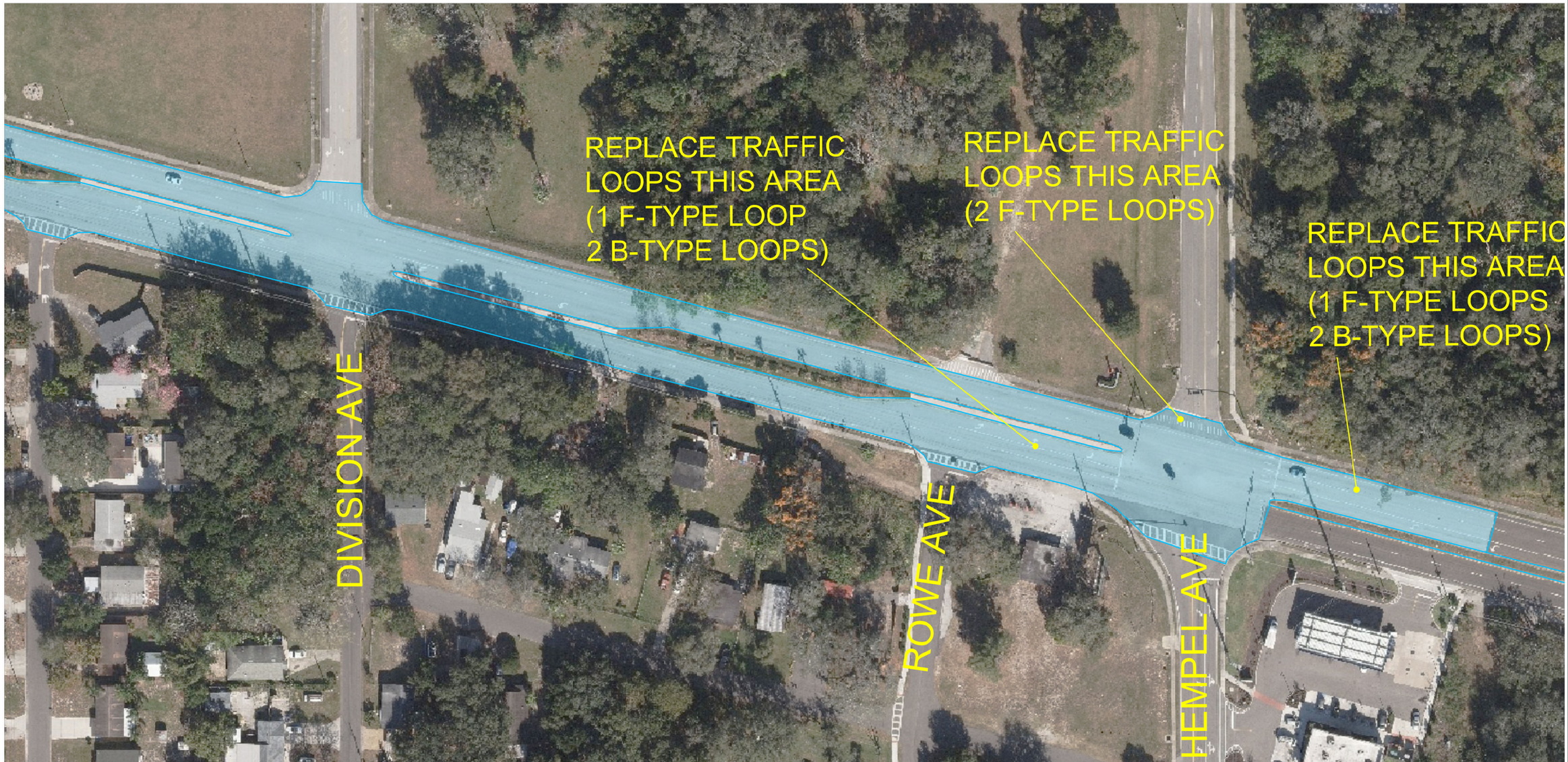
FAX: 407-905-3178

PUBLIC WORKS PAVING PROJECTS

OLD WINTER GARDEN ROAD
(BLACKWOOD TO HEMPEL)
MILL AND RESURFACING
PROJECT

FIGURE
C3

MATCH SHEET C3



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1.5" RESURFACE (FC-12.5)
OLD WINTER GARDEN ROAD
(BLACKWOOD TO HEMPEL)
TOTAL SURFACE AREA = 19,624 SY

1" = 100'
GRAPHIC SCALE
0 50 100

REVISED

DESIGNED BY: MDW
DRAWN BY: MDW
CHECKED BY: MJA
DATE CREATED: NOV 2023

ENGINEER OF RECORD
MILEN D WOMACK, P.E. #94569

CITY OF OCOEE, FL
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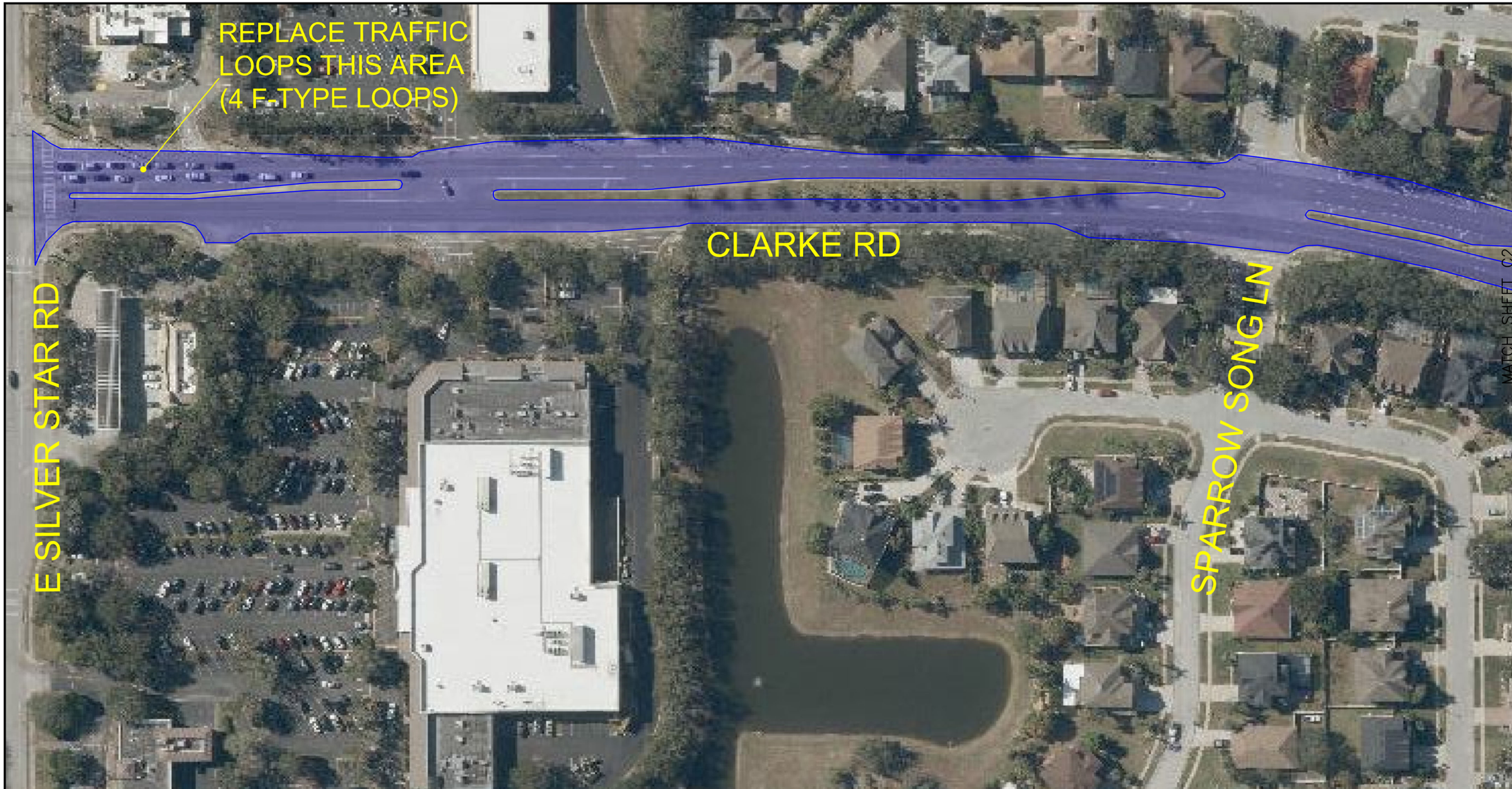
PUBLIC WORKS PAVING PROJECTS

OLD WINTER GARDEN ROAD
(BLACKWOOD TO HEMPEL)
MILL AND RESURFACING
PROJECT

FIGURE
C4



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2" MILL AND
1" RESURFACE (SP-9.5)
1" RESURFACE (FC-9.5)
CLARKE ROAD
TOTAL SURFACE AREA = 34,706 SY

1" = 100'
GRAPHIC SCALE
0 50 100

DESIGNED BY: MDW
DRAWN BY: MDW
CHECKED BY: MJA
DATE CREATED: NOV 2023

ENGINEER OF RECORD
MILEN D WOMACK, P.E. # 94569

CITY OF OCOEE, FL
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PUBLIC WORKS PAVING PROJECTS

CLARKE ROAD
(SILVER STAR TO AD MIMS)
MILL AND RESURFACING
PROJECT

FIGURE
C5

GENERAL CONSTRUCTION NOTES:

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1" RESURFACE (SP-9.5)
1" RESURFACE (FC-9.5)
CLARKE ROAD
TOTAL SURFACE AREA = 34,706 SY

1" = 100'
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0 50 100

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ENGINEER OF RECORD
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PUBLIC WORKS PAVING PROJECTS

CLARKE ROAD
(SILVER STAR TO AD MIMS)
MILL AND RESURFACING
PROJECT

FIGURE
C6

GENERAL CONSTRUCTION NOTES:

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2" MILL AND
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1" RESURFACE (FC-9.5)
CLARKE ROAD
TOTAL SURFACE AREA = 34,706 SY

1" = 100'
GRAPHIC SCALE
0 50 100

DESIGNED BY: MDW
DRAWN BY: MDW
CHECKED BY: MJA
DATE CREATED: NOV 2023

ENGINEER OF RECORD

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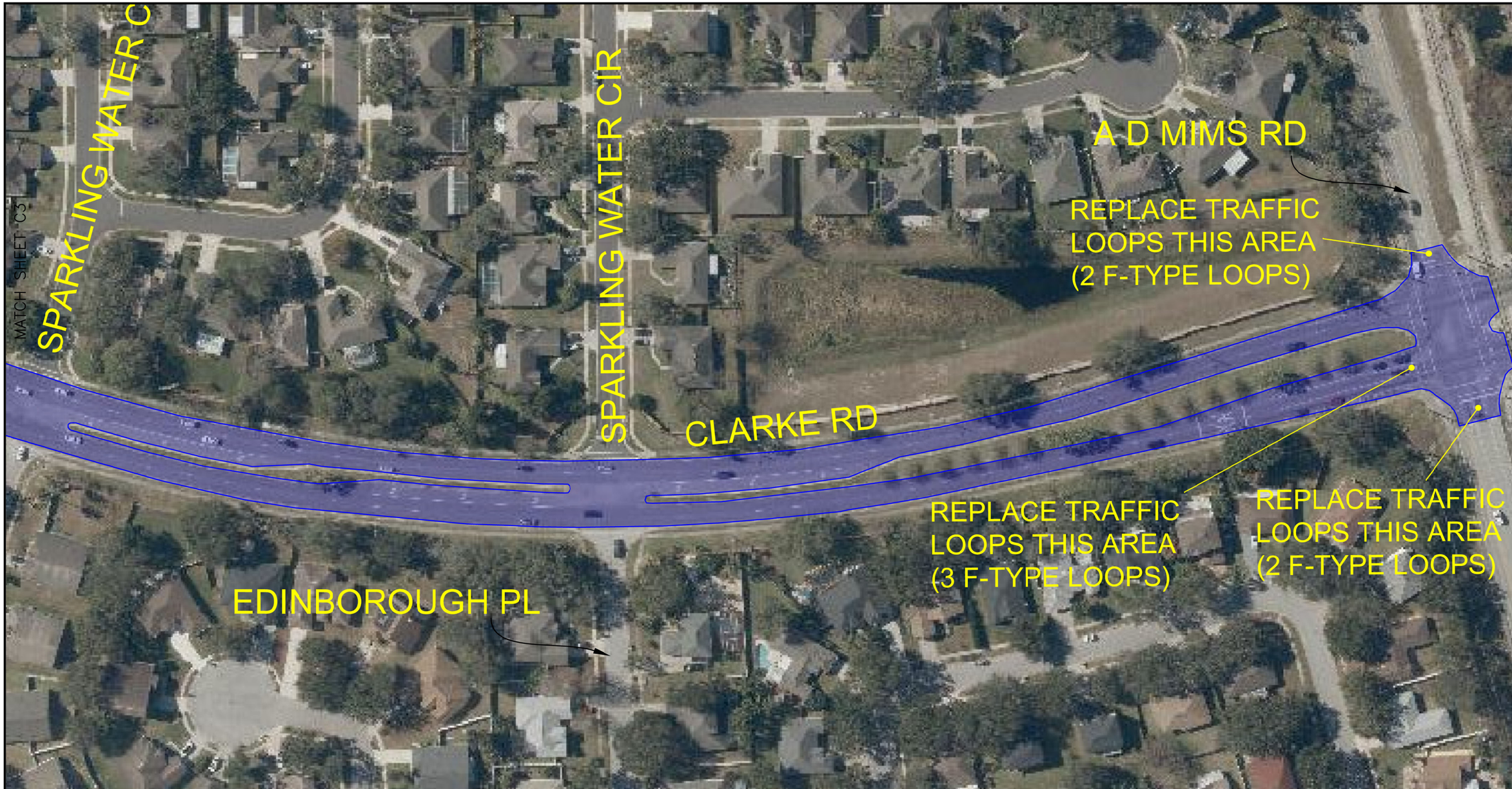
PUBLIC WORKS PAVING PROJECTS

CLARKE ROAD
(SILVER STAR TO AD MIMS)
MILL AND RESURFACING
PROJECT

FIGURE
C7



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7. CONTRACTOR REQUIRED TO SET-UP AND MAINTAIN TEMPORARY TRAFFIC CONTROL.
8. CONTRACTOR TO INCLUDE ALL TRAFFIC SIGNAL LOOP SYSTEMS IN COST.

2" MILL AND
1" RESURFACE (SP-9.5)
1" RESURFACE (FC-9.5)
CLARKE ROAD
TOTAL SURFACE AREA = 34,706 SY

1" = 100'
GRAPHIC SCALE
0 50 100

REVISED

DESIGNED BY: MDW
DRAWN BY: MDW
CHECKED BY: MJA
DATE CREATED: NOV 2023

ENGINEER OF RECORD
MILEN D WOMACK, P.E. # 94569

CITY OF OCOEE, FL
PUBLIC WORKS DEPARTMENT
301 MAGUIRE ROAD
OCOEE, FL 34761
PH: 407-905-3132 ext. 1505
FAX: 407-905-3176

PUBLIC WORKS PAVING PROJECTS

CLARKE ROAD
(SILVER STAR TO AD MIMS)
MILL AND RESURFACING
PROJECT

FIGURE
C8

GENERAL CONSTRUCTION NOTES:

1. CONTRACTOR IS REQUIRED TO MILL A MAXIMUM OF 1.25".
2. CONTRACTOR IS RESPONSIBLE TO REPLACE EXISTING PAVEMENT MARKINGS (MATCH TYPE AND COLOR), SAME SHALL APPLY TO REFLECTIVE PAVEMENT MARKERS.
3. TACK MUST BE APPLIED TO ALL CLEAN SURFACES CLEAR OF DEBRIS PRIOR TO PAVING OPERATIONS.
4. CONTRACTOR RESPONSIBLE FOR PROVIDE DESIGN MIX UPON REQUEST.
5. CONTRACTOR RESPONSIBLE FOR CORE SAMPLES, IF NEEDED, TO CHECK ASPHALT AS-BUILT DEPTH.
6. CONTRACTOR TO NOTIFY RESIDENCE AND BUSINESSES PRIOR TO PAVING OPERATIONS.
7. CONTRACTOR REQUIRED TO SET-UP AND MAINTAIN TEMPORARY TRAFFIC CONTROL.
8. CONTRACTOR TO INCLUDE ALL TRAFFIC SIGNAL LOOP SYSTEMS IN COST.

1.25" MILL AND
1.25" RESURFACE (SP-9.5)
LAKEWOOD HILLS SUB.
(STARKE LAKE CIR, ALASKA DR, HAWAII DR)
TOTAL PAVEMENT AREA = 7520SY

1" = 100'
GRAPHIC SCALE
0 50 100

REVISED

DESIGNED BY: MDW
DRAWN BY: MDW
CHECKED BY: MJA
DATE CREATED: NOV. 2023

ENGINEER OF RECORD
MILEN D WOMACK, P.E. # 94569

CITY OF OCOEE, FL
PUBLIC WORKS DEPARTMENT
301 MAGUIRE ROAD
OCOEE, FL 34761
PHONE: 407-905-3132 ext. 1305
FAX: 407-905-3174

PUBLIC WORKS PAVING PROJECTS

LAKEWOOD HILLS SUBDIVISION
MILL AND RESURFACING
PROJECT

FIGURE
C9

GENERAL CONSTRUCTION NOTES:

1. CONTRACTOR IS REQUIRED TO MILL A MAXIMUM OF 1.25".
2. CONTRACTOR IS RESPONSIBLE TO REPLACE EXISTING PAVEMENT MARKINGS (MATCH TYPE AND COLOR), SAME SHALL APPLY TO REFLECTIVE PAVEMENT MARKERS.
3. TACK MUST BE APPLIED TO ALL CLEAN SURFACES CLEAR OF DEBRIS PRIOR TO PAVING OPERATIONS.
4. CONTRACTOR RESPONSIBLE FOR PROVIDE DESIGN MIX UPON REQUEST.
5. CONTRACTOR RESPONSIBLE FOR CORE SAMPLES, IF NEEDED, TO CHECK ASPHALT AS-BUILT DEPTH.
6. CONTRACTOR TO NOTIFY RESIDENCE AND BUSINESSES PRIOR TO PAVING OPERATIONS.
7. CONTRACTOR REQUIRED TO SET-UP AND MAINTAIN TEMPORARY TRAFFIC CONTROL.
8. CONTRACTOR TO INCLUDE ALL TRAFFIC SIGNAL LOOP SYSTEMS IN COST.

1.25" MILL AND
1.25" RESURFACE (SP-9.5)
BRENTWOOD HEIGHTS SUB.
(MARSDEN ST, SULLIVAN AVE)
TOTAL PAVEMENT AREA = 3,408SY

1" = 100'
GRAPHIC SCALE
0 50 100

REVISED

DESIGNED BY: MDW
DRAWN BY: MDW
CHECKED BY: MJA
DATE CREATED: NOV. 2023

ENGINEER OF RECORD
MILEN D WOMACK, P.E. # 94569

CITY OF OCOEE, FL
PUBLIC WORKS DEPARTMENT
301 MAGUIRE ROAD
OCOEE, FL 34761
PH: 407-905-3132 ext. 1505
FAX: 407-905-3174

PUBLIC WORKS PAVING PROJECTS

BRENTWOOD HEIGHTS SUBDIVISION
MILL AND RESURFACING PROJECT

FIGURE
C10

GENERAL CONSTRUCTION NOTES:

1. CONTRACTOR IS REQUIRED TO MILL A MAXIMUM OF 1.5".
2. CONTRACTOR IS RESPONSIBLE TO REPLACE EXISTING PAVEMENT MARKINGS (MATCH TYPE AND COLOR), SAME SHALL APPLY TO REFLECTIVE PAVEMENT MARKERS.
3. TACK MUST BE APPLIED TO ALL CLEAN SURFACES CLEAR OF DEBRIS PRIOR TO PAVING OPERATIONS.
4. CONTRACTOR RESPONSIBLE FOR PROVIDE DESIGN MIX UPON REQUEST.
5. CONTRACTOR RESPONSIBLE FOR CORE SAMPLES, IF NEEDED, TO CHECK ASPHALT AS-BUILT DEPTH.
6. CONTRACTOR TO NOTIFY RESIDENCE AND BUSINESSES PRIOR TO PAVING OPERATIONS.
7. CONTRACTOR REQUIRED TO SET-UP AND MAINTAIN TEMPORARY TRAFFIC CONTROL.
8. CONTRACTOR TO INCLUDE ALL TRAFFIC SIGNAL LOOP SYSTEMS IN COST.

1.5" MILL AND
1.5" RESURFACE (SP – 12.5)
MOORE RD EASTERNMOST 300FT
(MOORE RD, 7TH AVE)
TOTAL PAVEMENT AREA = 1,280SY

1" = 100'
GRAPHIC SCALE
0 50 100

DESIGNED BY: MJA
DRAWN BY: MJA
CHECKED BY: MDW
DATE CREATED: NOV. 2023

ENGINEER OF RECORD
MILEN D WOMACK, P.E. # 94569

CITY OF OCOEE, FL
PUBLIC WORKS DEPARTMENT
301 MAGUIRE ROAD
OCOEE, FL 34761
PH: 407-905-3113 ext. 1505
FAX: 407-905-3174

PUBLIC WORKS PAVING PROJECTS

MOORE ROAD
MILL AND RESURFACING
PROJECT

FIGURE
C11

GENERAL CONSTRUCTION NOTES:

1. CONTRACTOR IS REQUIRED TO MILL A MAXIMUM OF 1".
2. CONTRACTOR IS RESPONSIBLE TO REPLACE EXISTING PAVEMENT MARKINGS (MATCH TYPE AND COLOR), SAME SHALL APPLY TO REFLECTIVE PAVEMENT MARKERS.
3. TACK MUST BE APPLIED TO ALL CLEAN SURFACES CLEAR OF DEBRIS PRIOR TO PAVING OPERATIONS.
4. CONTRACTOR RESPONSIBLE FOR PROVIDE DESIGN MIX UPON REQUEST.
5. CONTRACTOR RESPONSIBLE FOR CORE SAMPLES, IF NEEDED, TO CHECK ASPHALT AS-BUILT DEPTH.
6. CONTRACTOR TO NOTIFY RESIDENCE AND BUSINESSES PRIOR TO PAVING OPERATIONS.
7. CONTRACTOR REQUIRED TO SET-UP AND MAINTAIN TEMPORARY TRAFFIC CONTROL.
8. CONTRACTOR TO INCLUDE ALL TRAFFIC SIGNAL LOOP SYSTEMS IN COST.

1" MILL AND
1.5" RESURFACE (SP-12.5)
TIGER MINOR SOUTH PARKING LOT
(GENEVA ST.)
TOTAL PAVEMENT AREA = 1,945SY

1" = 50'
GRAPHIC SCALE
0 25 50

DESIGNED BY: MDW
DRAWN BY: MDW
CHECKED BY: MJA
DATE CREATED: NOV. 2023

ENGINEER OF RECORD
MILEN D WOMACK, P.E. # 94569

CITY OF OCOEE, FL
PUBLIC WORKS DEPARTMENT
301 MAGUIRE ROAD
OCOEE, FL 34761
PH: 407-905-3132 ext. 1505
FAX: 407-905-3174

PUBLIC WORKS PAVING PROJECTS

TIGER MINOR SOUTH
PARKING LOT
MILL AND RESURFACING
PROJECT

FIGURE
C12

GENERAL CONSTRUCTION NOTES:

1. CONTRACTOR IS REQUIRED TO MILL A MAXIMUM OF 1" ALONG THE PARK SIDEWALK/CURB. THE MILLING AREA SHALL EXTEND 2' FROM THE FACE OF THE SIDEWALK/CURB
2. CONTRACTOR IS RESPONSIBLE TO REPLACE EXISTING PAVEMENT MARKINGS (MATCH TYPE AND COLOR), SAME SHALL APPLY TO REFLECTIVE PAVEMENT MARKERS. FINAL STRIPING SHALL BE THERMOPLASTIC
3. TACK MUST BE APPLIED TO ALL CLEAN SURFACES CLEAR OF DEBRIS PRIOR TO PAVING OPERATIONS.
4. CONTRACTOR RESPONSIBLE FOR PROVIDE DESIGN MIX UPON REQUEST.
5. CONTRACTOR RESPONSIBLE FOR CORE SAMPLES, IF NEEDED, TO CHECK ASPHALT AS-BUILT DEPTH.
6. CONTRACTOR TO NOTIFY RESIDENCE AND BUSINESSES PRIOR TO PAVING OPERATIONS.
7. CONTRACTOR REQUIRED TO SET-UP AND MAINTAIN TEMPORARY TRAFFIC CONTROL.

1" MILL

1" OVERLAY (SP 9.5)

ACTION PARK PARKING LOT
(560 FLEWELLING AVE)

TOTAL PAVEMENT OVERLAY AREA = 1,805SY
TOTAL MILL AREA = 78SY

1" = 50
GRAPHIC SCALE
0 25 50

DESIGNED BY: MDW
DRAWN BY: MJA
CHECKED BY: MDW
DATE CREATED: NOV. 2023

ENGINEER OF RECORD
MILEN D WOMACK, P.E. # 94569

CITY OF OCOEE, FL
PUBLIC WORKS DEPARTMENT
301 MAGUIRE ROAD
OCOEE, FL 34761
PH: 407-905-3132 ext. 1505
FAX: 407-905-3174

PUBLIC WORKS PAVING PROJECTS

ACTION PARK PARKING LOT
MILL AND RESURFACING
PROJECT

FIGURE
C13

GENERAL CONSTRUCTION NOTES:

1. CONTRACTOR IS REQUIRED TO MILL A MAXIMUM OF 1.25".
2. CONTRACTOR IS REQUIRED TO PROVIDE STAMPED ASPHALT AT THE CEMETERY ENTRANCE. STAMPED AREA SHALL BE RED IN COLOR.
3. CONTRACTOR IS REQUIRED TO REPLACE THE EXISTING ASPHALT BERM WITH A UNIFORM ASPHALT BERM THAT IS 6" TALL AND 9" WIDE.
4. TACK MUST BE APPLIED TO ALL CLEAN SURFACES CLEAR OF DEBRIS PRIOR TO PAVING OPERATIONS.
5. CONTRACTOR RESPONSIBLE FOR PROVIDE DESIGN MIX UPON REQUEST.
6. CONTRACTOR RESPONSIBLE FOR CORE SAMPLES, IF NEEDED, TO CHECK ASPHALT AS-BUILT DEPTH.
7. CONTRACTOR TO NOTIFY RESIDENCE AND BUSINESSES PRIOR TO PAVING OPERATIONS.
8. CONTRACTOR REQUIRED TO SET-UP AND MAINTAIN TEMPORARY TRAFFIC CONTROL.

1.25" MILL AND
1.25" RESURFACE (SP-9.5)
OCOEE CEMETERY (368 E GENEVA ST)
STAMPED ASPHALT AREA = 130SY
TOTAL PAVEMENT AREA = 1,642SY

1" = 50'
GRAPHIC SCALE
0 25 50

REVISED

DESIGNED BY: MJA
DRAWN BY: MJA
CHECKED BY: MDW
DATE CREATED: NOV. 2023

ENGINEER OF RECORD
MILEN D WOMACK, P.E. # 94569

CITY OF OCOEE, FL
PUBLIC WORKS DEPARTMENT
301 MAGUIRE ROAD
OCOEE, FL 34761
PH: 407-905-3132 ext. 1305
FAX: 407-905-3175

PUBLIC WORKS PAVING PROJECTS

OCOEE CEMETERY
MILL AND RESURFACING
PROJECT

FIGURE
C14

CITY OF OCOEE

INVITATION TO BID (ITB) #24-004

ASPHALT PAVING PROJECTS FOR FY 2024

ocoee

florida

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FOR
BID #ITB 24-004 ASPHALT PAVING PROJECTS FOR FY 2024

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Submit with Bid

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Invitation to Bid, Legal Advertisement

The City of Ocoee, Florida (the "City") is soliciting sealed bids for the following project: **ITB #24-004 Asphalt Paving Projects for FY 2024.** Proposals will only be accepted electronically through Bonfire, a free e-Procurement platform, **until 2:00 pm, local time, on January 16, 2024.** Bids received after that time or through any other method will not be accepted under any circumstances. Bids that have been timely received will be publicly opened, virtually online and the names of the bidders read aloud at that time; instructions will be provided at https://www.ocoee.org/959/Public-Bid-Meetings. All questions regarding this ITB should be in writing to Olena Stokych, Purchasing Analyst, Finance Department/Purchasing at ostokych@ocoee.org. No Pre-Bid conference is scheduled at this time. Prospective bidders may secure a copy of the documents required for submitting a bid at no charge through Bonfire by accessing the City's published solicitation page https://ocoee.bonfirehub.com. For more information, please visit https://www.ocoee.org/323/Purchasing. Prospective bidders will be provided with all information regarding this ITB, addenda, and changes to the project requirements through the Bonfire e-Procurement Platform.

Melanie Sibbitt, City Clerk, Orlando Sentinel, December 17, 2023.

CITY OF OCOEE
INVITATION TO BID #ITB 24-004
ASPHALT PAVING PROJECTS FOR FY 2024

INTENT:

Sealed bids for Bid **#ITB 24-004** will be received by the City of Ocoee, hereinafter called "City" or "Owner," by any person, firm, corporation or agency submitting a bid for the work proposed, hereinafter called "Bidder", "Respondent", "Contractor", or "Offeror".

The proposed Contract will be for the labor, supervision, materials, equipment, supplies and incidentals for the Asphalt Paving Projects for FY 2024 for sections of Old Winter Garden (Maguire to Bluford), Old Winter Garden (Blackwood to Hempel), Clarke Road (Silver Star to Ad Mims), Lakewood Hills Subdivision, Marsden St/ Sullivan Ave, Moore Road, Tiger Minor South Parking Lot, Action Park Parking Lot and Ocoee Cemetery Drive (Add Alternate), in the City of Ocoee, as listed under the "Scope of Work/Bid Form" sections of this Invitation to Bid.

BIDDING INSTRUCTIONS:

A. Each Bidder shall furnish the information required on the bid form supplied and each accompanying sheet thereof on which an entry is made. Bids submitted on any other format shall be disqualified. Please check your prices before submission of bid, as no changes will be allowed after bid opening. Bids must be typewritten or handwritten using ink. Do not use pencil. No erasures are permitted. Mistakes may be crossed out and the correction typed adjacent and must be initialed and dated by the person signing the bid. Bid documents must be signed by a legally responsible representative, officer, or employee and should be properly witnessed and attested. All bids should also include the name and business address of any person, firm, or corporation interested in the bid, either as a principal, member of a firm, or general partner. If the Bidder is a corporation, the bid should include the name and business address of each officer, director, and holder of 10% or more of the stock of such corporation.

B. The City will receive questions regarding this ITB through the Bonfire Platform or through written inquiries directed to Olena Stokych, Purchasing Analyst at ostokych@ocoee.org. Deadline for receipt of written inquiries will be **January 9, 2024 at 2:00 p.m., local time.** Any clarifications/changes will be made by way of written addenda only, issued by the Finance Department/Purchasing. Bidders should not contact City staff, with the exception of the Procurement Manager, or other City consultants for information regarding this ITB before the Bid award date. Any contact with any other member of City Staff, City Commission, or its agents during the solicitation, award, and protest period may be grounds for disqualification.

C. Prospective Bidders may secure a free copy of the documents required for submitting a Bid through the Bonfire platform by accessing the City's published solicitation page at https://ocoee.bonfirehub.com. Please visit https://www.ocoee.org/323/Purchasing for more information. Prospective Bidders will be provided with all information regarding this ITB, addenda, and changes to the project requirements through the Bonfire platform; there is no charge to use the Bonfire platform. Partial sets of the documents required for submitting a Bid will not be issued.

   The City is **ONLY** accepting electronic solicitation responses online through the City's Bonfire platform at https://ocoee.bonfirehub.com. This link can also be accessed through the City's website at

https://www.ocoee.org/323/Purchasing under the ***Current Open Solicitations*** menu. All Bid submissions for this ITB **MUST** be submitted through the Bonfire Platform. Bid submissions received in any other format will not be accepted; no paper, fax, or e-mailed submissions will be accepted. There is no charge for bidders to use the Bonfire e-procurement platform. Bonfire platform's minimum system requirements: Microsoft Edge, Google Chrome, Safari, or Mozilla Firefox. JavaScript and browser cookies must be enabled.

Registration with Bonfire is free and is required prior to submitting a bid. You will be required to register once you click the "PREPARE YOUR SUBMISSION" in the solicitation file. It is suggested your company register no later than 24 hours in advance of the bid submission deadline to ensure proper registration. Should your company need assistance with registering, please contact the Bonfire Support Desk by emailing support@gobonfire.com. Support by email is provided Monday to Friday from 8:00 a.m. – 8:00 p.m. EST/EDT.

Upon completing the registration with Bonfire, bidders will be able to submit a bid securely, any time before the bid submission deadline, at https://ocoee.bonfirehub.com by clicking the "PREPARE YOUR SUBMISSION" under the solicitation. An instructional video is provided for an overview of the submission process. Once the bid has been submitted, the Bidder will receive a date/time stamp confirmation within the Bonfire platform and an email confirmation of the bid submission. Bids submitted on the Bonfire Platform will remain locked and inaccessible by City staff until the bid deadline. **Bidders are encouraged to allow ample time to upload and submit their Bid as the system will automatically lock responses upon the bid deadline.** A virtual public bid opening will be held on the date and time indicated below. Details on how to access the virtual bid opening will be located on the City's website at https://www.ocoee.org/959/Public-Bid-Meetings. The actual contract award will be made by the Ocoee City Commission at a later date. Please be aware that all City Commission meetings are duly noticed public meetings and all documents submitted to the City as a part of a bid constitute public records under Florida law.

D. Bidders shall submit one (1) complete electronic copy, preferably in a single file, of their Bid on the Bonfire Platform. Bids must be received and by Bonfire no later than **2:00 p.m., local time, on January 16, 2024.** Any attempt to submit a bid after the bid deadline will not be accepted under any circumstances. Any uncertainty regarding the time a bid is received will be resolved against the Bidder. It shall be the sole responsibility of the Bidder to have the bid **uploaded and submitted** on the Bonfire Platform prior to the due date and time.

File Uploads – Submission materials should be prepared in the file formats listed under Requested Information for this opportunity in the Bonfire Platform. The maximum upload file size is 1000 MB. Documents should not be embedded within uploaded files, as the embedded files will not be accessible or evaluated. All electronic files uploaded must be in a common format accessible by software programs the City uses. Those common formats are generally described as Microsoft Word (.doc or .docx), Microsoft Excel (.xls or .xlsx), Microsoft Power Point (.ppt or pptx), or Adobe Portable Document Format (.pdf). Respondents will not secure, password protect or lock uploaded files; the City must be able to open and view the contents of the file. Respondents will not disable or restrict the ability of the City to print the contents of an uploaded file. Scanned documents or images must be of sufficient quality, no less than 150 dpi, to allow for reading or interpreting the words, drawings, images or sketches. The City may disqualify any Submittal Response that does not meet the criteria stated in this paragraph.

E. All Bidders shall thoroughly examine and become familiar with the bid package and carefully note the items which must be submitted with the bid, such as:

a) Bid Security in the form of a Cashier's or Certified check or Bid Bond;
b) Addenda acknowledgement, if applicable;

c) List of References/Experience;
d) List of Subcontractors/Temporary Worker Agencies;
e) Equipment Listing;
f) Summary of Litigation;
g) Bid Form
h) Conflict of Interest Disclosure Form
i) Drug free workplace form
j) Company information/signature sheet
k) Contractor E-Verify Affidavit
l) Any other information specifically called for in these Bid Documents.

F. **Submission of a bid shall constitute an acknowledgment that the Bidder has complied with Paragraph E.** The failure or neglect of a Bidder to receive or examine a bid document shall in no way relieve it from any obligations under its bid or the contract. No claim for additional compensation that is based upon a lack of knowledge or understanding of any of the Contract Documents or the scope of work will be allowed. All items quoted shall be in compliance with the bid documents/scope of work.

G. A Pre-Bid Conference has not been scheduled for this project.

H. Any response by the City to a request by a prospective Bidder for clarification or correction will be made in the Bonfire ITB file or in the form of a written addendum, which will be distributed via Bonfire not later than twenty-four (24) hours before bid opening. It shall be the responsibility of each Bidder to obtain a copy of all issued Addenda. The City reserves the right to issue Addenda concerning date and time of bid opening at any time up to the date and time set for bid opening. **In case any Bidder fails to acknowledge receipt of any such Addendum, its bid will nevertheless be construed as though the Addendum had been received and acknowledged**. **Submission of a bid will constitute acknowledgment of the receipt of the Bid Documents and all Addenda**. Only interpretations or corrections provided by written Addenda shall be binding on the City. Bidders are cautioned that any other source by which a Bidder receives information concerning, explaining, or interpreting the Bid Documents shall not bind the City.

I. Any of the following causes may be considered as sufficient for the disqualification of a Bidder and the rejection of its bid:
   a) Submission of more than one (1) bid for the same work by an individual, firm, partnership or corporation under the same or different name. For purposes of this subparagraph, firms, partnerships or corporations under common control may be considered to be the same entity;
   b) Evidence of collusion between or among Bidders;
   c) Being in arrears on any of its existing contracts with the City or in litigation with the City or having defaulted on a previous contract with the City;
   d) Poor, defective, or otherwise unsatisfactory performance of work for the City or any other party on prior projects that, in the City's judgment and sole discretion, raises doubts as to Bidder's ability to properly perform the work; or
   e) Any other cause which, in the City's judgment and sole discretion, is sufficient to justify disqualification of Bidder or the rejection of its bid.

J. **CONVICTED VENDOR LIST (PUBLIC ENTITY CRIME).** A person or affiliate who has been placed on the convicted vendor list following a conviction for a public entity crime may not submit a bid on an award to provide any goods or services to a public entity, may not submit a bid on an award with a public entity for the construction or repair of a public building or public work, may not submit bids on leases of real property to a public entity, may not be awarded or perform work as a Contractor, Supplier, Subcontractor, or Consultant

under a award with any public entity, and may not transact business with any public entity in excess of the threshold amount provided in section 287.017 for Category Two for a period of 36 months from the date of being placed on the convicted vendor list. [See s. 287.133(2) (a), Florida Statutes.]

K. **FLORIDA PUBLIC RECORDS LAW.** In accordance with Chapter 119, Florida Statutes, and, except as may be provided by Chapter 119, Florida Statutes, and other applicable State and Federal Laws, all Bidders should be aware that the Bid and the responses thereto are in the public domain and are available for public inspection. Bidders are requested, however, to identify specifically any information contained in their bids that they consider confidential and/or proprietary and that they believe to be exempt from disclosure, citing specifically the applicable exempting law. All bids received in response to this Invitation to Bid become the property of the City and will not be returned. In the event of an award, all documentation produced as part of the contract will become the exclusive property of the City.

L. **PUBLIC RECORDS COMPLIANCE.** The City of Ocoee (City) is a public agency subject to Chapter 119, Florida Statutes. The Contractor agrees to comply with Florida's Public Records Law.
Specifically, the Contractor shall:
1. Keep and maintain public records required by the City to perform the service.
2. Upon request from the City's custodian of public records, provide the City with a copy of the requested records or allow the records to be inspected or copied within a reasonable time at a cost that does not exceed the cost provided in chapter 119, Florida Statutes, or as otherwise provided by law.
3. Ensure that public records that are exempt or confidential and exempt from the public records disclosure requirements are not disclosed except as authorized by law for the duration of the contract term and following completion of the contract if the Contractor does not transfer the records to the City.
4. Upon completion of the contract, Contractor agrees to transfer at no cost to the City all public records in possession of the Contractor or keep and maintain public records required by the City to perform the service. If the Contractor transfers all public record to the City upon completion of the contract, the Contractor shall destroy any duplicate public records that are exempt or confidential and exempt from public records disclosure requirements. If the Contractor keeps and maintains public records upon completion of the contract, the Contractor shall meet all applicable requirements for retaining public records. All records stored electronically must be provided to the City, upon request from the City's custodian of public records, in a format that is compatible with the information technology systems of the City.
5. A Contractor who fails to provide the public records to City within a reasonable time may be subject to penalties under section 119.10, Florida Statutes.

IF THE CONTRACTOR HAS QUESTIONS REGARDING THE APPLICATION OF CHAPTER 119, FLORIDA STATUTES, TO THE CONTRACTOR'S DUTY TO PROVIDE PUBLIC RECORDS RELATING TO THIS CONTRACT, CONTACT THE CUSTODIAN OF PUBLIC RECORDS AT 407-905-3105, CCDL@ocoee.org, WITH AN OFFICE LOCATED AT 1 N. BLUFORD AVENUE, OCOEE, FLORIDA 34761.

M. **No bid may be withdrawn for a period of ninety (90) days after the time and date scheduled for the bid opening. A request for withdrawal or a modification of a bid may be submitted to the Purchasing Agent, in writing, at any time prior to the deadline for submitting bids. After expiration of the deadline for receiving bids, no bid may be withdrawn or modified.**

The City reserves the right to accept or reject any or all bids, to waive formalities, technicalities or irregularities, to request clarification of information submitted in any bid, or to re-advertise for new bids. The City may accept any item or group of items of any bid, unless the Bidder qualifies its bid by

specific limitations. The City may accept one or more bids if, in the City's discretion, the City determines that it is in the City's best interest to do so.

The City reserves the right to award the contract to the Bidder which, in the City's sole discretion, is the most responsive and responsible Bidder. The City reserves the right, as an aid in determining which bid is responsible, to require a bidder to submit such additional evidence of Bidder's qualifications as the City may deem necessary, and may consider any evidence available to the City of the financial, technical, and other qualifications and abilities of a Bidder, including past performance (experience) with the City and others. The City Commission shall be the final authority in the selection of any and all bids.

(Remainder of page left blank intentionally.)

GENERAL TERMS & CONDITIONS:

1. BID SECURITY:

a) Each proposal must be accompanied by Bid Security in the form of a Cashier's/Certified Check or company check upon an incorporated bank or trust company **or** a Bid Bond in an amount equal to five percent (5%) of the amount of the bid. A combination of any of the former is not acceptable. Cash will not be accepted as Bid Security. The Bid Security is submitted as a guarantee that the respondent, if awarded the Contract, will after written notice of such award, enter into a written Contract with the City and as a guarantee that the respondent will not withdraw its bid for a period of ninety (90) days after the scheduled closing time for the receipt of bids, in accordance with the accepted bid and bid documents. Please note checks will be deposited.

b) A copy of the bid security is to be included with the bid submitted electronically Bonfire. The original bid security is to be mailed within five (5) business days after the bid opening to: City of Ocoee, Finance Department/Purchasing, Attention: Olena Stokych, Purchasing Analyst, 1 N. Bluford Avenue, Ocoee, FL 34761. Failure to provide the original bid security will cause your bid to be deemed non-responsive.

c) In the event of withdrawal of said bid within ninety (90) days following the opening of bids, or respondent's failure to enter into said contract with the City or failure to provide the City with other requirements of the contract documents or the bid invitation after issuance of Notice of Intent to Award by the City, then such respondent shall be liable to the City in the full amount of the check or bid bond and the City shall be entitled to retain the full amount of the check or to demand from the Surety the penal sum of the bid bond as liquidated damages and not a penalty.

d) Surety companies executing bonds shall be duly insured by an insurer or corporate surety and signed by a licensed agent who holds a current Power of Attorney from the surety company issuing the bond.

e) The cost of the required bond and required insurance coverage is to be included in the respondent's overhead and is not eligible for reimbursement as a separate cost by the City.

f) The checks of the three (3) most favorable respondents will be returned within three (3) days after the City and the successful respondent have executed the contract for work or until the 91st day after bid opening, whichever is earlier. The remaining checks will be returned within thirty (30) days after the opening of bids. Bid Bonds will be returned upon request following the same criteria as a check.

2. PERFORMANCE AND PAYMENT BONDS

(Required if Project is over $200,000.00.)

a) The Successful Bidder shall furnish the City with a State of Florida 100% Performance and a 100% Payment Bond written by a Surety Company acceptable to the City. Surety companies executing bonds shall be duly insured by an insurer or corporate surety and signed by a licensed agent who holds a current Power of Attorney from the surety company issuing the bond. The attached Performance and Payment Bond Forms shall be used.

b) The cost of the Payment and Performance Bonds shall be borne by the Successful Respondent. The bonds shall be accompanied by duly authenticated or certified documents, in duplicate, evidencing that the person executing the Bonds in behalf of the Surety had the authority to do so on the date of the bonds. The date of the certification cannot be earlier than the Agreement.

3. DEFAULT:

As a result of bids received under this Invitation, the award of the contract may be based, in whole or in part, on delivery and specification factors. Accordingly, should the Contractor not meet the delivery deadline(s) set forth in the specifications or should the Contractor fail to perform any of the other provisions of the specifications and/or other contract documents, the City may declare the Contractor in default and terminate the whole or any part of the contract. Upon declaring the Contractor in default and the contract in whole or in part, the City may procure and/or cause to be delivered the equipment, supplies, or materials specified, or any substitutions thereof and the Contractor shall be liable to the City for any excess costs resulting therefrom. In the event the Contractor has been declared in default of a portion of the contract, the Contractor shall continue the performance of the contract to the extent not terminated under the provisions of this paragraph. Where the Contractor fails to comply with any of the specifications, except for delivery deadline(s), the City may, in its discretion, provide the Contractor with written notification of its intention to terminate for default unless prescribed deficiencies are corrected within a specified period of time. Such notification shall not constitute a waiver of any of the City's rights and remedies hereunder.

4. PATENT INDEMNITY:

Except as otherwise provided, the successful Bidder agrees to indemnify the City and its officers, agents, and employees against liability, including costs and expenses for infringement upon any letters patent of the United States arising out of the performance of this Contract or out of the use or disposal by or for the account of the City or supplies furnished or construction work performed hereunder, to the extent caused by the negligence, recklessness, or intentional wrongful misconduct of the Respondent and persons employed or utilized by the Respondent in the performance of the construction contract.

Further, the Respondent shall fully indemnify, defend, and hold harmless the City and its officers, agents, and employees from any suits, actions, damages, and costs of every name and description, including attorneys' fees, arising from or relating to violation or infringement of a trademark, copyright, patent, trade secret, unpatented invention, or intellectual property right. If the bidder uses any design, device, or materials covered by letters, patent, or copyright, it is mutually agreed and understood without exception that the bid price shall include all royalties or cost arising from the use of such design, device, or materials.

5. PRICING:

Pricing should be provided as indicated on the Scope of Work/Bid Sheet attached, to include any alternate bids. Please note that alternate bids will not be accepted unless specifically called for on the Scope of Work/Bid Sheet. In case of a discrepancy between the unit price and extended price, the unit price will be presumed to be correct. Cost of preparation of a response to this bid is solely that of the bidder and the City assumes no responsibility for such costs incurred by the bidder.

The Bid form should not be completed in pencil. All entries on the Bid form shall be legible. The City reserves the right, but does not assume the obligation, to ask a Bidder to clarify an illegible entry on the Bid form. If the Bid form requires that the Bid price, or constituent portions of the Bid price, be stated in unit prices and total price; the unit prices and the total price for the stated number of units identified on the Bid form should be provided by the Bidder and be correctly computed. If there is an arithmetical conflict, between the unit price stated by the Bidder on the Bid form and the total price stated by the Bidder on the Bid form, the unit price stated by the Bidder on the Bid form shall take precedence. The City may

unilaterally correct such arithmetical conflict on the Bid form to calculate the total price, utilizing the unit prices that have been identified by the Bidder. The taking of such action by the City shall not constitute grounds for the Bidder to withdraw its bid nor shall it provide a defense constituting discharge of the bid bond. The City reserves the right, but does not assume the obligation, to waive any mistake, omission, error or other irregularity that may appear on the Bid form. However, the City reserves the right to reject as non-responsive Bid forms that are incomplete or contain information that is not required.

a) The Bidder represents that the article(s) to be furnished under this Invitation to Bid is (are) new and unused (unless specifically so stated) and that the quality has not deteriorated so as to impair its usefulness.
b) The prices in this bid have been arrived at independently, without consultation, communication, or agreement for the purpose of restriction competition, as to any matter relating to such prices with any other Bidder or with any competitor;
c) Unless otherwise required by law, the prices which have been quoted in this bid have not been knowingly disclosed by the Bidder and will not knowingly be disclosed by the Bidder prior to opening, directly or indirectly to any other Bidder or to any competitor;
d) No attempt has been made or will be made by the Bidder to induce any other person or firm to submit or not to submit a bid for the purpose of restricting competition. Every contract, combination or conspiracy in restraint of trade or commerce in this State is unlawful (s. 542.18, Florida Statutes, and all applicable federal regulations);
e) Bidder warrants the prices set forth herein do not exceed the prices charged by the Bidder under a contract with the State of Florida Purchasing Division; and
f) Bidder agrees that supplies/services furnished under this quotation, if awarded, shall be covered by the most favorable commercial warranties the Bidder gives to any customer for such supplies/services and that rights and remedies provided herein are in addition to and do not limit any rights offered to the City by any other provision of the bid award.

6. DISCOUNTS:

a) Trade and time payment discounts will be considered in arriving at new prices and in making awards, except that discounts for payments within less than 30 days will not be considered in evaluation of bids. However, offered discounts will be taken for less than 30 days if payment is made within discount period.
b) In connections with any discount offered, time will be computed from date of delivery and acceptance at destination, or from the date correct invoice is received in the office of Finance, whichever is later. Payment is deemed to be made, for the purpose of earning the discount, on the date of City Check.

7. SAMPLES:

Samples of items, when required, must be furnished free of expense to the City and, if not called for within fifteen days from date of bid opening, same will be disposed of in the best interest of the City.

8. AWARD CRITERIA:

The contract will be recommended to be awarded to the overall lowest most responsive and responsible Bidder according to the following criteria:

- Compliance with scope of work, specifications, terms, and conditions

- Bid price, the City will evaluate the Total Base Bid including alternates as the basis of review and award provided the total bid is within budget. For clarification, Mobilization shall be 5% of the total bid amount plus Add Alternates.
- Warranty offered
- Experience with similar work
- Successful reference check

9. LITERATURE:

If required by the scope of work, or the specifications, descriptive literature/brochures shall be included with this bid in order to properly evaluate make/model offered. Bids submitted without same may be considered non-responsive and disqualified.

10. BID PROTESTS:

All Bid Protests shall be submitted to the Procurement Manager in the following manner:

1. A Bidder **shall** file a written bid protest under this Article or be barred any relief; oral protests shall not be acknowledged.

2. A bid protest **shall** be limited to the following grounds: (a) issues arising from the procurement provisions of the Project Manual, its addenda, and other bidding documents; and/or (b) applicable federal, state, or local law. No bid protest may be based upon questions concerning the design documents (drawings and specifications). The Bidder shall clarify all questions concerning the design documents of the project prior to submitting its bid.

3. The content of the bid protest **shall** fully state the factual and legal grounds for the protest and the legal basis for the relief requested.

4. The bid protest **shall** be filed with the Procurement Manager not later than five (5) calendar days after the posting of the notice of intent to award or recommendation of award by staff, whichever is earlier.

5. The Procurement Manager, on behalf of the City, shall make a determination of the merits of the protest not later than five (5) business days after receipt of the protest. If the City denies the protest, the City may proceed with award of the contract unless enjoined by order of a court of competent jurisdiction.

11. PAYMENT TERMS:

Payment will be based upon monthly applications for payment properly submitted by the Contractor to the Owner and based upon the percentage of work complete. Retainage shall be five (5) percent of work to date based on the progress payment, including all change orders. All retainage amounts shall be paid when the work is complete, unless otherwise stated in the contract. Payment for all applications for payment for work properly completed shall be made, not later than the Twenty-fifth (25th) business day after the date on which the properly submitted Application for Payment is initially received by the Owner.

No payment will be made for materials ordered without proper purchase order authorization. Payment cannot be made until materials, goods or services, have been received and accepted by the City in the quality and quantity ordered.

Any contract resulting from this solicitation is deemed effective only to the extent of appropriations available.

The City of Ocoee, Florida has the following tax exemption certificates assigned:

- Florida Sales & Use Tax Exemption Certificate No. 85-8013779974C-0; and
- Pursuant to Chapter 212, Florida Statutes, the City is exempt from federal excise, state, and local sales taxes.

12. CONTRACT:

a) The successful Bidder, hereinafter referred to as "Contractor," will be required to enter into a contract with the City. The contract shall be a written agreement similar to the ASCE standard construction contract or City-issued purchase order. Construction time will be sixty (60) days from the Notice to Proceed for substantial completion and ninety (90) days from the Notice to Proceed for final completion.

b) The City may in its sole discretion award any additional work, whether in the existing area, or in any additional area, to any third party, or such work may be performed by the City's employees. Contractor will be expected to cooperate with any or all other Contractors who may be performing work for the City.

13. SAFETY/OSHA REQUIREMENTS:

The Bidder guarantees that the services to be performed and the goods to be provided herein, shall comply with all applicable federal, state and local laws, ordinances, regulations, orders and decrees, including without limitation such of the following acts as may be applicable: Federal Consumer Product Safety Act, Federal Fair Labor Standards Act, Occupational Safety and Health Act, Federal Hazardous Substances Labeling Act, Federal Flammable Fabrics Act, and any applicable environmental regulations.

a) All contractors are required to comply with the Congressional Federal Register (CFR) of the U.S. Department of Labor, Occupational Safety and Health Administration (OSHA) Construction Industry, Part 1926, and CFR 1910, General Industry Standards, that are applicable in construction work.
b) The prime contractor is not only responsible for the safety aspects of his operation and employees, **but** also that of all subcontractors on the job site.
c) Assure that a certified first aid person is designated, phone numbers of physicians, hospital and ambulance services are posted (copy to Personnel Director, City of Ocoee) and that a first aid kit is available.
d) All individuals are required to wear hard hats on all construction sites.
e) Provide personal protective equipment that may be required for jobs in progress (e.g.: hard hats, safety glasses, respirators, ear protection, long pants and shirts, etc.).
f) Observe the speed limit on City property.
g) Construction areas cleaned **daily**; excavations must be barricaded or flagged until backfilled. In some cases, bracing, shoring and sloping may be required.
h) Scaffolds shall have guard rails on all open sides and secured to prevent displacement.

i) Powder actuated stud guns or low velocity and/or similar powder actuated tools require eye and ear protection as well as to ensure that all unauthorized personnel are well clear.
j) Welding and cutting - a fire watch and appropriate fire extinguisher shall be provided and combustible materials cleaned up.
k) All heavy equipment must have, where applicable, (a) back-up alarms, (b) boom angle indicator, (c) load chart, (d) reeving, (3) fire extinguisher, (f) condition of hook and other items in accordance with OSHA 1926.550 and ANSI B30.5.
l) Construction material shall not be stored so as to block exits.
m) Ground fault circuit interrupters are required on all electrical circuits not part of the permanent wiring of the building.
n) Personal fall protection must be provided at elevations exceeding ten (10) feet.
o) Per City Ordinance, any Contractor using construction dumpsters within the City of Ocoee must obtain these services through Superior Waste Services of Florida, Inc.

14. DRUG-FREE WORKPLACE:

Provide a statement concerning the Bidder's status as a Drug-Free Work Place or evidence of an implemented drug-free workplace program. Submit the attached drug free workplace form with bid documents. **Bidder must complete and submit the attached Drug-Free Workplace Form with bid.**

15. CERTIFICATION OF NON-SEGREGATED FACILITIES

The Bidder certifies that the Bidder does not and will not maintain or provide for the Bidder's employees any segregated facilities at any of the Bidder's establishments and that the Bidder does not permit the Bidder's employees to perform their services at any location, under the Bidder's control, where segregated facilities are maintained. The Bidder agrees that a breach of this certification will be a violation of the Equal Opportunity clause in any contract resulting from acceptance of this Bid. As used in this certification, the term "segregated facilities" means any waiting room, work areas, time clocks, locker rooms and other storage and dressing areas, parking lots, drinking facilities provided for employees which are segregated on the basis of race, color, religion, national origin, habit, local custom, or otherwise. The Bidder agrees that (except where the Bidder has obtained identical certification from proposed contractors for specific time periods) the Bidder will obtain identical certifications from proposed subcontractors prior to the award of such contracts exceeding $10,000 which are not exempt from the provisions of the Equal Opportunity clause, and that the Bidder will retain such certifications in the Bidder's files.

The non-discriminatory guidelines as promulgated in Section 202, Executive Order 11246, and as amended by Executive Order 11375 and as amended, relative to Equal Opportunity for all persons and implementations of rules and regulations prescribed by the U.S. Secretary of labor, are incorporated herein.

16. CONFLICT OF INTEREST/NON-COLLUSION CERTIFICATION:

The Bidder declares by submission of a bid package that the only persons, or parties interested in their bid are those named herein, that this bid is, in all respects, fair and without fraud and that it is made without collusion with any other vendor or official of the City of Ocoee. Neither the Affiant nor the above named entity has directly or indirectly entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of free competitive pricing in connection with the entity's submittal for the above project. This statement restricts the discussion of pricing data until the completion of negotiations and execution of the Agreement for this project.

The Bidder certifies that no City Commissioner, other City Official or City employee directly or indirectly owns assets or capital stock of the bidding entity, nor will directly or indirectly benefit by the profits or emoluments of this proposal. (For purposes of this paragraph, indirect ownership or benefit does not include ownership or benefit by a spouse or minor child.)

The Bidder certifies that no member of the entity's ownership or management is presently applying for an employee position or actively seeking an elected position with the City. In the event that a conflict of interest is identified in the provision of services, the Bidder agrees to immediately notify the City in writing. **Bidder must submit the attached Conflict of Interest Disclosure Form.**

The Bidder further declares that a careful examination of the scope of services, instructions, and terms and conditions of this bid has occurred, and that the bid is made according to the provisions of the bid documents, and will meet or exceed the scope of services, requirements, and standards contained in the Bid documents.

Bidder agrees to abide by all conditions of the negotiation process. In conducting negotiations with the City, Bidder offers and agrees that if this negotiation is accepted, the Bidder will convey, sell, assign, or transfer to the City all rights, title, and interest in and to all causes of action it may now or hereafter acquire under the Anti-trust laws of the United States and the State of Florida for price fixing relating to the particular commodities or services purchased or acquired by the City. At the City's discretion, such assignment shall be made and become effective at the time the City tenders final payment to the Bidder. The bid constitutes a firm and binding offer by the Bidder to perform the services as stated.

17. PUBLIC ENTITY CRIME STATEMENT:

All invitations to bid as defined by Section 287.012(16), Florida Statutes, requests for proposals as defined by Section 287.012(23), Florida Statutes, and any contract document described by Section 287.058, Florida Statutes, shall contain a statement informing persons of the provisions of paragraph (2)(a) of Section 287.133, Florida Statutes, which reads as follows:

"A person or affiliate who has been placed on the convicted vendor list following a conviction for a public entity crime may not submit a bid on a contract to provide any goods or services to a public entity, may not submit a bid on a contract with a public entity for the construction or repair of public building or public work, may not submit bids on leases of real property to a public entity, may not be awarded or perform work as a contractor, supplier, subcontractor, or consultant under a contract with any public entity, and may not transact business with any public entity in excess of the threshold amount provided in Section 287.017, for CATEGORY TWO for a period of 36 months from the date of being placed on the convicted vendor list."

All Bidders who submit a Bid or Request for Proposal to the City of Ocoee are guaranteeing that they have read the previous statement and by signing the bid documents are qualified to submit a bid under Section 287.133 (2)(a), Florida Statutes.

18. SCRUTINIZED COMPANIES:

Bidder certifies that the company is not participating in a boycott of Israel. Bidder certifies that the Bidder is not on the Scrutinized Companies that Boycott Israel List, not on the Scrutinized Companies with Activities in Sudan List, not on the Scrutinized Companies with activities in the Iran Petroleum Energy

Sector List, or has been engaged in business operations in Cuba or Syria, as those terms are used and defined in sections 287.135 and 215.473 of the Florida Statutes. In the event that Bidder is unable to provide such certification but still seeks to be considered for award of this solicitation, Bidder shall, on a separate piece of paper, clearly state that it is on one or both of the Scrutinized Companies lists and shall furnish together with its proposal a duly executed written explanation of the facts supporting any exception to the requirement for certification that it claims under Section 287.135 of the Florida Statutes. Bidder agrees to cooperate fully with the City in any investigation undertaken by the City to determine whether the claimed exception would be applicable. The City shall have the right to terminate any contract resulting from this solicitation for default if Bidder is found to have submitted a false certification, or to have been placed on the Scrutinized Companies that Boycott Israel List, or to have been placed on the Scrutinized Companies for Activities in Sudan List, or the Scrutinized Companies with Activities in the Iran Petroleum Energy Sector List, or has been engaged in business operations in Cuba or Syria.

19. Prohibition Against Considering Social, Political or Ideological Interests in Government Contracting: Bidders are hereby notified of the provisions of section 287.05701, Florida Statutes, as amended, that the City will not request documentation of or consider a Bidder's social, political, or ideological interests when determining if the Bidder is a responsible Bidder. Bidders are further notified that the City's governing body may not give preference to a Bidder based on the Bidder's social, political, or ideological interests.

20. PERMITS/LICENSES/FEES:

a) Any permits, licenses or fees required will be the responsibility of the contractor; no separate payments will be made. Permit fees are waived for any City of Ocoee permits required.
b) The City requires a City of Ocoee registration if permitting is required. Please contact the City's Building Department at (407)905-3100 extension 1000, directly for information concerning this requirement.
c) Adherence to all applicable code regulations (Federal, State, County, and City) is the responsibility of the contractor.

21. E-VERIFY REGISTRATION AND USE.

By entering into the Contract, the awarded Contractor is obligated to comply with the provisions of § 448.095, Fla. Stat., "Employment Eligibility." This includes, but is not limited to utilization of the **E-Verify System** to verify the work authorization status of all newly hired employees, and requiring all subcontractors to provide an affidavit attesting that the subcontractor does not employ, contract with, or subcontract with, an alien unauthorized to work in the USA. Failure to comply will lead to termination of this contract, or if a subcontractor knowingly violates the statute, the subcontractor must be terminated immediately. If the Contract is terminated pursuant to Section 448.095, Fla. Stat., such termination is not a breach of contract and may not be considered as such. Any challenge to termination under this provision must be filed in the Ninth Judicial Circuit Court of Florida no later than 20 calendar days after the date of termination. If the Contract is terminated for a violation of Section 448.095 Fla. Stat., by the Contractor, the Contractor shall be liable for any additional costs incurred by the City as a result of the termination of the Contract. Nothing in the E-Verify Certification shall be construed to allow intentional discrimination of any class protected by law.

A. Pursuant to section 448.095, Florida Statutes, Contractor shall register with and use the U.S. Department of Homeland Security's E-Verify system, https://e-verify.uscis.gov/emp, to verify the work authorization status of all Contractor employees hired on and after January 1, 2021.

B. Subcontractors

(i) Contractor shall also require all subcontractors performing work under this Agreement to use the E-Verify system for any employees they may hire during the term of this Agreement.

(ii) Contractor shall obtain from all such subcontractors an affidavit stating the subcontractor does not employ, contract with, or subcontract with an unauthorized alien, as defined in section 448.095, Florida Statutes.

(iii) Contractor shall maintain a copy of all subcontractor affidavits for the duration of the Agreement.

C. Contractor must provide evidence of compliance with section 448.095, Florida Statutes. Evidence shall consist of an affidavit from the Contractor stating all employees hired on and after January 1, 2021 have had their work authorization status verified through the E-Verify system and a copy of their proof of registration in the E-Verify system.

D. Failure to comply with this provision is a material breach of the Agreement, and shall result in the immediate termination of the Agreement without penalty to the City. Contractor shall be liable for all costs incurred by the City to secure a replacement Agreement, including but not limited to, any increased costs for the same services, any costs due to delay, and rebidding costs, if applicable. **Completed the attached Contractor E-Verify Affidavit and submit with qualification package.**

22. INSURANCE REQUIREMENTS:

The Contractor shall not commence any work in connection with an Agreement until all of the following types of insurance have been obtained and such insurance has been approved by the City, nor shall the Contractor allow any Subcontractor to commence work on a subcontract until all similar insurance required of the subcontractor has been so obtained and approved. Policies other than Workers' Compensation shall be issued only by companies authorized by subsisting certificates of authority issued to the companies by the Department of Insurance of Florida which maintain a Best's Rating of "A" or better and a Financial Size Category of "VII" or better according to the A.M. Best Company. Policies for Workers' Compensation may be issued by companies authorized as a group self-insurer by 440.57, Florida Statutes.

a) Loss Deductible Clause: The City shall be exempt from, and in no way liable for, any sums of money which may represent a deductible in any insurance policy. The payment of such deductible shall be the sole responsibility of the General Contractor and/or subcontractor providing such insurance.
b) Workers' Compensation Insurance: The Contractor shall obtain during the life of this Agreement, Worker's Compensation Insurance with Employer's Liability Limits of $500,000/$500,000/$500,000 for all the Contractor's employees connected with the work of this project and, in the event any work is sublet, the Contractor shall require the subcontractor similarly to provide Workers' Compensation Insurance for all of the latter's employees unless such employees are covered by the protection afforded by the Contractor. Such insurance shall comply fully with the Florida Workers' Compensation Law. In case any class of employees engaged in hazardous work under this contract for the City is not protected under the Workers' Compensation statute, the Contractor shall provide, and cause each subcontractor to provide adequate insurance, satisfactory to the City, for the protection of the Contractor's employees not otherwise protected.
   - Include Waiver of Subrogation in favor of the City of Ocoee
c) Contractor's Public Liability and Property Damage Insurance: The Contractor shall obtain during the life of this Agreement COMMERCIAL AUTOMOBILE COVERAGE, this policy should name the City of Ocoee as an additional insured, and shall protect the Contractor and the City from claims for damage for personal injury, including accidental death, as well as claims for property damages which may arise from operations under this

Agreement whether such operations be by the Contractor or by anyone directly or indirectly employed by the Contractor, and the amounts of such insurance shall be the minimum limits as follows:

1) Automobile Bodily Injury Liability & Property Damage Liability
   - $1,000,000 Combined single limit per occurrence (each person, each accident)
   - All covered automobile will be covered via symbol 1
   - Liability coverage will include hired & non-owned automobile liability
   - Include Waiver of Subrogation in favor of The City of Ocoee

2) Comprehensive General Liability (Occurrence Form) - this policy should name the City of Ocoee as an additional insured and should indicate that the insurance of the Contractor is primary and non-contributory.
   - $2,000,000 GENERAL AGGREGATE
   - $2,000,000 PRODUCTS-COMPLETED OPERATIONS AGGREGATE
   - $1,000,000 PER OCCURRENCE
   - $1,000,000 PERSONAL & ADVERTISING INJURY
   - Include Waiver of Subrogation in favor of the City of Ocoee

3) Subcontractor's Comprehensive General Liability, Automobile Liability and Worker's Compensation Insurance: The Contractor shall require each subcontractor to procure and maintain during the life of this subcontract, insurance of the type specified above or insure the activities of these subcontractors in the Contractor's policy, as specified above.

4) Owner's Protective Liability Insurance: **n/a for this project**.

5) Contractual Liability: If the project is not bonded, the Contractor's insurance shall also include contractual liability coverage to insure the fulfillment of the contract. **NOTE: PUBLIC LIABILITY INSURANCE AND AUTOMOBILE LIABILITY INSURANCE, THE CITY SHALL BE NAMED AS ADDITIONAL INSURED.**
   - $1,000,000 PER OCCURRENCE
   - $2,000,000 AGGREGATE

6) Commercial Umbrella:
   - $1,000,000 PER OCCURRENCE
   - $2,000,000 Aggregate
   - Including Employer's Liability and Contractual Liability

7) Builders Risk: **n/a for this project**

8) Certificates of Insurance: Certificate of Insurance Form (see sample attached), naming the City of Ocoee as an additional insured will be furnished by the Contractor upon notice of award. These shall be completed by the authorized Resident Agent and returned to the Office of the Purchasing Agent. This certificate shall be dated and show:

   - The name of the Insured contractor, the specific job by name and job number, the name of the insurer, the number of the policy, its effective date, its termination date.
   - Statement that the Insurer shall mail notice to the Owner at least thirty (30) days prior to any material changes in provisions or cancellation of the policy, except ten (10) days written notice of cancellation for non-payment of premium.

ACORD **CERTIFICATE OF LIABILITY INSURANCE**

OP ID JC
FRAZE-1

DATE (MM/DD/YYYY)
11/04/04

PRODUCER

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW.

INSURERS AFFORDING COVERAGE	NAIC #
INSURER A: AM Best Rating A- or Better	
INSURER B:	
INSURER C:	
INSURER D:	
INSURER E:	

INSURED

Contractor's Name
Address

COVERAGES

THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. AGGREGATE LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	ADD'L INSRD	TYPE OF INSURANCE	POLICY NUMBER	POLICY EFFECTIVE DATE (MM/DD/YY)	POLICY EXPIRATION DATE (MM/DD/YY)	LIMITS	
		GENERAL LIABILITY				EACH OCCURRENCE	$ 1,000,000
	X	X COMMERCIAL GENERAL LIABILITY				DAMAGE TO RENTED PREMISES (Ea occurence)	$ 50,000
		CLAIMS MADE X OCCUR				MED EXP (Any one person)	$ 5,000
						PERSONAL & ADV INJURY	$ 1,000,000
						GENERAL AGGREGATE	$ 2,000,000
		GEN'L AGGREGATE LIMIT APPLIES PER:				PRODUCTS - COMP/OP AGG	$ 2,000,000
		POLICY X PRO-JECT LOC					
		AUTOMOBILE LIABILITY				COMBINED SINGLE LIMIT (Ea accident)	$ 1,000,000
		X ANY AUTO					
		ALL OWNED AUTOS				BODILY INJURY (Per person)	$
		SCHEDULED AUTOS					
		X HIRED AUTOS				BODILY INJURY (Per accident)	$
		X NON-OWNED AUTOS					
						PROPERTY DAMAGE (Per accident)	$
		GARAGE LIABILITY				AUTO ONLY - EA ACCIDENT	$
		ANY AUTO				OTHER THAN AUTO ONLY: EA ACC	$
						AGG	$
		EXCESS/UMBRELLA LIABILITY				EACH OCCURRENCE	$ 1,000,000
	X	X OCCUR CLAIMS MADE				AGGREGATE	$ 2,000,000
							$
		DEDUCTIBLE					$
		RETENTION $					$
		WORKERS COMPENSATION AND EMPLOYERS' LIABILITY				X WC STATU-TORY LIMITS / OTH-ER	
		ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED?				E.L. EACH ACCIDENT	$ 500,000
		If yes, describe under SPECIAL PROVISIONS below				E.L. DISEASE - EA EMPLOYEE	$ 500,000
						E.L. DISEASE - POLICY LIMIT	$ 500,000
		OTHER					
		Builders Risk				Any 1 Loc	100,000
						Any 1 Occ	1,000,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES / EXCLUSIONS ADDED BY ENDORSEMENT / SPECIAL PROVISIONS

The insurance evidenced by this certificate shall name the certificate holders as an additional insured on the General Liability & Umbrella Liability. Workers' Compensation, Employers' Liability & General Liability shall contain a Waiver of Subrogation in favor of the certificate holder. The certificate holder is added as a named insured for Builders Risk.

CERTIFICATE HOLDER

OCOEE01

City of Ocoee
150 N. Lakeshore Drive
Ocoee FL 34761-2258

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, THE ISSUING INSURER WILL ENDEAVOR TO MAIL 10 DAYS WRITTEN NOTICE TO THE CERTIFICATE HOLDER NAMED TO THE LEFT, BUT FAILURE TO DO SO SHALL IMPOSE NO OBLIGATION OR LIABILITY OF ANY KIND UPON THE INSURER, ITS AGENTS OR REPRESENTATIVES.

AUTHORIZED REPRESENTATIVE

ACORD 25 (2001/08)

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SAMPLE

23. LIST OF SUBCONTRACTORS:

SUBCONTRACTOR and/or TEMPORARY WORKER AGENCY
NAME/ADDRESS/FEDERAL I.D. NO./CONTACT PERSON/PHONE #:

_____
_____
_____
_____
_____
_____
_____

(Attach additional sheets if necessary)

The Bidder certifies that the Bidder has investigated each subcontractor/temporary worker agency listed and has received and has in the Bidder's files evidence that each subcontractor/temporary worker agency maintains a fully-equipped organization capable, technically and financially, of performing the pertinent work and that the subcontractor/temporary agency has done similar work in a satisfactory manner. **It is further acknowledged by the contractor that any CHANGE or OMISSIONS in the subcontractors listed above shall require the City of Ocoee's approval <u>before</u> any work shall commence by the additional subcontractor on this project.**

24. EQUIPMENT LISTING:

Please list year, make & model of all equipment that will be used on City of Ocoee properties, including whether owned or leased. If leased please provide name of lessor.

_____
_____
_____
_____
_____
_____
_____

25. REFERENCES/EXPERIENCE OF RESPONDENT WITH SIMILAR WORK

The Bidder shall complete the following blanks regarding experience with similar type of work. Bidder must demonstrate ability to perform services of similar complexity, nature, and size of this project within past three years.

DATE OF CONTRACT/AMOUNT OF PROJECT/CLIENT'S NAME AND ADDRESS/ TELPHONE NUMBER/EMAIL ADDRESS/NAME OF CONTACT

_____
_____
_____
_____
_____
_____
_____

Have you any similar work in progress at this time? Yes___ No ___.
Length of time in business_____
Have you ever failed to complete work awarded to you? If so, where and why?

_____

Bank or other financial references**:**

_____
_____
_____
_____
_____
_____
_____

(Attach additional sheets if necessary)

26. SUMMARY OF LITIGATION:

Provide a summary of any litigation, claim(s), bid or contract dispute(s) filed by or against the Bidder in the past five (5) years which is related to the services that the Bidder provides in the regular course of business. The summary shall state the nature of the litigation, claim, or contact dispute, a brief description of the case, the outcome or projected outcome, and the monetary amounts involved. If none, please so state.

_____
_____
_____
_____
_____
_____
_____

27. ACKNOWLEDGEMENT OF ADDENDA:

Bidder acknowledges receipt of the following addenda:

No._____ Dated _____
No._____ Dated _____
No._____ Dated _____
No._____ Dated _____
No._____ Dated _____

(remainder of page left blank intentionally)

CITY OF OCOEE
ITB #24-004
ASPHALT PAVING PROJECTS FOR FY 2024

EXHIBIT A

OLD WINTER GARDEN (MAGUIRE TO BLUFORD)
MILL AND RESURFACING

OLD WINTER GARDEN (BLACKWOOD TO HEMPEL)
MILL AND RESURFACING

CLARKE RD (SILVER STAR TO AD MIMS)
MILL AND RESURFACING

LAKEWOOD HILLS SUBDIVISION
MILL AND RESURFACING

MARSDEN ST/ SULLIVAN AVE
MILL AND RESURFACING

MOORE ROAD
MILL AND RESURFACING

TIGER MINOR SOUTH PARKING LOT
MILL AND RESURFACING

ACTION PARK PARKING LOT
MILL, RESURFACING, AND OVERLAY

OCOEE CEMETERY DRIVE
MILL AND RESURFACING

SCOPE OF WORK

The City of Ocoee, Florida (City) is soliciting bids from qualified contractors to mill and resurface using SP-9.5, SP-12.5 and FC-12.5 Asphaltic Concrete. Refer to description of services and technical specifications provided herewith. All work of this contract shall conform to the applicable technical specifications of Florida Department of Transportation (FDOT) "Standard Specifications for Road and Bridge Construction" Latest Edition, and "Roadway and Traffic Design Standards" Latest Edition including any amendments thereto. The CONTRACTOR shall acquire his own copies of the FDOT Standards.

All work is to be done in accordance with the drawings prepared by the City of Ocoee, the Measure and Payment section, below, and other bid documents. The total base bid price must include all costs required to complete the work, whether or not the materials and labor are explicitly listed. Quantities shown in the Bid Form are summarized from the plans. Such quantities are provided as an aid to preparing bids and are not binding on City as minimum quantities. Payment will be based on installed and accepted quantities.

Work is to be performed during normal business hours of Monday through Friday between 7 am – 5 pm. Any work performed outside of these standard work hours must be authorized by the City of Ocoee Public Works Director.

The City reserves the right to omit one or more bid items, as may be required to stay within the available project budget, when the work is awarded. If this occurs, the City or Contractor may seek to negotiate price changes for lump sum bid items that relate to the overall quantity of work, such as mobilization or maintenance of traffic. Should the City instead award one or more of the add-alternate bid items, no increases in lump sum unit prices will be permitted, as the add-alternate item bids should be inclusive of all additional effort and costs related to that work.

MEASUREMENT AND PAYMENT

1.01 DESCRIPTION OF WORK

This section defines the method which will be used to determine the quantities of work performed or materials supplied and establish the basis upon which payment will be made. Contractor is required to visit sites and field estimate existing and required striping quantity for Lump Sum Bid.

1.02 ESTIMATED QUANTITIES

Where quantities are shown they are approximate and are given only as a basis of calculation upon which the award of the Contract is to be made. CITY or ENGINEER do not assume any responsibility that the final quantities, nor shall CONTRACTOR claim misunderstanding because of such estimate of quantities. Final payment will be made only for the satisfactorily completed quantity of each item.

1.03 MEASUREMENT STANDARDS

All work completed under the Contract shall be measured according to United States Standard Methods.

1.04 METHOD OF MEASUREMENT

Measurement of Length:

Unless otherwise specified for the particular items involved, all measurements of distance for items to be paid for on the basis of length shall be taken horizontally or vertically.

Measurement of Area:

In the measurement of items paid for on the basis of area of finished work, the lengths and/or widths to be used in the calculations shall be the actual dimensions measured along the surface of the completed work within the neat lines shown or designated. At intersections, the measurement used for length of side area will be measured from the outside edge of the width allowed along the main trench.

1.05 PAYMENT

Lump Sum Items:

Where payment for items is shown to be paid for on a lump sum basis, no separate payment will be made for any item of work required to complete the lump sum item within the limits of work shown or specified.

Unit Price Items:

Where payment for items is shown to be paid for on a unit price basis, separate payment will be made for the items of work described herein and listed on the Bid Form. Any related work not specifically listed, but required for satisfactory completion of the work, shall be considered to be included in the scope of the appropriate listed work items.

1.06 COSTS INCLUDED IN PAYMENT ITEMS (IF APPLICABLE)

No separate payment will be made for the following items and the cost of such work shall be included in the applicable pay items of work.

- Clearing and grubbing (including disposal of excess material)
- Replacement of unpaved roadways, grass and shrubbery plots
- Cleanup
- Testing and placing system in operation
- Any material and equipment required to be installed and utilized for tests
- Pipe, structures, pavement replacement, restoration and/or appurtenances included within the limits of lump sum work, unless otherwise shown.
- Maintaining or detouring of the traffic (Temporary Traffic Control)
- Appurtenant work as required for a complete and operable system
- Surface restoration including removal and replacement of trees (under 4-inch diameter), shrubs, and sod disturbed by construction activities.
- Relocation and/or replacement of irrigation systems disturbed by construction
- Relocation and/or replacement of mail boxes disturbed by construction
- Furnishing adequate sanitary facilities for workers
- Adjustment of valve boxes
- Erosion control mechanisms
- Maintaining Driveway Access for Residences
- Tack for Asphalt

Cleanup:

CONTRACTOR's attention is called to the fact that cleanup is considered a part of the work of construction. No payment will be made until cleanup is essentially complete.

At the end of each week of construction, the CONTRACTOR shall perform cleaning of the work site, to the satisfaction of the Owner, before proceeding to the next week's scheduled work.

Work Outside Authorized Limits:
No payment will be made for work constructed outside the authorized limits of work.

1.07 APPLICATIONS FOR PAYMENT

Applications for payment shall be prepared by the CONTRACTOR and submitted to the CITY in accordance with the schedule established by the Conditions of the Contract and the Agreement. The applications for payment shall be submitted in the number and form established by the CITY at the Preconstruction Conference. The form shall be completely filled out and executed by an authorized representative of the CONTRACTOR. Supporting data such as schedules of stored materials shall be attached to each copy of the application.

1.08 CHANGE ORDER PROCEDURE

A Change Order is a written order to the CONTRACTOR signed by the CITY authorizing an addition, deletion or revision in the Work, or an adjustment in the Contract Price or the Contract Time which is issued after the execution of the Agreement. Refer to Change Order Form attached.

The following procedure shall be used in processing Change Orders:

For Additions to the Work:

The CITY shall issue a written order to the CONTRACTOR directing him to accomplish the additional work. The CONTRACTOR shall review the order and if he feels that the additional work entitles him to additional payment or additional time, he may submit a claim as prescribed in the Conditions of the Contract.

For Deletions From the Work:

The CITY shall issue a written order to the CONTRACTOR directing him to make the change. If the CITY feels that the Contract price should be reduced as a result of the change, the CITY shall make a claim for the reduction as provided in the Conditions of the Contract.

Cost of the changes in the work shall be determined in accordance with the requirements spelled out in the Conditions of the Contract. Modifications to incorporate the changes in cost will be made as the amount of any change is determined.

1.09 BID ITEMS

The following numbered paragraphs explain each of the bid items listed on the Bid Form. The paragraphs explain what is included in each item and how it will be paid.

1.00 OLD WINTER GARDEN (MAGUIRE TO BLUFORD)

1.01 Mobilization / Demobilization and General Requirements and Restoration

Mobilization shall be the preparatory work and operations in mobilizing for beginning work on the project, including, but not limited to, those operations necessary for the movement of personnel, equipment, supplies and incidentals to the project site, and if necessary the establishment of temporary offices, buildings, safety equipment and first aid supplies, sanitary and other facilities, as required by the Contract Documents and applicable laws and regulations. The cost of bonds, required insurance, and any other preconstruction expense necessary for the start of work, excluding the cost of construction materials, shall also be included in this item. Permitting is excluded and not the responsibility of the contractor. City of Ocoee shall provide (if necessary) custom signs or message board, only. In addition, payment for Quality Assurance Soil Testing, general Temporary Traffic Control and General Construction Requirements, unless stated under separate bid items, shall be included under this bid item and shall include the CONTRACTOR's overhead costs related specifically to this Contract. The contractor shall also be responsible for miscellaneous concrete and asphalt damage caused by paving equipment or trucks that must be traveled over to access paving areas. This includes valley gutters and concrete drives and sidewalks or brick pavers, asphaltic concrete that may be damaged during construction activities. Demobilization shall be the work of removing temporary facilities from the site. The cost of any fencing, signs, markings, and other items necessary to secure each work site and to notify the public as to the hazards present is explicitly included in this bid item. Insurance and indemnification costs are part of this bid item.

The lump-sum mobilization Bid Price in the Proposal should be limited to a maximum of five percent (5%) of the total Contract Price. Mobilization costs, estimated by the Contractor, that exceed five percent (5%) may be proportioned among and included within other pay item unit prices of the Contract. If the Contractor elects to exceed the five percent (5%) limit on the mobilization Bid Item, the amount exceeding this limit will be paid upon Final Acceptance of the Work. The City will evaluate the Total Base Bid including alternates as the basis of review and award provided the total bid is within budget. For clarification, Mobilization shall be 5% of the total bid amount plus Add Alternates. Bidder must Bid an all Bid items including the Add Alternate.

1.02 Milling

Payment for milling existing asphaltic concrete pavement shall be made at the Contract unit price per square yard (SY), and shall include full compensation for all labor, material and equipment required to complete the work. Payment includes full compensation for all materials and equipment required to mill a MAXIMUM of 1.5" of existing asphaltic pavement, as shown on the drawings, hauling, and cleaning up of milled material, labor and other incidentals. The measurement for payment under this item shall be the actual number of square yards of specified road satisfactorily milled. For Quality Control, if additional milled material is removed caused by scabbing, the contractor must immediately contact the City for direction. All materials and workmanship shall conform to the FDOT Standard Specifications (latest edition) Section 327 - Milling of Existing Asphalt Pavement.

1.03 Asphalt Pavement

Payment for constructing asphaltic concrete surface course shall be made at the Contract unit price per square yard (SY) placed and accepted, as shown on the Drawings, and shall be full compensation for all labor, material and equipment required to do the work. Payment shall include quality control testing, cleaning, sweeping and tack coat. No extra payment will be allowed for asphalt greater than that necessary to achieve the required grade,

unless directed by the CITY or CITY's representative. All materials and workmanship shall conform to the FDOT Standard Specifications (latest edition) Section 334 – Superpave Asphalt Concrete. Note: Warm Mix Asphalt is an acceptable option, per the Contractor's request.

1.04 Traffic Signal Loop System Restoration

Payment for Traffic Signal Loop shall be made at the Contract Lump Sum (LS), and shall be placed and accepted, based on the existing loop system at intersection signals. City highly recommends contractor visit site and meet with City Traffic Technician to determine existing system and quantity.

1.05 Pavement Markings

Payment for temporary striping and thermoplastic final striping, stop bars required at each stop sign and RPMs shall be made at the Contract Lump Sum (LS), and shall be placed and accepted, based on the existing striping along the road, intersections and cross walks. City recommends contractor visit site to determine quantity.

2.00 OLD WINTER GARDEN (BLACKWOOD TO HEMPEL)

2.01 Mobilization / Demobilization and General Requirements and Restoration

Mobilization shall be the preparatory work and operations in mobilizing for beginning work on the project, including, but not limited to, those operations necessary for the movement of personnel, equipment, supplies and incidentals to the project site, and if necessary the establishment of temporary offices, buildings, safety equipment and first aid supplies, sanitary and other facilities, as required by the Contract Documents and applicable laws and regulations. The cost of bonds, required insurance, and any other preconstruction expense necessary for the start of work, excluding the cost of construction materials, shall also be included in this item. Permitting is excluded and not the responsibility of the contractor. City of Ocoee shall provide (if necessary) custom signs or message board, only. In addition, payment for Quality Assurance Soil Testing, general Temporary Traffic Control and General Construction Requirements, unless stated under separate bid items, shall be included under this bid item and shall include the CONTRACTOR's overhead costs related specifically to this Contract. The contractor shall also be responsible for miscellaneous concrete and asphalt damage caused by paving equipment or trucks that must be traveled over to access paving areas. This includes valley gutters and concrete drives and sidewalks or brick pavers, asphaltic concrete that may be damaged during construction activities. Demobilization shall be the work of removing temporary facilities from the site. The cost of any fencing, signs, markings, and other items necessary to secure each work site and to notify the public as to the hazards present is explicitly included in this bid item. Insurance and indemnification costs are part of this bid item.

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2.02 Milling

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2.03 Asphalt Pavement

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2.04 Traffic Signal Loop System Restoration

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2.05 Pavement Markings

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3.00 CLARKE RD (SILVER STAR TO AD MIMS)

3.01 Mobilization / Demobilization and General Requirements and Restoration

Mobilization shall be the preparatory work and operations in mobilizing for beginning work on the project, including, but not limited to, those operations necessary for the movement of personnel, equipment, supplies and incidentals to the project site, and if necessary the establishment of temporary offices, buildings, safety equipment and first aid supplies, sanitary and other facilities, as required by the Contract Documents and applicable laws and regulations. The cost of bonds, required insurance, and any other preconstruction expense necessary for the start of work, excluding the cost of construction materials, shall also be included in this item. Permitting is excluded and not the responsibility of the contractor. City of Ocoee shall provide (if necessary) custom signs or message board, only. In addition, payment for Quality Assurance Soil Testing, general Temporary Traffic Control and General Construction Requirements, unless stated under separate bid items, shall be included under this bid item and shall include the CONTRACTOR's overhead costs related specifically to this Contract. The contractor shall also be

responsible for miscellaneous concrete and asphalt damage caused by paving equipment or trucks that must be traveled over to access paving areas. This includes valley gutters and concrete drives and sidewalks or brick pavers, asphaltic concrete that may be damaged during construction activities. Demobilization shall be the work of removing temporary facilities from the site. The cost of any fencing, signs, markings, and other items necessary to secure each work site and to notify the public as to the hazards present is explicitly included in this bid item. Insurance and indemnification costs are part of this bid item.

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3.03 and 3.04 Asphalt Pavement

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3.05 Traffic Signal Loop System Restoration

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3.06 Pavement Markings

Payment for temporary striping and thermoplastic final striping, stop bars required at each stop sign and RPMs shall be made at the Contract Lump Sum (LS), and shall be placed and accepted, based on the existing striping along the road, intersections and cross walks. City recommends contractor visit site to determine quantity.

4.00 LAKEWOOD HILLS SUBDIVISION (STARKE LAKE CIR, ALASKA DR, HAWAII DR)

4.01 Mobilization / Demobilization and General Requirements and Restoration

Mobilization shall be the preparatory work and operations in mobilizing for beginning work on the project, including, but not limited to, those operations necessary for the movement of personnel, equipment, supplies and incidentals to the project site, and if necessary the establishment of temporary offices, buildings, safety equipment and first aid supplies, sanitary and other facilities, as required by the Contract Documents and applicable laws and regulations. The cost of bonds, required insurance, and any other preconstruction expense necessary for the start of work, excluding the cost of construction materials, shall also be included in this item. Permitting is excluded and not the responsibility of the contractor. City of Ocoee shall provide (if necessary) custom signs or message board, only. In addition, payment for Quality Assurance Soil Testing, general Temporary Traffic Control and General Construction Requirements, unless stated under separate bid items, shall be included under this bid item and shall include the CONTRACTOR's overhead costs related specifically to this Contract. The contractor shall also be responsible for miscellaneous concrete and asphalt damage caused by paving equipment or trucks that must be traveled over to access paving areas. This includes valley gutters and concrete drives and sidewalks or brick pavers, asphaltic concrete that may be damaged during construction activities. Demobilization shall be the work of removing temporary facilities from the site. The cost of any fencing, signs, markings, and other items necessary to secure each work site and to notify the public as to the hazards present is explicitly included in this bid item. Insurance and indemnification costs are part of this bid item.

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4.02 Milling

Payment for milling existing asphaltic concrete pavement shall be made at the Contract unit price per square yard (SY), and shall include full compensation for all labor, material and equipment required to complete the work. Payment includes full compensation for all materials and equipment required to mill a MAXIMUM of 1.25" of existing asphaltic pavement, as shown on the drawings, hauling, and cleaning up of milled material, labor and other incidentals. The measurement for payment under this item shall be the actual number of square yards of specified road satisfactorily milled. For Quality Control, if additional milled material is removed caused by scabbing, the contractor must immediately contact the City for direction. All materials and workmanship shall conform to the FDOT Standard Specifications (latest edition) Section 327 - Milling of Existing Asphalt Pavement.

4.03 Asphalt Pavement

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4.04 Pavement Markings

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5.00 MARSDEN ST / SULLIVAN AVE

5.01 Mobilization / Demobilization and General Requirements and Restoration

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5.03 Asphalt Pavement

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5.04 Pavement Markings

Payment for temporary striping and thermoplastic final striping, stop bars required at each stop sign and RPMs shall be made at the Contract Lump Sum (LS), and shall be placed and accepted, based on the existing striping along the road, intersections and cross walks. City recommends contractor visit site to determine quantity.

6.00 MOORE ROAD (EASTERN MOST 300 FT To 7th Ave)

6.01 Mobilization / Demobilization and General Requirements and Restoration

Mobilization shall be the preparatory work and operations in mobilizing for beginning work on the project, including, but not limited to, those operations necessary for the movement of personnel, equipment, supplies and incidentals to the project site, and if necessary the establishment of temporary offices, buildings, safety equipment and first aid supplies, sanitary and other facilities, as required by the Contract Documents and applicable laws and regulations. The cost of bonds, required insurance, and any other preconstruction expense necessary for the start of work, excluding the cost of construction materials, shall also be included in this item. Permitting is excluded and not the responsibility of the contractor. City of Ocoee shall provide (if necessary) custom signs or message board, only. In addition, payment for Quality Assurance Soil Testing, general Temporary Traffic Control and General Construction Requirements, unless stated under separate bid items, shall be included under this bid item and shall include the CONTRACTOR's overhead costs related specifically to this Contract. The contractor shall also be responsible for miscellaneous concrete and asphalt damage caused by paving equipment or trucks that must be traveled over to access paving areas. This includes valley gutters and concrete drives and sidewalks or brick pavers, asphaltic concrete that may be damaged during construction activities. Demobilization shall be the work of removing temporary facilities from the site. The cost of any fencing, signs, markings, and other items necessary to secure each work site and to notify the public as to the hazards present is explicitly included in this bid item. Insurance and indemnification costs are part of this bid item.

The lump-sum mobilization Bid Price in the Proposal should be limited to a maximum of five percent (5%) of the total Contract Price. Mobilization costs, estimated by the Contractor, that exceed five percent (5%) may be proportioned among and included within other pay item unit prices of the Contract. If the Contractor elects to exceed the five percent (5%) limit on the mobilization Bid Item, the amount exceeding this limit will be paid upon Final Acceptance of the Work. The City will evaluate the Total Base Bid including alternates as the basis of review and award provided the total bid is within budget. For clarification, Mobilization shall be 5% of the total bid amount plus Add Alternates. Bidder must Bid an all Bid items including the Add Alternate.

6.02 Milling

Payment for milling existing asphaltic concrete pavement shall be made at the Contract unit price per square yard (SY), and shall include full compensation for all labor, material and equipment required to complete the work. Payment includes full compensation for all materials and equipment required to mill a MAXIMUM of 1.5" of existing asphaltic pavement, as shown on the drawings, hauling, and cleaning up of milled material, labor and other incidentals. The measurement for payment under this item shall be the actual number of square yards of specified road satisfactorily milled. For Quality Control, if additional milled material is removed caused by scabbing, the contractor must immediately contact the City for direction. All materials and workmanship shall conform to the FDOT Standard Specifications (latest edition) Section 327 - Milling of Existing Asphalt Pavement.

6.03 Asphalt Pavement

Payment for constructing asphaltic concrete surface course shall be made at the Contract unit price per square yard (SY) placed and accepted, as shown on the Drawings, and shall be full compensation for all labor, material and equipment required to do the work. Payment shall include quality control testing, cleaning, sweeping and tack coat. No extra payment will be allowed for asphalt greater than that necessary to achieve the required grade, unless directed by the CITY or CITY's representative. All materials and workmanship shall conform to the FDOT Standard Specifications (latest edition) Section 334 – Superpave Asphalt Concrete. Note: Warm Mix Asphalt is an acceptable option, per the Contractor's request.

6.04 Pavement Markings

Payment for temporary striping and thermoplastic final striping, stop bars required at each stop sign and RPMs shall be made at the Contract Lump Sum (LS), and shall be placed and accepted, based on the existing striping along the road, intersections and cross walks. City recommends contractor visit site to determine quantity.

7.00 TIGER MINOR SOUTH PARKING LOT

7.01 Mobilization / Demobilization and General Requirements and Restoration

Mobilization shall be the preparatory work and operations in mobilizing for beginning work on the project, including, but not limited to, those operations necessary for the movement of personnel, equipment, supplies and incidentals to the project site, and if necessary the establishment of temporary offices, buildings, safety equipment and first aid supplies, sanitary and other facilities, as required by the Contract Documents and applicable laws and regulations. The cost of bonds, required insurance, and any other preconstruction expense necessary for the start of work, excluding the cost of construction materials, shall also be included in this item. Permitting is excluded and not the responsibility of the contractor. City of Ocoee shall provide (if necessary) custom signs or message board, only. In addition, payment for Quality Assurance Soil Testing, general Temporary Traffic Control and General Construction Requirements, unless stated under separate bid items, shall be included under this bid item and shall include the CONTRACTOR's overhead costs related specifically to this Contract. The contractor shall also be responsible for miscellaneous concrete and asphalt damage caused by paving equipment or trucks that must be traveled over to access paving areas. This includes valley gutters and concrete drives and sidewalks or brick pavers, asphaltic concrete that may be damaged during construction activities. Demobilization shall be the work of

removing temporary facilities from the site. The cost of any fencing, signs, markings, and other items necessary to secure each work site and to notify the public as to the hazards present is explicitly included in this bid item. Insurance and indemnification costs are part of this bid item.

The lump-sum mobilization Bid Price in the Proposal should be limited to a maximum of five percent (5%) of the total Contract Price. Mobilization costs, estimated by the Contractor, that exceed five percent (5%) may be proportioned among and included within other pay item unit prices of the Contract. If the Contractor elects to exceed the five percent (5%) limit on the mobilization Bid Item, the amount exceeding this limit will be paid upon Final Acceptance of the Work. The City will evaluate the Total Base Bid including alternates as the basis of review and award provided the total bid is within budget. For clarification, Mobilization shall be 5% of the total bid amount plus Add Alternates. Bidder must Bid an all Bid items including the Add Alternate.

7.02 Milling

Payment for milling existing asphaltic concrete pavement shall be made at the Contract unit price per square yard (SY), and shall include full compensation for all labor, material and equipment required to complete the work. Payment includes full compensation for all materials and equipment required to mill a MAXIMUM of 1" of existing asphaltic pavement, as shown on the drawings, hauling, and cleaning up of milled material, labor and other incidentals. The measurement for payment under this item shall be the actual number of square yards of specified road satisfactorily milled. For Quality Control, if additional milled material is removed caused by scabbing, the contractor must immediately contact the City for direction. All materials and workmanship shall conform to the FDOT Standard Specifications (latest edition) Section 327 - Milling of Existing Asphalt Pavement.

7.03 Asphalt Pavement

Payment for constructing asphaltic concrete surface course shall be made at the Contract unit price per square yard (SY) placed and accepted, as shown on the Drawings, and shall be full compensation for all labor, material and equipment required to do the work. Payment shall include quality control testing, cleaning, sweeping and tack coat. No extra payment will be allowed for asphalt greater than that necessary to achieve the required grade, unless directed by the CITY or CITY's representative. All materials and workmanship shall conform to the FDOT Standard Specifications (latest edition) Section 334 – Superpave Asphalt Concrete. Note: Warm Mix Asphalt is an acceptable option, per the Contractor's request.

7.04 Pavement Markings

Payment for temporary striping and thermoplastic final striping, stop bars required at each stop sign and RPMs shall be made at the Contract Lump Sum (LS), and shall be placed and accepted, based on the existing striping along the road, intersections and cross walks. City recommends contractor visit site to determine quantity.

8.00 ACTION PARK PARKING LOT

8.01 Mobilization / Demobilization and General Requirements and Restoration

Mobilization shall be the preparatory work and operations in mobilizing for beginning work on the project, including, but not limited to, those operations necessary for the movement of personnel, equipment, supplies and

incidentals to the project site, and if necessary the establishment of temporary offices, buildings, safety equipment and first aid supplies, sanitary and other facilities, as required by the Contract Documents and applicable laws and regulations. The cost of bonds, required insurance, and any other preconstruction expense necessary for the start of work, excluding the cost of construction materials, shall also be included in this item. Permitting is excluded and not the responsibility of the contractor. City of Ocoee shall provide (if necessary) custom signs or message board, only. In addition, payment for Quality Assurance Soil Testing, general Temporary Traffic Control and General Construction Requirements, unless stated under separate bid items, shall be included under this bid item and shall include the CONTRACTOR's overhead costs related specifically to this Contract. The contractor shall also be responsible for miscellaneous concrete and asphalt damage caused by paving equipment or trucks that must be traveled over to access paving areas. This includes valley gutters and concrete drives and sidewalks or brick pavers, asphaltic concrete that may be damaged during construction activities. Demobilization shall be the work of removing temporary facilities from the site. The cost of any fencing, signs, markings, and other items necessary to secure each work site and to notify the public as to the hazards present is explicitly included in this bid item. Insurance and indemnification costs are part of this bid item.

The lump-sum mobilization Bid Price in the Proposal should be limited to a maximum of five percent (5%) of the total Contract Price. Mobilization costs, estimated by the Contractor, that exceed five percent (5%) may be proportioned among and included within other pay item unit prices of the Contract. If the Contractor elects to exceed the five percent (5%) limit on the mobilization Bid Item, the amount exceeding this limit will be paid upon Final Acceptance of the Work. The City will evaluate the Total Base Bid including alternates as the basis of review and award provided the total bid is within budget. For clarification, Mobilization shall be 5% of the total bid amount plus Add Alternates. Bidder must Bid an all Bid items including the Add Alternate.

8.02 Milling

Payment for milling existing asphaltic concrete pavement shall be made at the Contract unit price per square yard (SY), and shall include full compensation for all labor, material and equipment required to complete the work. Payment includes full compensation for all materials and equipment required to mill a MAXIMUM of 1" of existing asphaltic pavement, as shown on the drawings, hauling, and cleaning up of milled material, labor and other incidentals. The measurement for payment under this item shall be the actual number of square yards of specified road satisfactorily milled. For Quality Control, if additional milled material is removed caused by scabbing, the contractor must immediately contact the City for direction. All materials and workmanship shall conform to the FDOT Standard Specifications (latest edition) Section 327 - Milling of Existing Asphalt Pavement.

8.03 Asphalt Pavement

Payment for constructing asphaltic concrete surface course overlay shall be made at the Contract unit price per square yard (SY) placed and accepted, as shown on the Drawings, and shall be full compensation for all labor, material and equipment required to do the work. Payment shall include quality control testing, cleaning, sweeping and tack coat. No extra payment will be allowed for asphalt greater than that necessary to achieve the required grade, unless directed by the CITY or CITY's representative. All materials and workmanship shall conform to the FDOT Standard Specifications (latest edition) Section 334 – Superpave Asphalt Concrete. Note: Warm Mix Asphalt is an acceptable option, per the Contractor's request.

8.04 Pavement Markings

Payment for temporary striping and thermoplastic final striping, stop bars required at each stop sign and RPMs shall be made at the Contract Lump Sum (LS), and shall be placed and accepted, based on the existing striping along the road, intersections and cross walks. City recommends contractor visit site to determine quantity.

9.00 OCOEE CEMETERY DRIVE AISLE

9.01 Mobilization / Demobilization and General Requirements and Restoration

Mobilization shall be the preparatory work and operations in mobilizing for beginning work on the project, including, but not limited to, those operations necessary for the movement of personnel, equipment, supplies and incidentals to the project site, and if necessary the establishment of temporary offices, buildings, safety equipment and first aid supplies, sanitary and other facilities, as required by the Contract Documents and applicable laws and regulations. The cost of bonds, required insurance, and any other preconstruction expense necessary for the start of work, excluding the cost of construction materials, shall also be included in this item. Permitting is excluded and not the responsibility of the contractor. City of Ocoee shall provide (if necessary) custom signs or message board, only. In addition, payment for Quality Assurance Soil Testing, general Temporary Traffic Control and General Construction Requirements, unless stated under separate bid items, shall be included under this bid item and shall include the CONTRACTOR's overhead costs related specifically to this Contract. The contractor shall also be responsible for miscellaneous concrete and asphalt damage caused by paving equipment or trucks that must be traveled over to access paving areas. This includes valley gutters and concrete drives and sidewalks or brick pavers, asphaltic concrete that may be damaged during construction activities. Demobilization shall be the work of removing temporary facilities from the site. The cost of any fencing, signs, markings, and other items necessary to secure each work site and to notify the public as to the hazards present is explicitly included in this bid item. Insurance and indemnification costs are part of this bid item.

The lump-sum mobilization Bid Price in the Proposal should be limited to a maximum of five percent (5%) of the total Contract Price. Mobilization costs, estimated by the Contractor, that exceed five percent (5%) may be proportioned among and included within other pay item unit prices of the Contract. If the Contractor elects to exceed the five percent (5%) limit on the mobilization Bid Item, the amount exceeding this limit will be paid upon Final Acceptance of the Work. The City will evaluate the Total Base Bid including alternates as the basis of review and award provided the total bid is within budget. For clarification, Mobilization shall be 5% of the total bid amount plus Add Alternates. Bidder must Bid an all Bid items including the Add Alternate.

9.02 Milling

Payment for milling existing asphaltic concrete pavement shall be made at the Contract unit price per square yard (SY), and shall include full compensation for all labor, material and equipment required to complete the work. Payment includes full compensation for all materials and equipment required to mill a MAXIMUM of 1" of existing asphaltic pavement, as shown on the drawings, hauling, and cleaning up of milled material, labor and other incidentals. The measurement for payment under this item shall be the actual number of square yards of specified road satisfactorily milled. For Quality Control, if additional milled material is removed caused by scabbing, the contractor must immediately contact the City for direction. All materials and workmanship shall conform to the FDOT Standard Specifications (latest edition) Section 327 - Milling of Existing Asphalt Pavement.

9.03 Asphalt Pavement

Payment for constructing asphaltic concrete surface course shall be made at the Contract unit price per square yard (SY) placed and accepted, as shown on the Drawings, and shall be full compensation for all labor, material and equipment required to do the work. Payment shall include quality control testing, cleaning, sweeping and tack coat. No extra payment will be allowed for asphalt greater than that necessary to achieve the required grade, unless directed by the CITY or CITY's representative. All materials and workmanship shall conform to the FDOT Standard Specifications (latest edition) Section 334 – Superpave Asphalt Concrete. Note: Warm Mix Asphalt is an acceptable option, per the Contractor's request.

9.04 Stamped Asphalt

Payment for constructing stamped asphaltic concrete surface course shall be made at the Contract unit price per square yard (SY) placed and accepted, as shown on the Drawings, and shall be full compensation for all labor, material and equipment required to do the work. Payment shall include quality control testing, cleaning, sweeping and tack coat. No extra payment will be allowed for asphalt greater than that necessary to achieve the required grade, unless directed by the CITY or CITY's representative. Stamped asphalt shall a Streetbond/StreetPrint Textured Paving product or an approved alternate – red in color.

9.05 Asphalt Berm

Payment for constructing asphaltic concrete berm shall be made at the Contract unit price per linear foot (LF) placed and accepted, as shown on the Drawings, and shall be full compensation for all labor, material and equipment required to do the work. Payment shall include quality control testing, cleaning, sweeping and tack coat. No extra payment will be allowed for asphalt greater than that necessary to achieve the required grade, unless directed by the CITY or CITY's representative. Berm shall be 9-inches wide and 6-inches tall. All materials and workmanship shall conform to the FDOT Standard Specifications (latest edition) Section 334 – Superpave Asphalt Concrete. Note: Warm Mix Asphalt is an acceptable option, per the Contractor's request.

Contractor Qualifications

The prime contractor submitting a bid shall be preapproved for the associated FDOT Work Classes for Flexible Paving and Hot Plant-Mixed Bituminous Courses. The party responsible for all work related to the improvements, which may be a subcontractor, will be required to hold the same preapproved FDOT Work Classes. A City of Ocoee right-of-way permit will be required for all improvements. Contractor will be required to secure a right-of-way permit the cost of which will be waived by the City, and to schedule and pass related inspections performed by City staff. A state-licensed electrician will be required to secure a building permit for the electrical power requirements of the work, if any.

Shop Drawings

Where required, the Contractor shall furnish shop drawings to the City in sufficient time to allow a thorough review by City staff while not delaying progress of the work. Shop drawings shall be provided as three complete sets of drawings and specifications. Two sets will be returned to the Contactor; the City will retain one set. All sets returned to the Contactor will be stamped by the City indicating its decision as to the acceptability of the proposed material and manner of incorporation into the work. Any work not provided or installed in accordance with the approved shop drawings and/or the plans and specifications will be rejected by the City and must be replaced with acceptable material and/or workmanship prior to payment.

Construction Schedule

The construction period is **90 calendar days to substantial completion** and **150 calendar days to final completion**. Substantial completion is the point where all facilities may be used for the purpose intended with no significant "punch list" items remaining to be resolved. Note that there is no restoration phase of the work. Each bid item includes related restoration work as part of the bid item. Thus, any facility for which restoration has not been completed and accepted by the City cannot be considered to have reached the point of substantial completion. The construction warranty period begins on the date of substantial completion, which will be recorded using a certificate issued by the City and acknowledged by the Contractor.

The Contractor will be required to furnish a confirmed start date and construction phasing schedule to the City at the preconstruction conference so the period of construction can be determined for each part of the work. The City can delay the start date shown on the Notice to Proceed to allow a reasonable time for approval of shop drawings, mobilization, and similar start-up actions. The City may levy liquidated damages in the amount of $250 for each day beyond the final completion date shown on the Notice to Proceed.

The number of unfavorable weather days that are not included in the 60-day construction period to Final Completion. The City will evaluate any time extension sought by Contractor in light of these built-in time considerations.

Warranty Period

The Contractor is to provide a minimum one-year warranty beginning on the date of substantial completion, as recorded on a certificate of substantial completion issued by the City to the Contractor. The City will perform periodic inspections of the work and note any items that require correction. Unless posing a danger to the public, potentially leading to further damage to the affected improvement if not corrected, the City will normally wait to compile a list of all required corrective actions and transmit it to the Contractor near the end of the warranty period.

The period allowed for correction of all noted warranty repair issues is generally 30 days, but may be extended in consideration of the need to fabricate or receive necessary materials, arrange for the work to be performed by a subcontractor, and other reasonable causes. The notice of required corrective action will include the period allowed for correction. The City may levy liquidated damages in the amount of $250 for each day beyond the final completion date shown on the notice. Any corrective work provided may be subject to a warranty extension determined by the City, but in no case longer than one year in duration from the date of correction.

Payments

Contractor will be required to use the attached progress payment form and the final payment will need to be accompanied by a release of lien from all subcontractors and suppliers.

END OF SECTION

CITY OF OCOEE
1 N. Bluford Avenue
Ocoee, Florida 34761

ITB #24-004 ASPHALT PAVING PROJECTS FY 2024

CHANGE ORDER FORM

DATE: _____ PURCHASE ORDER: _____

The following changes are hereby made to the CONTRACT DOCUMENTS.

Original CONTRACT PRICE	$0.00
Current CONTRACT PRICE ADJUSTED by previous CHANGE ORDERS	$0.00
Net Increase (Decrease) Resulting from this CHANGE ORDER	**[$0.00]**
The current CONTRACT PRICE including this CHANGE ORDER	**[$0 .00]**
Original CONTRACT COMPLETION DATE:	[original contract date]
Current CONTRACT COMPLETION DATE adjusted by previous CHANGE ORDERS	[current contract date]
Net Increase Resulting from this CHANGE ORDER	**[number] days**
Current CONTRACT COMPLETION DATE including this CHANGE ORDER	**[new contract date]**

CHANGES ORDERED:

I. REQUIRED CHANGES

II. JUSTIFICATION

III. NARRATIVE OF NEGOTIATIONS

IV. PAYMENT

V. APPROVAL AND CHANGE AUTHORIZATION

This proposed change to the Contract requires approval by the Ocoee City Commission or the City Manager, dependent upon project approval authority, in order to supplement the project budget to fund the changes. It is expressly understood and agreed that the approval of the Change Order shall have no effect on the original contract other than matters expressly provided herein.

CONTRACTOR acknowledges, by its execution and acceptance of this Change Order, that the adjustments in Contract Price and Time shown hereon constitute full and complete compensation and satisfaction for all costs and modifications of performance time incurred by the CONTRACTOR as a result of this Change Order. No other claim for increased costs of performance or modifications of time will be granted by the OWNER for the Work covered by this Change Order. The CONTRACTOR hereby waives and releases any further claims for cost or time against the OWNER arising from or relating to the matters or Work set forth or contemplated by this Change Order.

RECOMMENDED BY:

CITY OF OCOEE, FLORIDA

By: _____
Signature

Date: _____

Title: _____

ACCEPTED BY:

[contractor name]

By: _____
Signature

Date: _____

Title: _____

APPROVED BY:

CITY OF OCOEE, FLORIDA

By: _____
Public Works Director

Date: _____

By: _____
Director of Finance

Date: _____

By: _____
City Manager

Date: _____

By: _____
Mayor

Date: _____

Attest: _____
City Clerk

FOR USE AND RELIANCE ONLY BY THE CITY OF OCOEE, APPROVED AS TO FORM AND LEGALITY THIS _____ DAY OF _____ , 20___

By: _____
City Attorney

APPROVED BY THE CITY OF OCOEE COMMISSION IN A MEETING HELD ON _____, 20___ UNDER AGENDA ITEM NO. _____.

APPLICATION AND CERTIFICATE FOR PAYMENT FORM

Application No._____ _____Progress Payment _____Final Payment

Contractor: _____ Contract Date: _____

Application Date: _____ For Period Ending _____

City Project No.: _____ Account No.: _____ P.O. No.: _____

Project Name: **ITB #24-004 Asphalt Paving Projects for FY 2024**

Construction Start Date: _____ End Date: _____

Construction Days - Elapsed: _____ Remaining: _____

1. Original Contract Amount $_____
2. Sum of Approved Change Orders to Date (from Table) $_____
3. Current Contract Amount (Sum of Lines 1 and 2) $_____
4. Total of Prior Pay Applications (including retainage) $_____
5. Amount of this Pay Application (including retainage; from Bid Item Quantity Spreadsheet) $_____
6. Total Earned to Date (Sum of Lines 4 and 5) $_____
7. Retainage Held from Prior Pay Applications $_____
8. Retainage to Be Held in this Pay Application $_____
9. Total Retainage Held to Date (Sum of Lines 7 and 8) $_____
10. Total Earned to Date Less Retainage (Line 6 minus Line 9) $_____
11. Total Earned less Retainage for this Pay Application (Line 5 minus Line 7) $_____

Approved Change Orders

Change Order No.	Date Approved by City	Date Accepted by Contractor	Total Change in Contract Price
		Total (Write in Line 2, above)	

Contractor's Certification

The undersigned Contractor hereby swears under penalty of perjury that (1) all previous progress payments received from the Owner on account of Work performed under the contract referred to above have been applied by the undersigned to discharge in full all obligations of the undersigned incurred in connection with Work covered by prior Applications for Payment numbered 1 through _____ inclusive; (2) all materials and equipment incorporated in said Project or otherwise listed in or covered by this Application for Payment are free and clear of all liens, claims, security interest and encumbrances; and (3) all Work covered by this Application for Payment is in accordance with the Contract Documents and not defective as that term is defined in the Contract Documents.

Dated _____, 20____ _____
(Contractor)

By:_____
(Name)

_____
(Title)

COUNTY OF_____

STATE OF_____

Before me on this _____ day of _____, 20__, personally appeared _____, known to me, who being duly sworn, deposes and says that (s)he is the _____ of the Contractor above mentioned; that(s) he executed the above Application for Payment and statement on behalf of said Contractor; and that all of the statements contained therein are true, correct and complete.

_____
Notary Public
My Commission Expires_____

Payment shown on Line 11 is recommended by City's Resident Project Representative:

By:_____ Date: _____
(Authorized Signature)

Owner's Approval By:_____
(Authorized Signature)

Date:_____ _____
(Title)

EXHIBIT B
BID FORM (Page 1 of 5)

ITB #24-004 ASPHALT PAVING PROJECTS FOR FY 2024

BID SUBMITTED BY _____FL CONTRACTOR LICENSE #_____

ITEM NO. 1	OLD WINTER GARDEN (MAGUIRE TO BLUFORD) MILLING AND RESURFACING	UNIT	QTY	UNIT PRICE	ITEM TOTAL
1.01	Mobilization/Demobilization & General Construction Requirements & Restoration (5% of Base Bid plus add alternates)	LS	1		
1.02	1.5" Milling (Max.)	SY	17,027		
1.03	1.5" Resurface Type FC-12.5 Asphalt Paving	SY	17,027		
1.04	Traffic Signal Loop System Restoration	LS	1		
1.05	Temporary Striping and Thermoplastic Final Striping	LS	1		
				SUB-TOTAL:	

ITEM NO. 2	OLD WINTER GARDEN (BLACKWOOD TO HEMPEL) MILLING AND RESURFACING	UNIT	QTY	UNIT PRICE	ITEM TOTAL
2.01	Mobilization/Demobilization & General Construction Requirements & Restoration (5% of Base Bid plus add alternates)	LS	1		
2.02	1.5" Milling (Max.)	SY	19,624		
2.03	1.5" Resurface Type FC-12.5 Asphalt Paving	SY	19,624		
2.04	Traffic Signal Loop System Restoration	LS	1		
2.05	Temporary Striping and Thermoplastic Final Striping	LS	1		
				SUB-TOTAL:	

BID FORM (Page 2 of 5)

ITB #24-004 ASPHALT PAVING PROJECTS FOR FY 2024

BID SUBMITTED BY _____**FL CONTRACTOR LICENSE #**_____

ITEM NO. 3	CLARKE RD (SILVER STAR TO AD MIMS) (1" FC 9.5, 1.5"SP 9.5)	UNIT	QTY	UNIT PRICE	ITEM TOTAL
3.01	Mobilization/Demobilization & General Construction Requirements & Restoration (5% of Base Bid plus add alternates)	LS	1		
3.02	2” Milling (Max.)	SY	34,706		
3.03	1” Resurface Type SP- 9.5 Asphalt Paving	SY	34,706		
3.04	1” Resurface Type FC-9.5 Asphalt Paving	SY	34,706		
3.05	Traffic Signal Loop System Restoration	1	1		
3.06	Temporary Striping and Thermoplastic Final Striping	1	1		
				SUB-TOTAL:	

ITEM NO. 4	LAKEWOOD HILLS SUBDIVISION (STARKE LAKE CIR, ALASKA DR, HAWAII DR)	UNIT	QTY	UNIT PRICE	ITEM TOTAL
4.01	Mobilization/Demobilization & General Construction Requirements & Restoration (5% of Base Bid plus add alternates)	LS	1		
4.02	1.25” Milling (Max.)	SY	7520		
4.03	1.25" Resurface Type SP-12.5 Asphalt Paving	SY	7520		
4.04	Temporary Striping and Thermoplastic Final Striping (6 stop bars)	LS	1		
				SUB-TOTAL:	

BID FORM (Page 3 of 5)

ITB #24-004 ASPHALT PAVING PROJECTS FOR FY 2024

BID SUBMITTED BY _____**FL CONTRACTOR LICENSE #**_____

ITEM NO. 5	MARSDEN ST / SULLIVAN AVE	UNIT	QTY	UNIT PRICE	ITEM TOTAL
5.01	Mobilization/Demobilization & General Construction Requirements & Restoration (5% of Base Bid plus add alternates)	LS	1		
5.02	1.25” Milling (Max.)	SY	3,408		
5.03	1.25" Resurface Type SP-12.5 Asphalt Paving	SY	3,408		
5.04	Temporary Striping and Thermoplastic Final Striping (2 stop bars)	LS	1		
				SUB-TOTAL:	

ITEM NO. 6	MOORE ROAD (EASTERN MOST 300 FT To 7th Ave)	UNIT	QTY	UNIT PRICE	ITEM TOTAL
6.01	Mobilization/Demobilization & General Construction Requirements & Restoration (5% of Base Bid plus add alternates)	LS	1		
6.02	1.5” Milling (Max.)	SY	1,280		
6.03	1.5” Resurface Type SP-12.5 Asphalt Paving	SY	1,280		
6.04	Temporary Striping and Thermoplastic Final Striping	LS	1		
				SUB-TOTAL:	

BID FORM (Page 4 of 5)

ITB #24-004 ASPHALT PAVING PROJECTS FOR FY 2024

BID SUBMITTED BY _____**FL CONTRACTOR LICENSE #**_____

ITEM NO.	TIGER MINOR SOUTH PARKING LOT	UNIT	QTY	UNIT PRICE	ITEM TOTAL
7.01	Mobilization/Demobilization & General Construction Requirements & Restoration (5% of Base Bid plus add alternates)	LS	1		
7.02	1” Milling (Max.)	SY	1,945		
7.03	1.5” Resurface Type SP-12.5 Asphalt Paving	SY	1,945		
7.04	Temporary Striping and Thermoplastic Final Striping	LS	1		
				SUB-TOTAL:	

`	ACTION PARK PARKING LOT	UNIT	QTY	UNIT PRICE	ITEM TOTAL
8.01	Mobilization/Demobilization & General Construction Requirements & Restoration (5% of Base Bid plus add alternates)	LS	1		
8.02	1” Milling (Max.) (2' strip along curb)	SY	78		
8.03	1" Overlay Type SP 9.5 Asphalt Paving	SY	1,805		
8.04	Temporary Striping and Thermoplastic Final Striping	LS	1		
				SUB-TOTAL:	

BID FORM (Page 5 of 5)

ITB #24-004 ASPHALT PAVING PROJECTS FOR FY 2024

BID SUBMITTED BY _____**FL CONTRACTOR LICENSE #**_____

ITEM NO. 9	OCOEE CEMETERY DRIVE (ADD ALTERNATE)	UNIT	QTY	UNIT PRICE	ITEM TOTAL
9.01	Mobilization/Demobilization & General Construction Requirements & Restoration (5% of Base Bid plus add alternates)	LS	1		
9.02	1.25" Milling (Max.)	SY	1,642		
9.03	1.25" Resurface Type SP-12.5 Asphalt Paving	SY	1,642		
9.04	Stamped Asphalt (Brick Pattern - Red)	SY	130		
9.05	Asphalt Berm (9" W x 6" H)	LF	300		
				SUB-TOTAL:	

TOTAL BASE BID WITHOUT ITEM NO. 9 ADD ALTERNATE = $
WRITTEN:

TOTAL BID WITH ITEM NO. 9 ADD ALTERNATE = $
WRITTEN:

EXHIBIT C
BID BOND

KNOW ALL MEN BY THESE PRESENTS, that we, the undersigned, _____ _____, as Principal, and _____ _____ as Surety, are hereby held and firmly bound unto the City of Ocoee, Florida, as Owner, in the penal sum of, (5 percent of the Contract Bid) $_____ _____

(written amount in dollars and cents)

for the payment of which, well and truly to be made, we hereby jointly and severally bind ourselves, successors and assigns.

Signed, this _____ day of _____, 20__. The Condition of the above obligation is such that whereas the Principal has submitted to the City of Ocoee, Florida a certain Bid, attached hereto and hereby made a part hereof to enter into a contract in writing, for the **ITB #24-004 Asphalt Paving Projects for FY 2024 (Project).**

NOW THEREFORE

1. Bidder and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to pay to Owner upon default of Bidder any damages, costs, or expenses, including attorney's fees, incurred by Owner that are proximately caused by such default. In no event shall Bidder's and Surety's obligation hereunder exceed the penal sum set forth on the face of this Bond.

2. Default of Bidder shall occur upon the failure of Bidder to deliver within the time required by the Bidding Documents (or any extension thereof agreed to in writing by Owner) the executed Agreement required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents and Contract Documents.

3. This obligation shall be null and void if:

   3.1 Owner accepts Bidder's bid and Bidder delivers within the time required by the Bidding Documents (or any extension thereof agreed to in writing by Owner) the executed Agreement required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents and Contract Documents, or

   3.2 All bids are rejected by Owner, or

   3.3 Owner fails to issue a Notice of Intent to Award to Bidder within ninety (90) days from the time and date fixed for the opening of Bids (or any extension thereof

agreed to in writing by Bidder and, if applicable, consented to by Surety when required by paragraph 5 hereof).

4. Payment under this Bond will be due and payable upon default by Bidder and within 30 calendar days after receipt by Bidder and Surety of written notice of default from Owner, which notice will be given with reasonable promptness, identifying this Bond and the Project and including a statement of the amount due.

5. Surety waives notice of and any and all defenses based on or arising out of any time extension to issue notice of award agreed to in writing by Owner and Bidder, provided that the total time for issuing notice of award including extensions shall not in the aggregate exceed 120 days from Bid Due Date without Surety's written consent.

6. No suit or action shall be commenced under this bond prior to 30 calendar days after the notice of default required in paragraph 4 above is received by Bidder and Surety and in no case later than one year after Bid Due Date.

7. Any suit or action under this Bond shall be commenced only in a court of competent jurisdiction located in the state in which the Project is located.

8. Notices required hereunder shall be in writing and sent to Bidder and Surety at their respective addresses shown on the face of this Bond. Such notices may be sent by personal delivery, commercial courier or by United States Registered or Certified Mail, return receipt requested, postage pre-paid, and shall be deemed to be effective upon receipt by the party concerned.

9. Surety shall cause to be attached to this Bond, a current and effective Power of Attorney evidencing the authority of the officer, agent or representative who executed this Bond on behalf of Surety to execute, seal and deliver such Bond and bind the Surety thereby.

10. This Bond is intended to conform to all applicable statutory requirements. Any applicable requirement of any applicable statute that has been omitted from this Bond shall be deemed to be included herein as if set forth at length. If any provision of this Bond conflicts with any applicable provision of any applicable statute, then the provision of said statute shall govern and the remainder of this Bond that is not in conflict therewith shall continue in full force and effect.

11. The term "bid" as used herein includes a bid, offer, or proposal as applicable.

IN WITNESS WHEREOF, the Principal and the Surety have hereunto set their hands and seals, and such of them as are corporations have caused their corporate seals to be hereto affixed and these presents to be signed by their proper officers, the day and year first set forth above.

BIDDER:	Strike out (X) non-applicable signature blocks and complete applicable block. All signatures must have their names printed or type below their signature.

If Bidder is **SOLE PROPRIETORSHIP**, complete this signature block.	
_____ (Individual's Signature) _____ (Individual's Signature) doing business as _____ _____ (Business Address) _____ _____ (Telephone No.) (Florida License No.)	(1) _____ (Witness) (2) _____ (Witness) **(SEAL)**

If Bidder is **PARTNERSHIP**, complete this signature block.	
_____ (Partnership Name) _____ (General Partner's Signature) _____ (General Partner's Name) _____ (Business Address) _____ _____ (Telephone No.) (Florida License No.)	(1) _____ (Witness) (2) _____ (Witness) **(SEAL)**

If Bidder is **CORPORATION,** complete this signature block.	
_____ (Corporation Name) _____ (State of Incorporation) By:_____ (Name of Person Authorized to Sign - See Note 1) _____ (Title) _____ (Authorized Signature) _____ (Corporation President) _____ (Business Address) _____ _____ (Telephone No.) (Florida License No.)	(1) _____ (Witness) (2) _____ (Witness) **(SEAL)**

SURETY

_____ (Surety Business Name) _____ (Principal Place of Business) By:_____ (Surety Agent's Signature - See Note 2) _____ (Surety Agent's Name) _____ (Surety Agent's Title) _____ (Business Name of Local Agent for Surety) _____ (Business Address) _____ _____ (Telephone No.) (Bond No.)	Witness: (If agency is not a Corporation) (1) _____ (Witness) (2) _____ (Witness) Attest: (If Agency is a Corporation) _____ (Corporate Secretary Signature) _____ (Corporate Secretary Name) (Corporate Seal)

NOTES:

(1) Complete and attach "Corporate Authority to Execute Documents" if executed by any corporate employee other than president or vice-president.

(2) Complete and attach a certified copy of "Power-of-Attorney" prepared by Surety appointing individual "Attorney-in-Fact" for execution of Bid Bond on behalf of Surety and corresponding notarized "Attorney-in-Fact".

(3) Above addresses are to be used for giving required notice.

(4) Any singular reference to Bidder, Surety, Owner or other party shall be considered plural where applicable.

(5) Surety companies executing bonds must appear on the Treasury Department's most current list (Circular 570 as amended) and be authorized to transact business in the state where the project is located.

ATTORNEY-IN-FACT AFFIDAVIT

STATE OR COMMONWEALTH OF_____)

COUNTY OR CITY OF _____)

Before me, a Notary Public, personally came _____ known to me, and known to be the Attorney-in-Fact of _____, a _____ Corporation, which (Surety Company) (State)

executed the attached bond as surety, who deposed and said that his signature and the corporate seal of said

_____ were affixed by order and authority of said Company's Board of Directors, (Surety Company)

and that the execution of the attached bond is the free act and deed of _____.
(Surety Company)

Given under my hand and seal this _____ day of _____, 20__.

_____
(Notary Public)

My Commission Expires _____.

END OF SECTION

EXHIBIT C
PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS that _____ _____, (hereinafter referred to as "Principal"), and _____ _____, a corporation organized under the laws of the State of _____ _____and licensed to do business in the State of _____, (hereinafter referred to as "Surety"), and held and firmly bound unto the City of Ocoee, Florida, as Obligee, (hereinafter referred to as "Obligee"), in the Penal Sum of _____, for the payment of which sum well and truly made, Principal and Surety bind themselves, their heirs, personal representatives, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, Principal has by written agreement dated _____,entered into a contract, (hereinafter referred to as the "Contract") with Obligee for the construction of **ITB #24-004 Asphalt Paving Projects for FY 2024** (hereinafter referred to as the "Project") in accordance with the plans and specifications prepared by City of Ocoee , dated November 2023; and

NOW, THEREFORE, THE CONDITIONS OF THIS OBLIGATION IS SUCH THAT IF Principal shall well and truly perform all the undertakings, covenants, terms, conditions, and agreements of said Contract including, but not limited to, the making of payments to persons or entities providing labor, materials or services to Principal under the Contract, as well as, fulfilling all warranty obligations required after the Certificate of Completion is issued, within the time provided therein, and any extensions thereof that may be granted by the Obligee, and also during the life of any warranty or guaranty required under said Contract, and shall also well and truly perform all undertakings, covenants, terms, conditions, and agreements of any and all duly authorized and modifications of said Contract that may hereafter be made, and shall pay, compensate, indemnify and save harmless the said Obligee of and from any and all loss, damage and expense, or from any breach or default by Principal under the Contract, including, but not limited to, liquidated damages, damages caused by delays in performance of the Principal, expenses, cost and attorneys' fees, including appellate proceedings, that Obligee sustains resulting directly or indirectly from failure of the Principal to perform the Work identified by the Contract, then this obligations shall be null and void; otherwise, it shall remain in full force and effect and Surety shall be liable to Obligee under this Performance Bond.

The Surety's obligations hereunder shall be direct and immediate and not conditional or contingent upon Obligee's pursuit of its remedies against Principal, and shall remain in full force and effect notwithstanding (I) amendments or modifications to the contract or contract entered into by Obligee and Principal without the Surety's knowledge or consent; (ii) waivers of compliance with or any default under the Contract granted by Obligee to Principal or by Principal to Obligee without the Surety's knowledge or consent; (iii) the discharge of Principal from its obligations under the Contract as a result of any proceeding initiated under The Bankruptcy Code of 1978, as the same may be amended, or any similar state or federal law, or any limitation of the liability of Principal or its estate as a result of any such proceedings; or (iv) any other action taken by Obligee or Principal that would, in the absence of this clause, result in the release or discharge by operation of law of the Surety from its obligations hereunder.

In the event that the Surety fails to fulfill its obligations under this Performance Bond, then the Surety shall also indemnify and save the Obligee harmless from any and all loss, damage, cost

and expense, including reasonable attorneys' fees and other legal costs for all trial and appellate proceedings, resulting directly or indirectly from the Surety's failure to fulfill its obligations hereunder. This paragraph shall survive the termination or cancellation of this Performance Bond. The obligations set forth in this paragraph shall not be limited by the Penal Sum of this Bond.

Any changes in or under the Contract or the Contract and compliance or noncompliance with any formalities connected with the Contract or the Contract or the changes therein shall not affect Surety's obligations under this bond, and Surety hereby waives notice of any such changes. Further, Principal and Surety acknowledge that the Penal Sum of this bond shall increase or decrease in accordance with approved changes or modifications to the Contract.

The said Principal and the said surety agree that this bond shall inure to the benefit of all persons supplying labor and material in the prosecution of the work provided for in the said subcontract, as well as to the Obligee, and that such persons may maintain independent actions upon this bond in their own names.

IN WITNESS WHEREOF, the Principal and Surety have executed this instrument under their several seals on the _____ day of _____, 20__, the name and corporate seal of each corporate party being hereto affixed and these presents fully signed by its undersigned representative, pursuant to the authority of its governing body.

Signed, sealed and delivered
in the presence of:

_____Principal

By:_____(SEAL)

_____ (Official Title)

_____Surety

By:_____ (SEAL)

_____ (Official Title)

NOTES: If Principal and Surety are corporations, the respective corporate seal should be affixed and attached.

Surety shall execute and attach a certified copy of Power of Attorney Appointing Individual Attorney-In-Fact for execution of Performance Bond on behalf of Surety.

END OF SECTION

EXHIBIT C
Statutory Payment Bond
Pursuant to Florida Statutes, 255.05, et seq.

KNOW ALL MEN BY THESE PRESENTS, THAT _____ (hereinafter called the "Principal"), as Principal, and _____, a corporation organized and existing under the laws of the State of _____, hereinafter called the "Surety"), as Surety, are held and firmly bound unto the City of Ocoee, Florida, (hereinafter called the "Obligee"), by bond number _____ in the sum of _____ _____ Dollars and ____Cents ($_____), for the payment of which sum well and truly to be made, the said Principal and Surety bind themselves, and their respective heirs, administrators, executors, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has entered into a written Contract with the Obligee dated ____ _____, 20__ to perform, as Contractor, in accordance with the Contract and Contract Documents, which Contract and Contract Documents are hereby incorporated herein by reference for **ITB #24-004 Asphalt Paving Projects for FY 2024**.

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION IS SUCH, that if the Principal promptly makes payments to all claimants, as defined in Section 255.05 (1), Florida Statutes, that provide or furnish the Principal with labor, materials, or supplies, used directly or indirectly by Principal in the prosecution of the work provided for in the contract, then this obligation shall be null and void; otherwise it shall remain in full force and effect.

The Principal and the Surety agree that this Bond shall inure to the benefit of all claimants, as defined in Section 255.05 (1), Florida Statutes, that provide or furnish the Principal with labor, materials, or supplies, used directly or indirectly by Principal in the prosecution of the work provided for in said Contract, and that any such claimant may maintain an independent action upon this Bond in its own name.

The provisions of Florida Statutes, Section 255.05, et seq. are hereby incorporated herein by reference and made a part of this payment bond including, but not limited to, the notice and time limitation provisions in subsection (2). Any action instituted by a claimant under this bond for payment must be in accordance with the notice and time limitation provisions in Section 255.05 (2), Florida Statutes.

IN WITNESS WHEREOF, the above bounden parties have executed this instrument under their several seals this _____ day of _____, 20__, the name and corporate seal of each corporate party being hereto affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body.

_____(Seal)
(Principal)

By _____
(Name & Title)

_____
(Signature)

_____
Witness or Secretary's Attestation

_____(Seal)
(Surety)

By _____
(Name & Title*)

_____
(Signature)

_____
Witness or Secretary's Attestation

*Attach Power-Of-Attorney

END OF SECTION

EXHIBIT D - ITB #24-004 BID CONFLICT OF INTEREST DISCLOSURE FORM

The award of this contract is subject to the provisions of Chapter 112, Florida Statutes. All Bidders must disclose within their Bid: the name of any City of Ocoee employee, Mayor or City Commissioner, other City Official, or City Consultants, who owns assets or capital stock, directly or indirectly, in the Bidder's firm or any of its branches, or would directly or indirectly benefit by the profits or emoluments of this Bid. (Indirect ownership or benefit applies to any members of his or her immediate family.) Bidder certifies that no member of the entity's ownership or management is presently applying for an employee position or actively seeking an elected position with the City. In the event that a conflict of interest is identified in the provision of services, Bidder agrees to immediately notify the City in writing.

The purpose of this disclosure form is to give the City the information needed to identify potential conflicts of interest for the City Commission, Staff, and other key City employees and consultants involved in the award and administration of this contract.

According to Chapter 112, Florida Statutes, the term "conflict of interest" "means a situation in which regard for a private interest tends to lead to disregard of a public duty or interest", and refers to situations in which financial or other personal considerations may adversely affect, or have the appearance of adversely affecting, an employee's professional judgment in exercising any City duty or responsibility in administration, management, instruction, research, or other professional activities.

Please check one of the following statements and attach additional documentation if necessary:

_____ To the best of our knowledge, the undersigned firm has no potential conflict of interest for this Bid.

_____ The undersigned firm, by attachment to this form, submits information which may be a potential conflict of interest for this Bid.

Acknowledged by:

_____
Firm Name

_____
Signature

_____
Name and Title (Print or Type)

_____
Date

EXHIBIT E
ITB #24-004 DRUG-FREE WORKPLACE CERTIFICATION

IDENTICAL TIE BIDS: Preference shall be given to businesses with drug-free workplace programs. Whenever two or more bids which are equal with respect to price, quantity, and service are received by the State or by any political subdivision for the procurement of commodities or contractual services, a bid received from a business that certifies that it has implemented a drug-free workplace program shall be given preference in the award process. Established procedures for processing tie bids will be followed if none of the tied vendors have a drug-free workplace program (Florida Statutes Section 287.087). In order to have a drug-free workplace program, a business shall:

1. Publish a statement notifying employees that the unlawful manufacture, distribution, dispensing, possession, or use of a controlled substance is prohibited in the workplace and specifying the actions that will be taken against employees for violations of such prohibition.

2. Inform employees about the dangers of drug abuse in the workplace, the business's policy of maintaining a drug-free workplace, and available drug counseling, rehabilitation, and employee assistance programs, and the penalties that may be imposed upon employees for drug abuse violations.

3. Give each employee engaged in providing the commodities or contractual services that are under bid a copy of the statement specified in subsection (1).

4. In the statement specified in subsection (1), notify the employees that, as a condition of working on the commodities or contractual services that are under bid, the employee will abide by the terms of the statement and will notify the employer of any conviction of, or pleas of guilty or *nolo contendere* to, any violation of Chapter 893 or of any controlled substance law of the United States or any state, for a violation occurring in the workplace no later than five (5) days after such conviction.

5. Impose a sanction on, or require the satisfactory participation in a drug abuse assistance or rehabilitation program is such is available in the employee's community, by any employee who is so convicted.

6. Make a good faith effort to continue to maintain a drug-free workplace through implementation of this section.

As the person authorized to sign the statement, I certify that this firm complies fully with the above requirements.

Bidder:_____

Signed:_____

By: _____
(Print or Type Name)

Title: _____

Date:_____

END OF SECTION

EXHIBIT F - BID # 24-004 COMPANY INFORMATION/SIGNATURE SHEET

FAILURE TO COMPLY WITH THESE BID INSTRUCTIONS WILL RESULT IN DISQUALIFICATION OF YOUR BID. PLEASE SIGN BELOW ATTESTING THAT YOU HAVE READ AND UNDERSTAND ALL BID INSTRUCTIONS AND THAT THE PRICES REFLECTED ON THE "SCOPE OF WORK/BID FORM" ARE ACCURATE AND WITHOUT COLLUSION. THE PERSON SIGNING THIS BID SHOULD HAVE THE LEGAL AUTHORITY TO BIND THE COMPANY INTO A LEGAL CONTRACT.

_____
COMPANY NAME

_____
TELEPHONE (INCLUDE AREA CODE)

_____
FAX (INCLUDE AREA CODE)

_____
E-MAIL ADDRESS

_____
AUTHORIZED SIGNATURE (manual)

IF REMITTANCE ADDRESS IS DIFFERENT FROM PURCHASE ORDER ADDRESS, PLEASE INDICATE BELOW:

_____
NAME/TITLE (PLEASE PRINT)

_____

_____
STREET ADDRESS

_____

_____
CITY STATE ZIP

FEDERAL ID #_____

_____Individual _____Corporation _____Partnership _____Other (Specify)_____

Sworn to and subscribed before me by means of ☐ physical presence or ☐ online notarization this _____day of _____, 20____.

Personally Known_____ or

Produced Identification_____

_____
(Type of Identification)

Notary Public - State of _____
County of _____

_____
Signature of Notary Public

_____
Printed, typed or stamped
Commissioned name of Notary Public

EXHIBIT G
CONTRACTOR E-VERIFY AFFIDAVIT

I hereby certify that _____ [insert contractor company name] does not employ, contract with, or subcontract with an unauthorized alien, and is otherwise in full compliance with Section 448.095, Florida Statutes.

All employees hired on or after January 1, 2021 have had their work authorization status verified through the E-Verify system.

A true and correct copy of _____ [insert contractor company name] **proof of registration in the E-Verify system is attached to this Affidavit.**

_____

Print Name: _____

Date: _____

STATE OF FLORIDA

COUNTY OF _____

The foregoing instrument was acknowledged before me by means of ☐physical presence or ☐online notarization, this _____(date) by _____ (name of officer or agent, title of officer or agent) of _____ (name of contractor company acknowledging), a _____ (state or place of incorporation) corporation, on behalf of the corporation. He/she is personally known to me or has produced _____ (type of identification) as identification.

[Notary Seal]

_____
Notary Public

_____
Name typed, printed or stamped

My Commission Expires: _____

EXHIBIT H

2023-2024 Asphalt Plan Sheets PDF

Plan Sheets Include Plans for All Projects Listed in Exhibit A

1. **C1 – C2: Old Winter Garden (Maguire to Bluford)**
2. **C3 – C4: Old Winter Garden (Blackwood to Hempel)**
3. **C5 – C8: Clarke Road (Silver Star to Ad Mims)**
4. **C9: Lakewood Hills Subdivision**
5. **C10: Marsden St/ Sullivan Ave**
6. **C11: Moore Road**
7. **C12: Tiger Minor South Parking Lot**
8. **C13: Action Park Parking Lot**
9. **C14: Ocoee Cemetery Drive (Add Alternate)**

MATCH SHEET C2

GENERAL CONSTRUCTION NOTES:

1. CONTRACTOR IS REQUIRED TO MILL A MAXIMUM OF 1.5".
2. CONTRACTOR IS RESPONSIBLE TO REPLACE EXISTING PAVEMENT MARKINGS (MATCH TYPE AND COLOR), SAME SHALL APPLY TO REFLECTIVE PAVEMENT MARKERS.
3. TACK MUST BE APPLIED TO ALL CLEAN SURFACES CLEAR OF DEBRIS PRIOR TO PAVING OPERATIONS.
4. CONTRACTOR RESPONSIBLE FOR PROVIDE DESIGN MIX UPON REQUEST.
5. CONTRACTOR RESPONSIBLE FOR CORE SAMPLES, IF NEEDED, TO CHECK ASPHALT AS-BUILT DEPTH.
6. CONTRACTOR TO NOTIFY RESIDENCE AND BUSINESSES PRIOR TO PAVING OPERATIONS.
7. CONTRACTOR REQUIRED TO SET-UP AND MAINTAIN TEMPORARY TRAFFIC CONTROL.
8. CONTRACTOR TO INCLUDE ALL TRAFFIC SIGNAL LOOP SYSTEMS IN COST.

1.5" MILL AND
1.5" RESURFACE (FC-12.5)
OLD WINTER GARDEN ROAD
TOTAL SURFACE AREA = 17,027 SY

1" = 100'
GRAPHIC SCALE
0 50 100

DESIGNED BY: MDW
DRAWN BY: MDW
CHECKED BY: MJA
DATE CREATED: NOV 2023

ENGINEER OF RECORD
MILEN D WOMACK, P.E. # 94569

CITY OF OCOEE, FL
PUBLIC WORKS DEPARTMENT
301 MAGUIRE ROAD
OCOEE, FL 34761
PH: 407-905-3132 ext. 1305
FAX: 407-905-3176

PUBLIC WORKS PAVING PROJECTS

OLD WINTER GARDEN ROAD
(MAGUIRE TO BLUFORD)
MILL AND RESURFACING
PROJECT

FIGURE
C1

MATCH SHEET C1

GENERAL CONSTRUCTION NOTES:

1. CONTRACTOR IS REQUIRED TO MILL A MAXIMUM OF 1.5".
2. CONTRACTOR IS RESPONSIBLE TO REPLACE EXISTING PAVEMENT MARKINGS (MATCH TYPE AND COLOR), SAME SHALL APPLY TO REFLECTIVE PAVEMENT MARKERS.
3. TACK MUST BE APPLIED TO ALL CLEAN SURFACES CLEAR OF DEBRIS PRIOR TO PAVING OPERATIONS.
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8. CONTRACTOR TO INCLUDE ALL TRAFFIC SIGNAL LOOP SYSTEMS IN COST.

1.5" MILL AND
1.5" RESURFACE (FC-12.5)
OLD WINTER GARDEN ROAD
TOTAL SURFACE AREA = 17,027 SY

1" = 100'
GRAPHIC SCALE
0 50 100

DESIGNED BY: MDW
DRAWN BY: MDW
CHECKED BY: MJA
DATE CREATED: NOV 2023

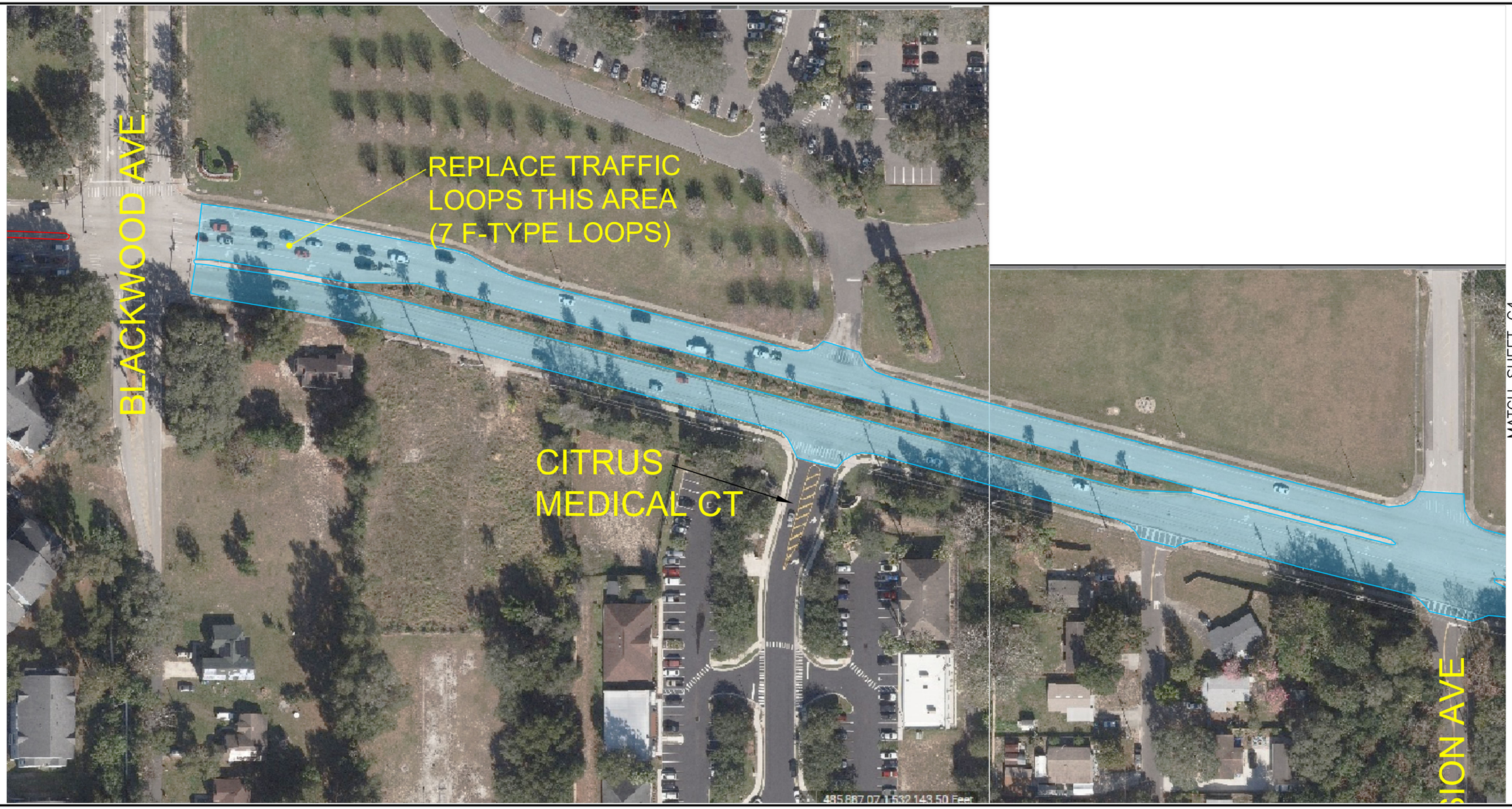
ENGINEER OF RECORD
MILEN D WOMACK, P.E. # 94569

CITY OF OCOEE, FL
PUBLIC WORKS DEPARTMENT
301 MAGUIRE ROAD
OCOEE, FL 34761
PH: 407-905-3112 ext. 1505
FAX: 407-905-3175

PUBLIC WORKS PAVING PROJECTS

OLD WINTER GARDEN ROAD
(MAGUIRE TO BLUFORD)
MILL AND RESURFACING
PROJECT

FIGURE
C2



MATCH SHEET C4

GENERAL CONSTRUCTION NOTES:

1. CONTRACTOR IS REQUIRED TO MILL A MAXIMUM OF 1.5".
2. CONTRACTOR IS RESPONSIBLE TO REPLACE EXISTING PAVEMENT MARKINGS (MATCH TYPE AND COLOR), SAME SHALL APPLY TO REFLECTIVE PAVEMENT MARKERS.
3. TACK MUST BE APPLIED TO ALL CLEAN SURFACES CLEAR OF DEBRIS PRIOR TO PAVING OPERATIONS.
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6. CONTRACTOR TO NOTIFY RESIDENCE AND BUSINESSES PRIOR TO PAVING OPERATIONS.
7. CONTRACTOR REQUIRED TO SET-UP AND MAINTAIN TEMPORARY TRAFFIC CONTROL.
8. CONTRACTOR TO INCLUDE ALL TRAFFIC SIGNAL LOOP SYSTEMS IN COST.

1.5" MILL AND
1.5" RESURFACE (FC-12.5)
OLD WINTER GARDEN ROAD
(BLACKWOOD TO HEMPEL)
TOTAL SURFACE AREA = 19,624 SY

1" = 100'
GRAPHIC SCALE
0 50 100

DESIGNED BY: MDW
DRAWN BY: MDW
CHECKED BY: MJA
DATE CREATED: NOV 2023

ENGINEER OF RECORD
MILEN D WOMACK, P.E. # 94569

CITY OF OCOEE, FL
PUBLIC WORKS DEPARTMENT
301 MAGUIRE ROAD
OCOEE, FL 34761
PH: 407-905-3117 ext. 1305
FAX: 407-905-3176

PUBLIC WORKS PAVING PROJECTS

OLD WINTER GARDEN ROAD
(BLACKWOOD TO HEMPEL)
MILL AND RESURFACING
PROJECT

FIGURE
C3

MATCH SHEET C3

GENERAL CONSTRUCTION NOTES:

1. CONTRACTOR IS REQUIRED TO MILL A MAXIMUM OF 1.5".
2. CONTRACTOR IS RESPONSIBLE TO REPLACE EXISTING PAVEMENT MARKINGS (MATCH TYPE AND COLOR), SAME SHALL APPLY TO REFLECTIVE PAVEMENT MARKERS.
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1.5" MILL AND
1.5" RESURFACE (FC-12.5)
OLD WINTER GARDEN ROAD
(BLACKWOOD TO HEMPEL)
TOTAL SURFACE AREA = 19,624 SY

1" = 100'
GRAPHIC SCALE
0 50 100

DESIGNED BY: MDW
DRAWN BY: MDW
CHECKED BY: MJA
DATE CREATED: NOV 2023

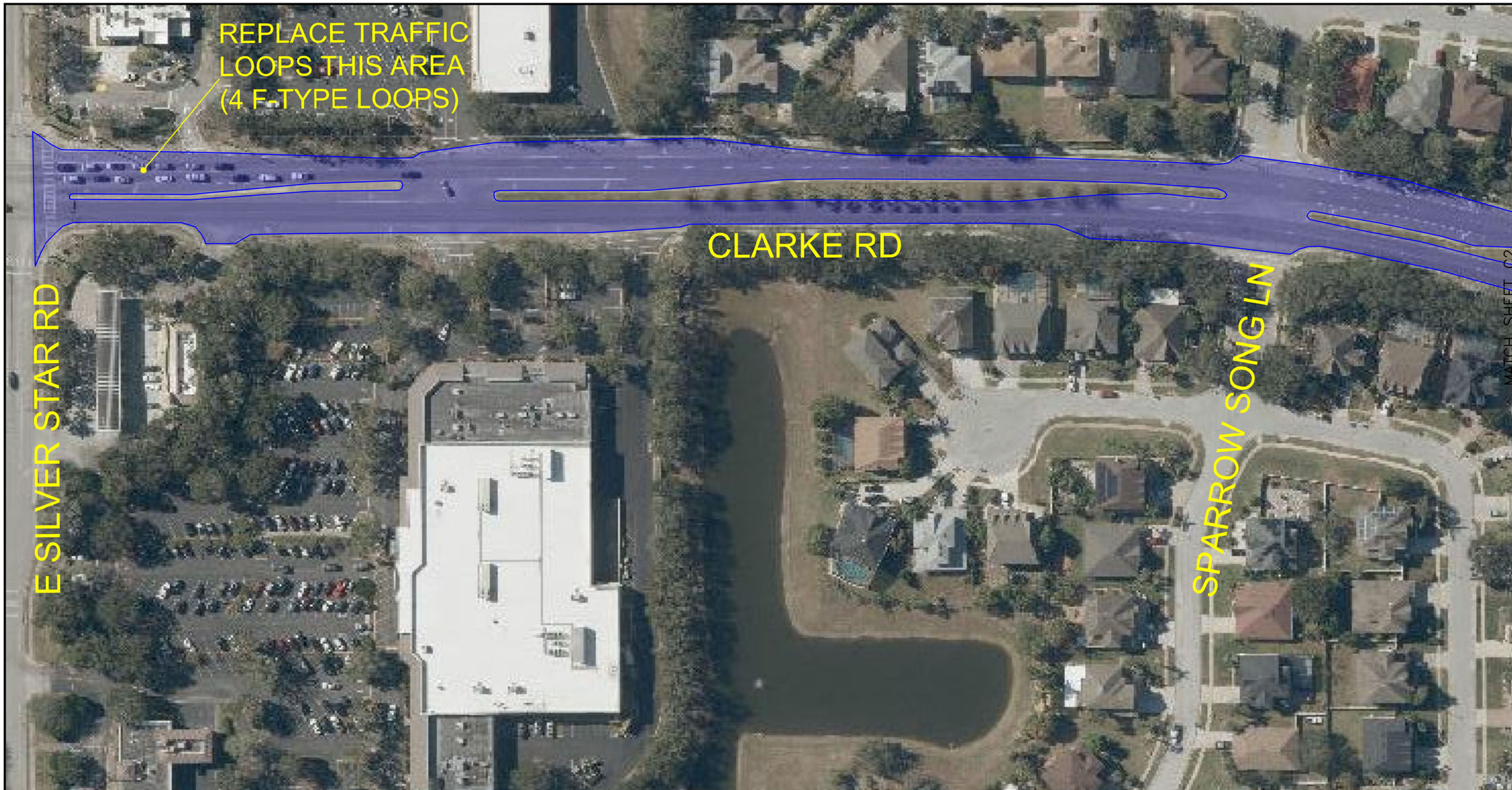
ENGINEER OF RECORD
MILEN D WOMACK, P.E. #94569

CITY OF OCOEE, FL
PUBLIC WORKS DEPARTMENT
303 MAGUIRE ROAD
OCOEE, FL 34761
PH: 407-905-3132 ext. 1505
FAX: 407-905-3174

PUBLIC WORKS PAVING PROJECTS

OLD WINTER GARDEN ROAD
(BLACKWOOD TO HEMPEL)
MILL AND RESURFACING
PROJECT

FIGURE
C4



GENERAL CONSTRUCTION NOTES:

1. CONTRACTOR IS REQUIRED TO MILL A MAXIMUM OF 1.5".
2. CONTRACTOR IS RESPONSIBLE TO REPLACE EXISTING PAVEMENT MARKINGS (MATCH TYPE AND COLOR), SAME SHALL APPLY TO REFLECTIVE PAVEMENT MARKERS.
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6. CONTRACTOR TO NOTIFY RESIDENCE AND BUSINESSES PRIOR TO PAVING OPERATIONS.
7. CONTRACTOR REQUIRED TO SET-UP AND MAINTAIN TEMPORARY TRAFFIC CONTROL.
8. CONTRACTOR TO INCLUDE ALL TRAFFIC SIGNAL LOOP SYSTEMS IN COST.

2" MILL AND
1" RESURFACE (SP-9.5)
1" RESURFACE (FC-9.5)
CLARKE ROAD
TOTAL SURFACE AREA = 34,706 SY

1" = 100'
GRAPHIC SCALE
0 50 100

DESIGNED BY: MDW
DRAWN BY: MDW
CHECKED BY: MJA
DATE CREATED: NOV 2023

ENGINEER OF RECORD
MILEN D WOMACK, P.E. # 94569

CITY OF OCOEE, FL
PUBLIC WORKS DEPARTMENT
301 MAGUIRE ROAD
OCOEE, FL 34761
PH: 407-905-3131 ext. 1305
FAX: 407-905-3174

PUBLIC WORKS PAVING PROJECTS

CLARKE ROAD
(SILVER STAR TO AD MIMS)
MILL AND RESURFACING
PROJECT

FIGURE
C5

GENERAL CONSTRUCTION NOTES:

1. CONTRACTOR IS REQUIRED TO MILL A MAXIMUM OF 1.5".
2. CONTRACTOR IS RESPONSIBLE TO REPLACE EXISTING PAVEMENT MARKINGS (MATCH TYPE AND COLOR), SAME SHALL APPLY TO REFLECTIVE PAVEMENT MARKERS.
3. TACK MUST BE APPLIED TO ALL CLEAN SURFACES CLEAR OF DEBRIS PRIOR TO PAVING OPERATIONS.
4. CONTRACTOR RESPONSIBLE FOR PROVIDE DESIGN MIX UPON REQUEST.
5. CONTRACTOR RESPONSIBLE FOR CORE SAMPLES, IF NEEDED, TO CHECK ASPHALT AS-BUILT DEPTH.
6. CONTRACTOR TO NOTIFY RESIDENCE AND BUSINESSES PRIOR TO PAVING OPERATIONS.
7. CONTRACTOR REQUIRED TO SET-UP AND MAINTAIN TEMPORARY TRAFFIC CONTROL.
8. CONTRACTOR TO INCLUDE ALL TRAFFIC SIGNAL LOOP SYSTEMS IN COST.

2" MILL AND
1" RESURFACE (SP-9.5)
1" RESURFACE (FC-9.5)
CLARKE ROAD
TOTAL SURFACE AREA = 34,706 SY

1" = 100'
GRAPHIC SCALE
0 50 100

DESIGNED BY: MDW
DRAWN BY: MDW
CHECKED BY: MJA
DATE CREATED: NOV 2023

ENGINEER OF RECORD
MILEN D WOMACK, P.E. # 94569

CITY OF OCOEE, FL
PUBLIC WORKS DEPARTMENT
301 MAGUIRE ROAD
OCOEE, FL 34761
PH: 407-905-3132 ext. 1505
FAX: 407-905-3176

PUBLIC WORKS PAVING PROJECTS

CLARKE ROAD
(SILVER STAR TO AD MIMS)
MILL AND RESURFACING
PROJECT

FIGURE
C6

GENERAL CONSTRUCTION NOTES:

1. CONTRACTOR IS REQUIRED TO MILL A MAXIMUM OF 1.5".
2. CONTRACTOR IS RESPONSIBLE TO REPLACE EXISTING PAVEMENT MARKINGS (MATCH TYPE AND COLOR), SAME SHALL APPLY TO REFLECTIVE PAVEMENT MARKERS.
3. TACK MUST BE APPLIED TO ALL CLEAN SURFACES CLEAR OF DEBRIS PRIOR TO PAVING OPERATIONS.
4. CONTRACTOR RESPONSIBLE FOR PROVIDE DESIGN MIX UPON REQUEST.
5. CONTRACTOR RESPONSIBLE FOR CORE SAMPLES, IF NEEDED, TO CHECK ASPHALT AS-BUILT DEPTH.
6. CONTRACTOR TO NOTIFY RESIDENCE AND BUSINESSES PRIOR TO PAVING OPERATIONS.
7. CONTRACTOR REQUIRED TO SET-UP AND MAINTAIN TEMPORARY TRAFFIC CONTROL.
8. CONTRACTOR TO INCLUDE ALL TRAFFIC SIGNAL LOOP SYSTEMS IN COST.

2" MILL AND
1" RESURFACE (SP-9.5)
1" RESURFACE (FC-9.5)
CLARKE ROAD
TOTAL SURFACE AREA = 34,706 SY

1" = 100'
GRAPHIC SCALE
0 50 100

DESIGNED BY: MDW
DRAWN BY: MDW
CHECKED BY: MJA
DATE CREATED: NOV 2023

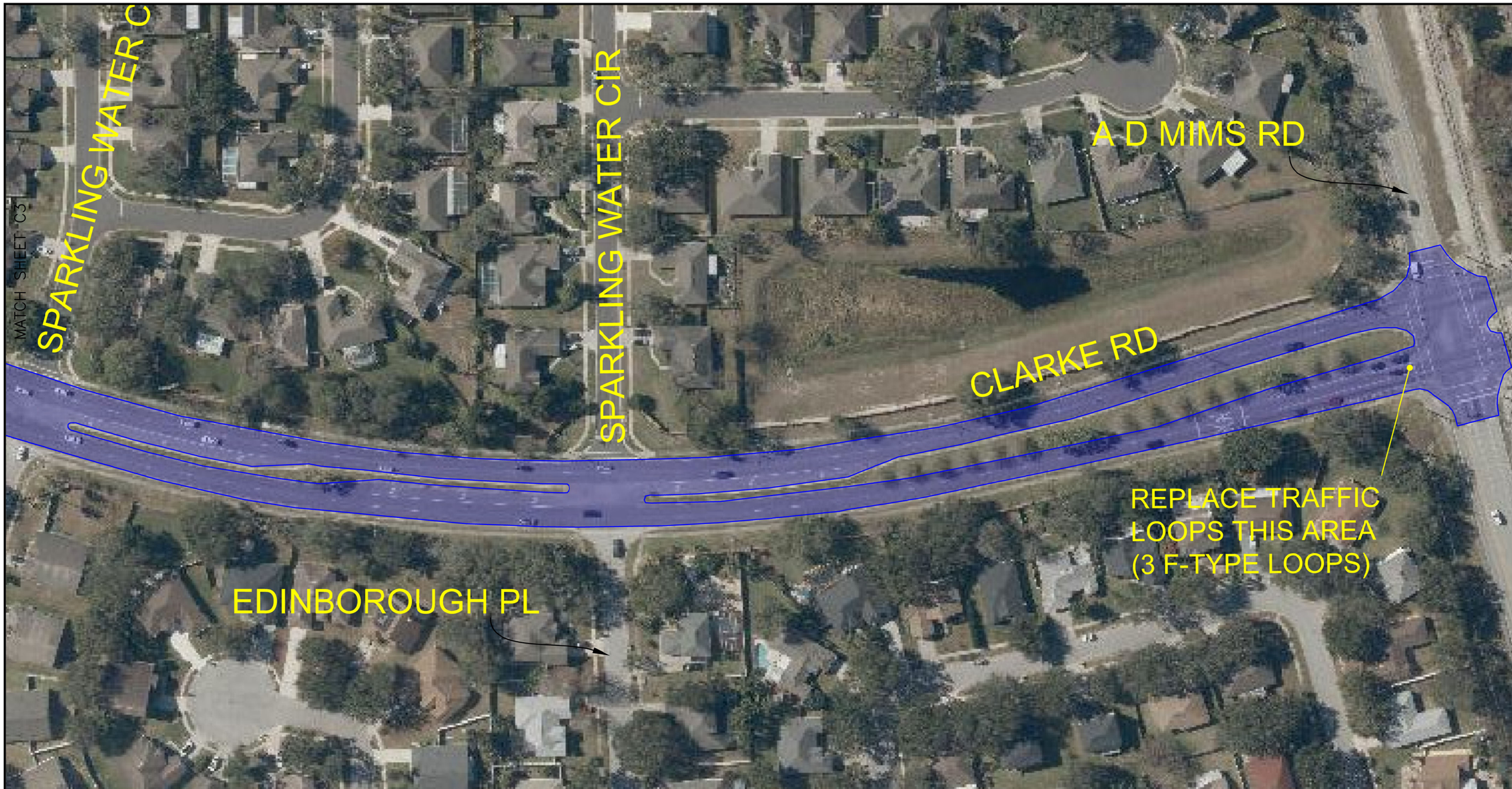
ENGINEER OF RECORD
MILEN D WOMACK, P.E. # 94569

CITY OF OCOEE, FL
PUBLIC WORKS DEPARTMENT
301 MAGUIRE ROAD
OCOEE, FL 34761
PH: 407-905-3132 ext. 1505
FAX: 407-905-3176

PUBLIC WORKS PAVING PROJECTS

CLARKE ROAD
(SILVER STAR TO AD MIMS)
MILL AND RESURFACING
PROJECT

FIGURE
C7



GENERAL CONSTRUCTION NOTES:

1. CONTRACTOR IS REQUIRED TO MILL A MAXIMUM OF 1.5".
2. CONTRACTOR IS RESPONSIBLE TO REPLACE EXISTING PAVEMENT MARKINGS (MATCH TYPE AND COLOR), SAME SHALL APPLY TO REFLECTIVE PAVEMENT MARKERS.
3. TACK MUST BE APPLIED TO ALL CLEAN SURFACES CLEAR OF DEBRIS PRIOR TO PAVING OPERATIONS.
4. CONTRACTOR RESPONSIBLE FOR PROVIDE DESIGN MIX UPON REQUEST.
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6. CONTRACTOR TO NOTIFY RESIDENCE AND BUSINESSES PRIOR TO PAVING OPERATIONS.
7. CONTRACTOR REQUIRED TO SET-UP AND MAINTAIN TEMPORARY TRAFFIC CONTROL.
8. CONTRACTOR TO INCLUDE ALL TRAFFIC SIGNAL LOOP SYSTEMS IN COST.

2" MILL AND
1" RESURFACE (SP-9.5)
1" RESURFACE (FC-9.5)
CLARKE ROAD
TOTAL SURFACE AREA = 34,706 SY

1" = 100'
GRAPHIC SCALE
0 50 100

DESIGNED BY: MDW
DRAWN BY: MDW
CHECKED BY: MJA
DATE CREATED: NOV 2023

ENGINEER OF RECORD
MILEN D WOMACK, P.E. # 94569

CITY OF OCOEE, FL
PUBLIC WORKS DEPARTMENT
303 MAGUIRE ROAD
OCOEE, FL 34761
PH: 407-905-3132 ext. 1505
FAX: 407-905-3174

PUBLIC WORKS PAVING PROJECTS

CLARKE ROAD
(SILVER STAR TO AD MIMS)
MILL AND RESURFACING
PROJECT

FIGURE
C8

GENERAL CONSTRUCTION NOTES:

1. CONTRACTOR IS REQUIRED TO MILL A MAXIMUM OF 1.25".
2. CONTRACTOR IS RESPONSIBLE TO REPLACE EXISTING PAVEMENT MARKINGS (MATCH TYPE AND COLOR), SAME SHALL APPLY TO REFLECTIVE PAVEMENT MARKERS.
3. TACK MUST BE APPLIED TO ALL CLEAN SURFACES CLEAR OF DEBRIS PRIOR TO PAVING OPERATIONS.
4. CONTRACTOR RESPONSIBLE FOR PROVIDE DESIGN MIX UPON REQUEST.
5. CONTRACTOR RESPONSIBLE FOR CORE SAMPLES, IF NEEDED, TO CHECK ASPHALT AS-BUILT DEPTH.
6. CONTRACTOR TO NOTIFY RESIDENCE AND BUSINESSES PRIOR TO PAVING OPERATIONS.
7. CONTRACTOR REQUIRED TO SET-UP AND MAINTAIN TEMPORARY TRAFFIC CONTROL.
8. CONTRACTOR TO INCLUDE ALL TRAFFIC SIGNAL LOOP SYSTEMS IN COST.

1.25" MILL AND
1.25" RESURFACE (SP-12.5)
LAKEWOOD HILLS SUB.
(STARKE LAKE CIR, ALASKA DR, HAWAII DR)
TOTAL PAVEMENT AREA = 7520SY

1" = 100'
GRAPHIC SCALE
0 50 100

DESIGNED BY: MDW
DRAWN BY: MDW
CHECKED BY: MJA
DATE CREATED: NOV. 2023

ENGINEER OF RECORD
MILEN D WOMACK, P.E. # 94569

CITY OF OCOEE, FL
PUBLIC WORKS DEPARTMENT
301 MAGUIRE ROAD
OCOEE, FL 34761
PHONE: 407-905-3132 ext. 1305
FAX: 407-905-3178

PUBLIC WORKS PAVING PROJECTS

LAKEWOOD HILLS SUBDIVISION
MILL AND RESURFACING
PROJECT

FIGURE
C9

GENERAL CONSTRUCTION NOTES:

1. CONTRACTOR IS REQUIRED TO MILL A MAXIMUM OF 1.25".
2. CONTRACTOR IS RESPONSIBLE TO REPLACE EXISTING PAVEMENT MARKINGS (MATCH TYPE AND COLOR), SAME SHALL APPLY TO REFLECTIVE PAVEMENT MARKERS.
3. TACK MUST BE APPLIED TO ALL CLEAN SURFACES CLEAR OF DEBRIS PRIOR TO PAVING OPERATIONS.
4. CONTRACTOR RESPONSIBLE FOR PROVIDE DESIGN MIX UPON REQUEST.
5. CONTRACTOR RESPONSIBLE FOR CORE SAMPLES, IF NEEDED, TO CHECK ASPHALT AS-BUILT DEPTH.
6. CONTRACTOR TO NOTIFY RESIDENCE AND BUSINESSES PRIOR TO PAVING OPERATIONS.
7. CONTRACTOR REQUIRED TO SET-UP AND MAINTAIN TEMPORARY TRAFFIC CONTROL.
8. CONTRACTOR TO INCLUDE ALL TRAFFIC SIGNAL LOOP SYSTEMS IN COST.

1.25" MILL AND
1.25" RESURFACE (SP-12.5)
BRENTWOOD HEIGHTS SUB.
(MARSDEN ST, SULLIVAN AVE)
TOTAL PAVEMENT AREA = 3,408SY

1" = 100'
GRAPHIC SCALE
0 50 100

DESIGNED BY: MDW
DRAWN BY: MDW
CHECKED BY: MJA
DATE CREATED: NOV. 2023

ENGINEER OF RECORD
MILEN D WOMACK, P.E. # 94569

CITY OF OCOEE, FL
PUBLIC WORKS DEPARTMENT
301 MAGUIRE ROAD
OCOEE, FL 34761
PH: 407-905-3132 ext. 1505
FAX: 407-905-3174

PUBLIC WORKS PAVING PROJECTS

MARSDEN ST/SULLIVAN AVE
MILL AND RESURFACING
PROJECT

FIGURE
C10

GENERAL CONSTRUCTION NOTES:

1. CONTRACTOR IS REQUIRED TO MILL A MAXIMUM OF 1.5".
2. CONTRACTOR IS RESPONSIBLE TO REPLACE EXISTING PAVEMENT MARKINGS (MATCH TYPE AND COLOR), SAME SHALL APPLY TO REFLECTIVE PAVEMENT MARKERS.
3. TACK MUST BE APPLIED TO ALL CLEAN SURFACES CLEAR OF DEBRIS PRIOR TO PAVING OPERATIONS.
4. CONTRACTOR RESPONSIBLE FOR PROVIDE DESIGN MIX UPON REQUEST.
5. CONTRACTOR RESPONSIBLE FOR CORE SAMPLES, IF NEEDED, TO CHECK ASPHALT AS-BUILT DEPTH.
6. CONTRACTOR TO NOTIFY RESIDENCE AND BUSINESSES PRIOR TO PAVING OPERATIONS.
7. CONTRACTOR REQUIRED TO SET-UP AND MAINTAIN TEMPORARY TRAFFIC CONTROL.
8. CONTRACTOR TO INCLUDE ALL TRAFFIC SIGNAL LOOP SYSTEMS IN COST.

1.5" MILL AND
1.5" RESURFACE (SP – 12.5)
MOORE RD EASTERNMOST 300FT
(MOORE RD, 7TH AVE)
TOTAL PAVEMENT AREA = 1,280SY

1" = 100'
GRAPHIC SCALE
0 50 100

DESIGNED BY: MJA
DRAWN BY: MJA
CHECKED BY: MDW
DATE CREATED: NOV. 2023

ENGINEER OF RECORD
MILEN D WOMACK, P.E. # 94569

CITY OF OCOEE, FL
PUBLIC WORKS DEPARTMENT
301 MAGUIRE ROAD
OCOEE, FL 34761
PH: 407-905-3113 ext. 1505
FAX: 407-905-3174

PUBLIC WORKS PAVING PROJECTS

MOORE ROAD
MILL AND RESURFACING
PROJECT

FIGURE
C11

GENERAL CONSTRUCTION NOTES:

1. CONTRACTOR IS REQUIRED TO MILL A MAXIMUM OF 1".
2. CONTRACTOR IS RESPONSIBLE TO REPLACE EXISTING PAVEMENT MARKINGS (MATCH TYPE AND COLOR), SAME SHALL APPLY TO REFLECTIVE PAVEMENT MARKERS.
3. TACK MUST BE APPLIED TO ALL CLEAN SURFACES CLEAR OF DEBRIS PRIOR TO PAVING OPERATIONS.
4. CONTRACTOR RESPONSIBLE FOR PROVIDE DESIGN MIX UPON REQUEST.
5. CONTRACTOR RESPONSIBLE FOR CORE SAMPLES, IF NEEDED, TO CHECK ASPHALT AS-BUILT DEPTH.
6. CONTRACTOR TO NOTIFY RESIDENCE AND BUSINESSES PRIOR TO PAVING OPERATIONS.
7. CONTRACTOR REQUIRED TO SET-UP AND MAINTAIN TEMPORARY TRAFFIC CONTROL.
8. CONTRACTOR TO INCLUDE ALL TRAFFIC SIGNAL LOOP SYSTEMS IN COST.

1" MILL AND
1.5" RESURFACE (SP-12.5)
TIGER MINOR SOUTH PARKING LOT
(GENEVA ST.)
TOTAL PAVEMENT AREA = 1,945SY

1" = 50'
GRAPHIC SCALE
0 25 50

DESIGNED BY: MDW
DRAWN BY: MDW
CHECKED BY: MJA
DATE CREATED: NOV. 2023

ENGINEER OF RECORD
MILEN D WOMACK, P.E. # 94569

CITY OF OCOEE, FL
PUBLIC WORKS DEPARTMENT
301 MAGUIRE ROAD
OCOEE, FL 34761
PH: 407-905-3132 ext. 1505
FAX: 407-905-3174

PUBLIC WORKS PAVING PROJECTS

TIGER MINOR SOUTH
PARKING LOT
MILL AND RESURFACING
PROJECT

FIGURE
C12

GENERAL CONSTRUCTION NOTES:

1. CONTRACTOR IS REQUIRED TO MILL A MAXIMUM OF 1" ALONG THE PARK SIDEWALK/CURB. THE MILLING AREA SHALL EXTEND 2' FROM THE FACE OF THE SIDEWALK/CURB
2. CONTRACTOR IS RESPONSIBLE TO REPLACE EXISTING PAVEMENT MARKINGS (MATCH TYPE AND COLOR), SAME SHALL APPLY TO REFLECTIVE PAVEMENT MARKERS. FINAL STRIPING SHALL BE THERMOPLASTIC
3. TACK MUST BE APPLIED TO ALL CLEAN SURFACES CLEAR OF DEBRIS PRIOR TO PAVING OPERATIONS.
4. CONTRACTOR RESPONSIBLE FOR PROVIDE DESIGN MIX UPON REQUEST.
5. CONTRACTOR RESPONSIBLE FOR CORE SAMPLES, IF NEEDED, TO CHECK ASPHALT AS-BUILT DEPTH.
6. CONTRACTOR TO NOTIFY RESIDENCE AND BUSINESSES PRIOR TO PAVING OPERATIONS.
7. CONTRACTOR REQUIRED TO SET-UP AND MAINTAIN TEMPORARY TRAFFIC CONTROL.

1" MILL

1" OVERLAY (SP 9.5)

ACTION PARK PARKING LOT
(560 FLEWELLING AVE)

TOTAL PAVEMENT OVERLAY AREA = 1,805SY
TOTAL MILL AREA = 78SY

1" = 50
GRAPHIC SCALE
0 25 50

DESIGNED BY: MDW
DRAWN BY: MJA
CHECKED BY: MDW
DATE CREATED: NOV. 2023

ENGINEER OF RECORD
MILEN D WOMACK, P.E. # 94569

CITY OF OCOEE, FL
PUBLIC WORKS DEPARTMENT
301 MAGUIRE ROAD
OCOEE, FL 34761
PH: 407-905-3132 ext. 1505
FAX: 407-905-3174

PUBLIC WORKS PAVING PROJECTS

ACTION PARK PARKING LOT
MILL AND RESURFACING
PROJECT

FIGURE
C13

GENERAL CONSTRUCTION NOTES:

1. CONTRACTOR IS REQUIRED TO MILL A MAXIMUM OF 1.25".
2. CONTRACTOR IS REQUIRED TO PROVIDE STAMPED ASPHALT AT THE CEMETERY ENTRANCE. STAMPED AREA SHALL BE RED IN COLOR.
3. CONTRACTOR IS REQUIRED TO REPLACE THE EXISTING ASPHALT BERM WITH A UNIFORM ASPHALT BERM THAT IS 6" TALL AND 9" WIDE.
4. TACK MUST BE APPLIED TO ALL CLEAN SURFACES CLEAR OF DEBRIS PRIOR TO PAVING OPERATIONS.
5. CONTRACTOR RESPONSIBLE FOR PROVIDE DESIGN MIX UPON REQUEST.
6. CONTRACTOR RESPONSIBLE FOR CORE SAMPLES, IF NEEDED, TO CHECK ASPHALT AS-BUILT DEPTH.
7. CONTRACTOR TO NOTIFY RESIDENCE AND BUSINESSES PRIOR TO PAVING OPERATIONS.
8. CONTRACTOR REQUIRED TO SET-UP AND MAINTAIN TEMPORARY TRAFFIC CONTROL.

1.25" MILL AND
1.25" RESURFACE (SP-12.5)
OCOEE CEMETERY (368 E GENEVA ST)
STAMPED ASPHALT AREA = 130SY
TOTAL PAVEMENT AREA = 1,642SY

1" = 50'
GRAPHIC SCALE
0 25 50

DESIGNED BY: MJA
DRAWN BY: MJA
CHECKED BY: MDW
DATE CREATED: NOV. 2023

ENGINEER OF RECORD
MILEN D WOMACK, P.E. # 94569

CITY OF OCOEE, FL
PUBLIC WORKS DEPARTMENT
301 MAGUIRE ROAD
OCOEE, FL 34761
PH: 407-905-3132 ext. 1305
FAX: 407-905-3178

PUBLIC WORKS PAVING PROJECTS

OCOEE CEMETERY
MILL AND RESURFACING
PROJECT

FIGURE
C14

STAFF REPORT

Meeting Date: February 6, 2024
Item #: 4

Contact Name: Joyce Tolbert, Shannon Hopper
Contact Number: Ext. 1516, Ext. 1524

Department Director: Rebecca Roberts
City Manager: Robert Frank

Subject: Approval to Reject the Sole Bid Received for ITB #24-001 Ocoee WWTF Electrical Upgrade and Expansion (ARPA Federal Grant Funded Project). (Procurement Manager Tolbert)

Background Summary:

The City solicited sealed bids for ITB #24-001 Ocoee WWTF Electrical Upgrade and Expansion, which is one of the City's ARPA federal grant funded projects. The Project consists of the construction of a new electrical building and electrical upgrade for the City's wastewater treatment facility.

The ITB publicly advertised on November 5, 2023, and the public bid opening was held on January 10, 2024. At the bid opening, the city received a sole Bid from Sawcross, Inc. in the amount of $5.7 million, which is significantly more than the estimated $2.4 million provided by the engineer of record, CPH. The Bid was reviewed by Finance, Utilities, and the City's Owner's Representative (ZHA). In an attempt to negotiate a lower price, the City held a vendor negotiation meeting with Sawcross on January 30, 2024; however, the project cost remained the same.

Based on the fact that the City only received one (1) bid that greatly exceeded the anticipated budget for the project, and the attempt to negotiate a lower price with the sole Bidder was unsuccessful, staff recommends rejecting the sole Bid received from Sawcross, Inc., as indicated in the recommendation memorandum from Assistant Utilities Director, Jen Bolling. Additionally, since the competitive bid process was unsuccessful, staff also recommends the Utilities Department to directly negotiate a lower price with a general contractor that, at a minimum, meets the requirements of this Project under Title 2 of the Code of Federal Regulations, Part 200 (2 CFR 200), Uniform Guidance. Specifically, 2 CFR 200.320(c) allows for procurement of federally funded projects through a non-competitive procurement process if competition is determined to be inadequate after solicitation. The City will maintain the public records exemption status for the sole Bid as applicable.

Issue:

Should the Honorable Mayor and City Commissioners reject the sole Bid received for ITB #24-001 Ocoee WWTF Electrical Upgrade and Expansion (ARPA Federal Grant Funded Project)?

Recommendations:

Staff recommends the Honorable Mayor and City Commissioners reject the sole Bid received for ITB #24-001 Ocoee WWTF Electrical Upgrade and Expansion (ARPA Federal Grant Funded Project) and authorize staff to negotiate a lower price with a qualified general contractor.

Attachments:

1. Recommendation Memo ITB 24-001
2. ITB 24-001 Project Manual
3. Addendum 01
4. Addendum 02
5. Addendum 03
6. Addendum 04
7. Addendum 05
8. Addendum 06
9. Addendum 07

Financial Impacts:
ARPA Federal Grant Funded Project budget is $2.4 million.

Type of Item: Consent

Mayor
Rusty Johnson

City Manager
Robert Frank

Commissioners
Larry Brinson, Sr., District 1
Rosemary Wilsen, District 2
Richard Firstner, District 3
George Oliver III, District 4

MEMORANDUM

TO: **Joyce Tolbert**
Procurement Manager

FROM: **Jennifer Bolling, P.E.**
Assistant Utilities Director

DATE: **Tuesday, January 30, 2024**

RE: **24-001ITB - ITB #24-001 Ocoee WWTF Electrical Upgrade and Expansion - ARPA Federal Grant Funded Project**

The Utilities Department is recommending the rejection of the bid received for the Ocoee WWTF Electrical Upgrade and Expansion - ARPA Federal Grant Funded Project. The sole bid received is $3.325 million greater than the budget estimated by the design engineer. The rejection is based on receipt of only one (1) bid and the bidder greatly exceeding the anticipated budget for the project and an attempt to negotiate a lower price was unsuccessful with this bidder.

Since the competitive bid process was unsuccessful, Utilities, as per the guidelines, would like to try direct negotiation with a qualified firm.

Please let us know if you have any questions.

PROJECT MANUAL

Ocoee WWTF Electrical Upgrade and Expansion

ITB #24-001

October 2023

Prepared by:

City of Ocoee & CPH, LLC

CITY OF OCOEE

ITB #24-001
Ocoee WWTF Electrical Upgrade and Expansion

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Professional Service Industries' Subsurface Report

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City of Ocoee Engineering Standards Manual

APPENDIX "C" – INSTRUCTIONS AND CONTRACT FORMS

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FORM 00883	Final Affidavit
FORM 00885	Interim Affidavit

DIVISION 0

BIDDING AND CONTRACT REQUIREMENTS

SECTION 00010

LEGAL ADVERTISEMENT

The City of Ocoee, Florida, ("City") is soliciting sealed bids for the following project **ITB #24-001 Ocoee WWTF Electrical Upgrade and Expansion**, which is an ARPA federal grant funded project. Bids will only be accepted electronically through Bonfire, a free e-Procurement platform, **until 2:00 pm, local time, on December 5, 2023**. Bids received after that time or through any other method will not be accepted under any circumstances. Bids that have been timely received will be publicly opened, virtually online and the name of each bidder and price submitted will be read aloud at that time; instructions will be provided at https://www.ocoee.org/959/Public-Bid-Meetings. A non-mandatory **Pre-bid Conference and site visit will be held at 1:30 p.m. local time on November 13, 2023,** at the City of Ocoee Utilities Administration Building, 1800 AD Mims Road, Ocoee, FL 34761. All questions regarding this ITB shall be in writing and directed to Shannon Hopper, Purchasing Technician, shopper@ocoee.org. Prospective Bidders may secure a copy of the documents required for submitting a bid at no charge through Bonfire by accessing the City's published solicitation page at https://ocoee.bonfirehub.com. For more information, visit https://www.ocoee.org/323/Purchasing. Prospective Bidders will be provided with all information regarding this ITB, addenda, and changes to the project requirements through the Bonfire e-Procurement Platform. Melanie Sibbitt, City Clerk, Orlando Sentinel, November 5, 2023.

SECTION 00020

INVITATION TO BID

ITB #24-001 Ocoee WWTF Electrical Upgrade and Expansion

The City of Ocoee, Florida ("City", "Owner") is soliciting sealed Bids for the Project **ITB #24-001 Ocoee WWTF Electrical Upgrade and Expansion.** The Project is one of the City's designated utilities projects federal grant funded through the American Rescue Plan Act (ARPA) / Coronavirus State and Local Fiscal Recovery Funds (SLFRF). All procurements by Federal Grant recipients and sub-recipients shall comply with the provisions of 2 C.F.R. Section 200.317 – 327. Proper documentation is required by the American Rescue Plan Act, per the federal requirements and corresponding forms.

Description of Work: The Work shall be performed under a General Contractor license. All Work for the Project shall be constructed in accordance with the drawings and specifications and the Project Manual prepared by CPH, LLC and the City of Ocoee. Bids shall be deemed to include all items necessary for the furnishing, delivering, and installing of all materials, equipment, incidentals, and services, including all labor for the Work which is generally described as the following:

A. The project will consist of, but is not limited to, the following:
   i. Construct one (1) Electrical Building and furnish and install new electrical equipment
   ii. Install new 1000 KW generator with weatherproof sound-attenuating walk-in type enclosure and belly tank (generator, automatic transfer switches, and fuel monitoring system to be provided by the City)
   iii. Construct blower pad and install new blowers (blowers to be provided by the City)
   iv. Demolish existing generator, diesel fuel tank, transformer, sidewalk and aboveground blower piping
   v. Furnish and install electrical conduit and electrical pullboxes.
   vi. Construct generator pad, grade site and install new concrete sidewalk.
   vii. Construct transformer pad per Duke Energy Specifications
   viii. Remove existing asphalt pavement and replace with concrete pavement

B. Furnish all materials, equipment, tools, and labor which is reasonably and properly inferable and necessary for the proper completion of the Work, whether specifically indicated in the Contract Documents or not.

C. All permits, licenses and fees, other than those permits included in the appendicies shall be secured and paid for by the CONTRACTOR.

D. Repair, replace, or otherwise settle with the Owner, if damage to property or existing facilities occurs, including damage to pavements, utilities, lawns, structures, etc.

E. Construct the Project under a single lump sum contract.

The City is ONLY accepting electronic solicitation responses online through the City's Bonfire platform at https://ocoee.bonfirehub.com. This link can also be accessed through the City's website at https://www.ocoee.org/323/Purchasing under the Current Open Solicitations menu. All Bid submissions for this ITB MUST be submitted electronically through the Bonfire Platform. Bid submissions received in any other format will not be accepted; no paper, fax, or e-mailed submissions will be accepted. There is no charge for bidders to use the Bonfire e-procurement platform. Bonfire platform's minimum system requirements: Microsoft Edge, Google Chrome, Safari, or Mozilla Firefox. JavaScript and browser cookies must be enabled.

Registration with Bonfire is free and is required prior to submitting a bid. It is suggested that prospective bidders register no later than 24 hours in advance of the bid submission deadline to ensure proper registration. Should a Bidder need assistance with registering, please contact the Bonfire Support Desk by emailing support@gobonfire.com. Support by email is provided Monday to Friday from 8:00 a.m. – 8:00 p.m. EST/EDT.

Upon completing the registration with Bonfire, bidders will be able to submit a bid securely, any time before the bid submission deadline, at https://ocoee.bonfirehub.com by clicking the "PREPARE YOUR SUBMISSION" under the solicitation. An instructional video is provided for an overview of the submission process. Once the bid has been submitted, the Bidder will receive a date/time stamp confirmation within the Bonfire platform and an email confirmation of the bid submission. Bids submitted on the Bonfire Platform will remain locked and inaccessible by City staff until the bid deadline. Bidders are encouraged to allow ample time to upload and submit their Bid as the system will automatically lock upon the bid submission deadline. The actual contract award will be made by the Ocoee City Commission at a later date. Please be aware that all City Commission meetings are duly noticed public meetings and all documents submitted to the City as a part of a bid constitute public records under Florida law.

Bid Submission Deadline: Bids will only be accepted electronically through the Bonfire Platform **until 2:00 p.m., local time, on December 5, 2023.** Bidders shall submit one (1) complete electronic copy, preferably in a single file, of their Bid on the Bonfire Platform. Bids must be received by Bonfire no later than the bid submission deadline**.** It shall be the sole responsibility of the Bidder to have its Bid **uploaded and submitted** on the Bonfire Platform prior to the due date and time. Any attempt to submit a bid after the submission deadline will not be accepted under any circumstances. Any uncertainty regarding the time a bid is received will be resolved against the Bidder. A virtual public bid opening will be held at approximately 2:01 pm. or as soon thereafter. Once available, the details on how to access the virtual bid opening will be posted in the project file on Bonfire and available on the City's website at https://www.ocoee.org/959/Public-Bid-Meetings.

Deadline for Receipt of Questions: The City will receive questions regarding this ITB only through written inquires directed to Shannon Hopper, Purchasing Technician at shopper@ocoee.org OR through the questions and answer section of the project file on Bonfire until **November 28, 2023 at 2:00 p.m., local time.** Any clarifications/changes will be made by way of written addenda only, issued by Purchasing and posted on Bonfire. Bidders should not contact City staff, with the exception of the Purchasing Technician, or other City consultants for information regarding this ITB

before the Bid award date. Any contact with any other member of City Staff, City Commission, or its agents during the solicitation, award, and protest period may be grounds for disqualification.

Pre-Bid Conference: A non-mandatory pre-bid conference and site visit is scheduled for **1:30 p.m. local time on Monday, November 13, 2023,** at the City of Ocoee Utilities Administration Building, 1800 AD Mims Road, Ocoee, FL 34761.

Bid Bond: A certified check or bid bond shall accompany each Bid. The certified check or bid bond shall be for an amount not less than five percent (5%) of the bid price, and shall be made payable to the City of Ocoee as a guarantee that the Bidder will not withdraw for a period of ninety (90) days after bid closing time.

Convicted Vendor List (Public Entity Crime). A person or affiliate who has been placed on the convicted vendor list following a conviction for a public entity crime may not submit a Bid on an award to provide any goods or services to a public entity, may not submit a bid on an award with a public entity for the construction or repair of a public building or public work, may not submit bids on leases of real property to a public entity, may not be awarded or perform work as a Contractor, Supplier, Subcontractor, or Consultant under a award with any public entity, and may not transact business with any public entity in excess of the threshold amount provided in section 287.017 for Category Two for a period of 36 months from the date of being placed on the convicted vendor list. [See s. 287.133(2)(a), Florida Statutes.]

Florida Public Records Law. In accordance with Chapter 119, Florida Statutes, and, except as may be provided by Chapter 119, Florida Statutes, and other applicable State and Federal Laws, all Bidders should be aware that the Bid and the responses thereto are in the public domain and are available for public inspection. Bidders are requested, however, to identify specifically any information contained in their bids that they consider confidential and/or proprietary and that they believe to be exempt from disclosure, citing specifically the applicable exempting law. All bids received in response to this Invitation to Bid become the property of the City and will not be returned. In the event of an award, all documentation produced as part of the contract will become the exclusive property of the City.

Prohibition Against Considering Social, Political or Ideological Interests in Government Contracting: Bidders are hereby notified of the provisions of section 287.05701, Florida Statutes, as amended, that the City will not request documentation of or consider a Bidder's social, political, or ideological interests when determining if the Bidder is a responsible Bidder. Bidders are further notified that the City's governing body may not give preference to a Bidder based on the Bidder's social, political, or ideological interests.

The City reserves the right to accept or reject any or all bids, to waive formalities, technicalities or irregularities, to request clarification of information submitted in any bid, or to re-advertise for new bids. The City may accept any item or group of items of any bid, unless the Bidder qualifies its bid by specific limitations. The City may accept one or more bids if, in the City's discretion, the City determines that it is in the City's best interest to do so.

The City reserves the right to award the contract to the Bidder which, in the City's sole discretion, is the most responsive and responsible Bidder. The City reserves the right, as an aid in determining which bid is responsible, to require a bidder to submit such additional evidence of Bidder's qualifications as the City may deem necessary, and may consider any evidence available to the City of the financial, technical, and other qualifications and abilities of a Bidder, including past performance (experience) with the City and others. The City Commission shall be the final authority in the selection of any and all bids.

END OF SECTION

SECTION 00100

INSTRUCTIONS TO BIDDERS

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SECTION 00100

INSTRUCTIONS TO BIDDERS

ARTICLE 1 - DEFINED TERMS

1.1 Terms used in these Instructions to Bidders that are defined in Section 01001 – General Requirements have the meanings assigned to them in that Section, as supplemented. Terms defined here for general application within the Project Manual are:

1.1.1 "Apparent low Bidder" means the Bidder submitting the lowest bid at the bid opening without correction of numerical discrepancies, consideration of alternates, or determination of responsiveness and responsibility.

1.1.2 “Bidding Documents” consist of the Project Manual and related drawings, both as may be modified by addenda.

1.1.3 “Contract Documents” are described in Section 00500, Article 8, and generally include the Scope of Work Agreement (Section 00500), performance bond (Section 00610), payment bonds (Section 00620), certificates of insurance (Section 00650), Notice of Intent to Award (Section 00840), Notice to Proceed (Section 00841), General Conditions (Section 00700), Supplemental Conditions (Section 00800), the complete Project Manual (including Section 00020 - Invitation to Bid and Section 00100 - Instructions to Bidders), drawings, any addenda issued by Owner or Engineer, Contractor’s Bid (Section 00300), and documentation submitted by Bidder prior to the Notice of Intent to Award being issued.

1.1.4 “Contractor” refers to the corporation, firm, or person who is authorized to undertake the Work.

1.1.5 “Engineer” refers to the Utilities Director of the City of Ocoee, or his designee, who shall act as Owner’s representative and serves as project engineer for all decisions and actions requiring action by “Engineer.”

1.1.6 “Owner” is the City of Ocoee, Florida.

1.1.7 “Owner’s representative” is the Utilities Director of the City of Ocoee or designee.

1.1.8 “Project Manual” refers to the complete document set, including “Engineering Standards Manual,” issued by Owner, as may be amended, not including the drawings.

1.1.9 “Purchasing Technician” for this project is Shannon Hopper, Finance Department/Purchasing, City of Ocoee, shopper@ocoee.org.

1.1.10 "Successful Bidder" means the Bidder to whom Owner awards or expects to award the contract. The apparent low Bidder is not necessarily the successful Bidder.

1.2 The work, as defined in Section 00500 – Scope of Work Agreement, is governed by the requirements of Section 00700 – General Conditions and Section 00800 – Supplemental Conditions.

ARTICLE 2 - COPIES OF BIDDING DOCUMENTS

2.1 Prospective Bidders may secure a free copy of the documents required for submitting a Bid through the Bonfire platform by accessing the City's published solicitation page at https://ocoee.bonfirehub.com. Prospective Bidders will be provided with all information regarding this ITB, addenda, and changes to the project requirements through the Bonfire platform; there is no charge to use the Bonfire platform. Partial sets of the documents required for submitting a Bid will not be issued.

2.2 Complete sets of bidding documents shall include 11" x 17" drawings.

2.3 Owner, in making copies of the bidding documents available on the above terms, does so only for the purpose of obtaining bids on the work and does not confer a license or grant for any other use.

ARTICLE 3 - QUALIFICATIONS OF BIDDERS

Each Bidder shall complete the questionnaire (Section 00301) included in the Bid Form. Owner reserves the right to reject and/or disqualify any Bidder not meeting the Minimum Requirements for this invitation to bid as indicated on the Questionnaire. To demonstrate qualifications to perform the work, each Bidder must be prepared to submit, within seven (7) days of Owner's request, the additional qualifications submittals set forth in Article 22 of the Instructions to Bidders.

ARTICLE 4 - EXAMINATION OF CONTRACT DOCUMENTS AND SITE

4.1 It is the responsibility of each Bidder before submitting a Bid to: (a) examine thoroughly the Contract Documents and other related data identified in the Bidding Documents; (b) visit the site to become familiar with the general and local conditions that may affect cost, progress, performance, or furnishing of the work; (c) consider federal, state, and local laws and regulations that may affect cost, progress, performance, or furnishing of the work; (d) study and carefully correlate Bidder's knowledge and observations with the Contract Documents and such other related data; and (e) promptly notify Purchasing Technician of all conflicts, errors, ambiguities, or discrepancies that Bidder has discovered in or between the Contract Documents and such other related documents or conditions prior to submitting a bid.

4.2 Information and data shown or indicated in the Contract Documents with respect to existing underground facilities at or contiguous to the site are based upon information and data furnished to Owner and Engineer by owners of such underground facilities or others, and Owner and Engineer do not assume responsibility for the accuracy or completeness thereof.

4.3 Contractor shall perform exploratory excavations for the purpose of locating underground pipelines, conduits, cables or structures in advance of the construction.

4.4 Before submitting a Bid, each Bidder will be responsible for obtaining such additional or supplementary examinations, investigations, explorations, tests, studies, and data concerning conditions (surface, subsurface, and underground facilities) at or contiguous to the site or otherwise, which may affect cost, progress, performance, or furnishing of the work, or which relate to any aspect of the means, methods, techniques, sequences, or procedures of construction to be employed by Bidder, and safety precautions and programs incident thereto or that Bidder deems necessary to determine its bid for performing and furnishing the work in accordance with the time, price, and other terms and conditions of the Contract Documents.

4.5 Each Bidder has access to the public portions of the construction area to conduct such examinations, investigations, explorations, tests, and studies as each Bidder deems necessary for submission of a bid. Bidder must fill all holes and clean up and restore the site to its former condition upon completion of such explorations, investigations, tests, and studies.

4.7 The submission of a bid will constitute an incontrovertible representation by Bidder that Bidder has complied with every requirement of this Article 4; that without exception the bid is premised upon performing and furnishing the work required by the Contract Documents and applying the specific means, methods, techniques, sequences or procedures of construction (if any) that may be shown or indicated or expressly required by the Contract Documents; that Bidder has given Purchasing Technician written notice of all conflicts, errors, ambiguities, and discrepancies that Bidder has discovered in the Contract Documents and the written resolutions thereof by Purchasing Technician are acceptable to Bidder; and that the Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performing and furnishing the work.

4.8 The submission of the Bid shall be an indication that the Bidder has considered normal local weather conditions (daily and monthly variations) and accounted for these circumstances in the preparation of the bid and schedule of construction.

ARTICLE 5 - AVAILABILITY OF LANDS FOR WORK, ETC.

5.1 The lands upon which the work is to be performed, rights-of-way and easements for access thereto, and other lands designated for use by Contractor in performing the work are identified in the Contract Documents. All additional lands and access thereto required for temporary construction facilities, construction equipment, or storage of materials and equipment to be incorporated in the work are to be obtained and paid for by Contractor. Easements for permanent structures or permanent changes in existing facilities are to be obtained and paid for by Owner unless otherwise provided in the Contract Documents.

5.2 Each Bidder is instructed to fully acquaint himself or herself with the status of easement acquisitions by the Owner at the time of submission of his or her bid and the possibility that additional parcels may remain to be acquired. The Contractor shall sequence and schedule the work to delay schedule impacts caused by un-acquired easements so as not to interfere with the progress of the work in other areas of the Project. The Owner shall not

be liable for any damage that may occur to the Contractor for any and all delay through delay of the Owner in securing the necessary right-of-way. The Owner agrees that it shall make every effort to acquire such easements, if any, with all reasonable speed and diligence.

ARTICLE 6 - ADDENDA AND INTERPRETATIONS

6.1 Bidders shall promptly notify Purchasing Technician of any ambiguity, inconsistency, or error that they may discover upon examination of the Bidding Documents or the site before submitting a Bid.

6.2 All questions about the meaning or intent of the Bidding Documents shall be submitted to Purchasing Technician in writing by e-mail or through the question and answer section of the project file on Bonfire. Bidders shall not contact other City staff, members of the City Commission, or City s or consultants before the award date with reference to this Invitation to Bid. **Any contact with other members of City staff, the City Commission, or their agents or consultants during the bid, award, and protest period may be grounds for Bidder disqualification.**

6.3 Submitted questions and their replies considered relevant to other Bidders, if any, shall be published through addenda posted on Bonfire no later than twenty-four (24) hours before bid time. **Questions received less than seven (7) calendar days prior to the date for opening of bids may not be answered.** Only questions answered by formal written addenda shall be binding. Prospective Bidders are warned that no source other than formal written addenda is authorized to give information supplementing, explaining, or interpreting the Bidding Documents. Failure of any Bidder to receive any such addendum or interpretation shall not relieve such Bidder from its terms and requirements.

6.4 Owner reserves the right to suspend, cancel, or postpone bid opening without prior notice in response to emergencies, loss of and/or unattainable funds, and other unexpected conditions. An addendum will be published at the earliest reasonable opportunity notifying bidders of such an event and the time of any new bid opening date.

ARTICLE 7 - BID SECURITY

7.1 Each Bid must be accompanied by Bid Security in the form of a Cashier's/Certified Check upon an incorporated bank or trust company or a Bid Bond in an amount equal to five percent (5%) of the amount of the bid and submitted on the attached Bid Bond Form. A combination of any of the former is not acceptable. Cash will not be accepted as Bid Security. The Bid Security is submitted as a guarantee that Bidder, if awarded the Contract, will after written notice of such award, enter into a written Contract with the City and as a guarantee that Bidder will not withdraw its Bid for a period of ninety (90) days after the scheduled closing time for the receipt of bids, in accordance with the accepted bid and bid documents. Please note checks will be deposited.

7.2 A copy of the bid security is to be included with the bid submitted electronically Bonfire. The original bid security is to be mailed within five (5) business days after the bid opening to: City of Ocoee, Finance Department/Purchasing, Attention: Shannon Hopper, Purchasing Technician, 1 N. Bluford Avenue, Ocoee, FL 34761. Failure to provide the original will cause your bid to be deemed non-responsive.

7.3 In the event of withdrawal of said Bid within ninety (90) days following the opening of bids, or Bidder's failure to enter into said contract with the City or failure to provide the City with other requirements of the Contract Documents or the bid invitation after issuance of Notice of Intent to Award by the City, then such Bidder shall be liable to the City in the full amount of the Bid Security and the City shall be entitled to retain the full amount of the check or to demand from the Surety the penal sum of the bid bond as liquidated damages and not a penalty.

7.4 Surety companies executing bonds shall be duly insured by an insurer or corporate surety and signed by a licensed agent who holds a current Power of Attorney from the surety company issuing the bond.

7.5 The cost of the required bond and required insurance coverage is to be included in Bidder's overhead and is not eligible for reimbursement as a separate cost by the City.

7.6 The bid security of any Bidder whom Owner believes to have a reasonable chance of receiving the award will be retained by Owner until the City and successful bidder have executed the contract for work or until the ninety-first (91st) day after the bid opening, whichever is earlier. Bid security, in the form of a cashier's check, of other Bidders will be returned approximately thirty (30) days after the bid opening. Bid security, in the form of a bid bond, will be returned upon request following the same criteria as the cashier's check. The bid security of the successful Bidder shall be retained until such Bidder has executed the Agreement and furnished the required payment and performance bonds, whereupon the bid security shall be returned. If the successful Bidder fails to furnish the required qualifications or submittals; or fails to execute and deliver the Agreement and furnish the required bonds within ten (10) days of the Notice of Award, Owner may rescind the Notice of Award and the bid security of that Bidder shall be forfeited.

ARTICLE 8 - CONTRACT TIME

The number of consecutive calendar days within which, or the date by which, the work is to be completed (the Contract Time) is set forth in the Scope of Work Agreement (Section 00500).

ARTICLE 9 - LIQUIDATED DAMAGES AND INDEMNITY

9.1 Provisions for liquidated damages are set forth in the Scope of Work Agreement (Section 00500, Article 3).

9.2 The liquidated damages amount of Section 00500 has been established in accordance with the Florida Department of Transportation's *Standard Specifications for Road and Bridge Construction*, 2004 Edition, and supplements and revisions thereto.

ARTICLE 10 - SUBSTITUTE MATERIAL AND EQUIPMENT

The work, if awarded, shall be awarded on the basis of material and equipment described in the drawings or given in the specifications with consideration of possible substitute items identified by the reference, "or equal." Whenever it is indicated in the drawings or stated in the specifications that a substitute item of material or equipment may be furnished or used by Contractor, if acceptable to Owner's representative, then application for such acceptance shall not be considered by Owner's representative until after the effective date of the Agreement. If a substitution list is provided as part of the prescribed Base Bid Form, Bidders must identify proposed substitute materials. These substitute materials and equipment shall be evaluated after the effective date of the Agreement. Only the proposed alternatives and substitution items listed on the Substitution List shall be evaluated by the Owner's representative. The cost of changes in related work and/or production of additional drawings that may be required to illustrate or define the alternate equipment and its relationship to the other parts or portions of the work shall be paid by Contractor. No change shall be made in the amount of time in which to complete the work or in the liquidated damages. If the proposed substituted material or equipment is found to be unacceptable to the Owner's representative as an "equal" item, then the base bid material or equipment named in the specification or City's Approved Materials List shall be furnished by the Contractor.

ARTICLE 11 - SUBCONTRACTORS, ETC.

11.1 Each Bid must identify the names and addresses of the subcontractors listed in the bid form titled, "Subcontractor/Supplier List (Section 00301-A)." If requested by the Purchasing Technician, the Bidder, and any other Bidder so requested, shall, within seven (7) days after the date of the request, submit to Owner an experience statement with pertinent information as to similar projects and other evidence of qualification for each such subcontractor, person, and organization. If Owner or its representative, after due investigation, has reasonable objection to any proposed subcontractor, other person, or organization, then Owner may, before giving the Notice of Award, request Bidder to submit an acceptable substitute without an increase in contract price or contract time. If the Bidder declines to make any such substitution, Owner may elect not to award the work to such Bidder. A Bidder's declining to make any such substitution shall not constitute grounds for sacrificing his bid security. No Bidder shall be required to employ any subcontractor, other person, or organization against whom Bidder has reasonable objection.

11.2 Procedures for approval of other subcontractors after execution of the Agreement are through written submittal to and approval by Owner's representative.

11.3 No more than <u>thirty percent (30%)</u> of the dollar value of the total bid amount for the work shall be performed by subcontractors, excluding supplying of material. The balance of the work must be accomplished by the Bidder's own forces. Each Bidder must complete the

Bid form titled, "Subcontractor/Supplier List" (Section 00301-A) listing each item of work to be subcontracted and the estimated not-to-exceed cost of these items. (Work in this respect does not include cost paid to suppliers for materials and equipment furnished for this project.)

ARTICLE 12 - BID FORM

12.1 The Bid form may not be completed in pencil. All entries on the Bid form shall be legible. The City reserves the right, but does not assume the obligation, to ask a Bidder to clarify an illegible entry on the Bid form. If the Bid form requires that the Bid price, or constituent portions of the Bid price, be stated in unit prices and total price; the unit prices and the total price for the stated number of units identified on the Bid form should be provided by the Bidder and be correctly computed. If there is an arithmetical conflict, between the unit price stated by the Bidder on the Bid form and the total price stated by the Bidder on the Bid form, the unit price stated by the Bidder on the Bid form shall take precedence. The City may unilaterally correct such arithmetical conflict on the Bid form to calculate the total price, utilizing the unit prices that have been identified by the Bidder. The taking of such action by the City shall not constitute grounds for the Bidder to withdraw its bid nor shall it provide a defense constituting discharge of the bid bond. The City reserves the right, but does not assume the obligation, to waive any mistake, omission, error or other irregularity that may appear on the Bid form. However, the City reserves the right to reject as non-responsive Bid forms that are incomplete or contain information that is not required.

12.2 Bids by corporations must be executed in the corporate name by the president or a vice-president (or other corporate officer, if accompanied by evidence of authority to sign) and the corporate seal must be affixed and attested by the secretary or an assistant secretary of the corporation. The corporate address and state of incorporation must be shown below the signature. If requested, the person signing a bid for a corporation or partnership must produce evidence satisfactory to Owner of the person's authority to bind the corporation or partnership. If the Bidder is a corporation, and if the bid is executed by someone other than the President or Vice President of the corporation, attach to the bid a certified copy of corporate resolutions of the board of directors of the corporation authorizing the person to execute the bid on behalf of the corporation.

12.3 Bids by partnerships must be executed in the partnership’s name and signed by a partner, whose title must appear under the signature. The official address of the partnership must be shown below the signature.

12.4 All names and titles must be typed or printed below the signature.

12.5 The Bid shall contain an acknowledgment of receipt of all addenda (the numbers of which shall be indicated on the bid form).

12.6 The Bidder’s address to which communications regarding the bid are to be directed must be shown.

12.7 Evidence of authority to conduct business in the State of Florida as an out-of-state corporation shall be provided in accordance with Paragraph 12.2, above. Florida contractor's license number, if any, must also be shown.

12.8 Bids must be priced on a lump-sum basis for the base contract and include a separate price for each line item, as provided in the bid form. Some line items on the bid form are for unit prices with a bid quantity stated. The actual installed quantity may differ, with the unit price being multiplied by the actual number of units required. However, the Owner reserves the right to renegotiate the unit price whenever the installed quantity is significantly different from the bid quantity. In this context, "significantly different" is defined as being of sufficient magnitude so as to alter the price basis of the materials and/or services supplied to the Contractor, either up or down, for the line item.

12.9 The Bid price shall include such amounts as the Bidder deems proper for overhead and profit on all line items. There is no additional line item on the bid form for these elements of the total price.

12.10 Bids that are incomplete or conditional, or that contain additions not called for, alterations, or irregularities of any kind, may be rejected.

12.11 Indemnification shall be incidental to the contract and no direct pay shall be made for indemnification.

12.12 The Bid price for Mobilization/Demobilization may not exceed five percent (5%) of the Total Bid price less this bid item.

ARTICLE 13- SUBMISSION OF BIDS

13.1 All Bids submissions for this ITB MUST be submitted electronically online through the City's Bonfire Platform https://ocoee.bonfirehub.com. Bid submissions received in any other format will not be accepted; no paper, fax, or e-mailed submissions will be accepted. Bidders shall submit one (1) complete electronic copy, preferably in a single file, of their Bid on the Bonfire Platform. Bids must be received by Bonfire no later than the submission deadline stated in the invitation to bid**.** Any attempt to submit a bid after the submission deadline will not be accepted under any circumstances. Any uncertainty regarding the time a bid is received will be resolved against the Bidder. It shall be the sole responsibility of the Bidder to have the bid **uploaded <u>and</u> submitted** on the Bonfire Platform prior to the due date and time.

File Uploads – Submission materials should be prepared in the file formats listed under Requested Information for this opportunity in the Bonfire Platform. The maximum upload file size is 1000 MB. Documents should not be embedded within uploaded files, as the embedded files will not be accessible or evaluated. All electronic files uploaded must be in a common format accessible by software programs the City uses. Those common formats are generally described as Microsoft Word (.doc or .docx), Microsoft Excel (.xls or .xlsx), Microsoft Power Point (.ppt or pptx), or Adobe Portable Document Format

(.pdf). Respondents will not secure, password protect or lock uploaded files; the City must be able to open and view the contents of the file. Respondents will not disable or restrict the ability of the City to print the contents of an uploaded file. Scanned documents or images must be of sufficient quality, no less than 150 dpi, to allow for reading or interpreting the words, drawings, images or sketches. The City may disqualify any Submittal Response that does not meet the criteria stated in this paragraph.

13.2 Each Bid must contain the forms and documents stated in Section 300.

13.3 More than one bid received for the same work from an individual, firm, partnership, corporation, or association under the same or different names shall not be considered. Reasonable grounds for believing that any Bidder is interested in more than one bid for the same work shall cause the rejection of all such bids in which the Bidder has an interest. If there are reasonable grounds for believing that collusion exists among the Bidders, the bids of participants in such collusion shall not be considered.

ARTICLE 14 - MODIFICATION AND WITHDRAWAL OF BIDS

14.1 Bids may be modified or withdrawn by an appropriate document duly executed (in the manner that a bid must be executed) and delivered to the place where bids are to be submitted at any time prior to the deadline for submitting bids. A request for withdrawal or a modification must be in writing and signed by a person duly authorized to do so; and, in case it is signed by a deputy or subordinate, the principal's proper written authority to such deputy or subordinate must accompany the request for withdrawal or modification. Withdrawal of a bid shall not prejudice the rights of a Bidder to submit a new bid prior to the bid date and time. After expiration of the period for receiving bids, no bid may be withdrawn, modified, or explained.

14.2 Within twenty-four (24) hours after bids are opened, any Bidder may withdraw its bid and the bid security shall be returned, provided that Owner is not materially prejudiced, and the Bidder files a duly signed written notice with Owner. Any such withdrawal is conditioned on Bidder demonstrating within forty-eight (48) hours to the reasonable satisfaction of Owner that: (a) there has been a material and substantial mistake in the preparation of the bid; (b) the mistake is of such great consequence that to enforce the bid would be unconscionable; and (c) the mistake occurred notwithstanding the exercise of reasonable care in the preparation of the bid.

14.3 Following the 24-hour period during which a bid may be withdrawn as a result of one of the three causes noted above in Section 14.2, bids may not be withdrawn without being subject to the loss of bid security, regardless of the cause, including the discovery of a mistake resulting from Owner's correcting bid item prices and/or the total bid price.

ARTICLE 15 - OPENING OF BIDS

15.1 Except for bids that are facially or patently non-responsive, bids shall be opened publicly and read aloud at the time and place indicated in the Invitation to Bid (Section 00020).

15.2 Owner reserves the right to suspend, cancel, or postpone bid opening without prior notice in response to emergencies, loss of funds, and other unexpected conditions. An addendum will be published at the earliest reasonable opportunity notifying bidders of such an event and the time of any new bid opening date.

15.3 An abstract (tabulation) of the amounts of the bids received will be prepared by the Owner and made available to all Bidders within ten (10) days of the bid opening. Owner reserves the right to modify the bid abstract at any time subsequent to posting in order to reflect issues that may arise up to the time of award.

ARTICLE 16 - BIDS TO REMAIN OPEN SUBJECT TO ACCEPTANCE

16.1 All bids shall remain open for delivery by Owner of the Notice of Award for ninety (90) calendar days after the day of the bid opening.

16.2 Extensions of time when bids shall remain open beyond the ninety (90) day period may be made only by mutual agreement between Owner, the Bidder, and the surety, if any, for the Bidder.

ARTICLE 17 - AWARD OF CONTRACT

17.1 To the extent permitted by applicable state and federal laws and regulations and Owner's purchasing rules and procedures, Owner reserves the right to reject any or all bids, including, without limitation, the right to reject any or all nonconforming, non-responsive, unbalanced, or conditional bids and to reject the bid of any Bidder if Owner believes that it would not be in the best interest of the project to make an award to that Bidder, whether because the bid is not responsive, the Bidder is unqualified or of doubtful skill or ability, the Bidder fails to meet any other pertinent standard or criteria established by Owner, or the bid is irregular. Bids may be considered irregular and subject to rejection if they show serious omission, unauthorized alterations of form, unauthorized alternate bids, incomplete or unbalanced unit prices, excessive loading of project costs on fixed-cost (lump sum) components of the work, or other irregularities of any kind. Owner also reserves the right to waive all informalities not involving price, time, or changes in the work, and to negotiate contract terms with the Bidder. (Discrepancies between the multiplication of units of work and unit prices will be resolved in favor of the unit prices.) (Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct sum.) Bids may be corrected or rejected by Owner at any time prior to award.

17.2 Invited Alternate Bids, if any, that are determined by Owner, in its sole discretion, to be acceptable may be considered in determining the lowest responsive and responsible Bidder. In evaluating bids, Owner may consider the qualifications of the Bidders; and the prescribed requirements, bid alternates, unit prices, and other information, as may be requested in the Bid Form or by other means prior to the Notice of Award.

17.3 The Owner shall award the contract pursuant to applicable law. Owner specifically reserves the right to award the contract to a Bidder other than the lowest responsive Bidder when, in Owner's sole discretion, Owner determines that action to be in its best interests. Owner, in its sole discretion, reserves the right to reject any and all bids and to waive any informality concerning bids whenever such rejection or waiver is in the best interest of Owner. If all bids exceed the amount of funds estimated by Owner to be available to finance the project, Owner may reject all bids. The Owner reserves the right to rescind any award of a contract if anticipated funding for the project becomes unavailable. The ability of a Bidder to obtain a performance and payment bond shall not be regarded as the sole test of such Bidder's competency or responsibility. Nothing contained herein shall place a duty upon Owner to reject bids or award a contract based upon anything other than its sole discretion, as described herein. By submitting a bid, Bidder recognizes and accepts that Owner may reject the bid based upon the exercise of Owner's sole discretion, and Bidder waives any claim it might have for damages or other relief resulting from the rejection of its bid based on these grounds.

17.4 Owner may consider the qualifications and experience of subcontractors proposed for those portions of the work for which the identity of subcontractors must be submitted in conformance with Articles 11 and 22 of these Instructions to Bidders (Section 00100).

17.5 Owner may conduct such investigations as Owner deems necessary to assist in the evaluation of any bid and to establish the responsibility, qualifications, and ability of Bidders, proposed subcontractors, and other persons and organizations to perform the work in accordance with the Contract Documents within the prescribed time to Owner's satisfaction. Owner reserves the right to reject the bid of any Bidder that does not pass any such evaluation to Owner's satisfaction.

17.6 The responsive Bidder must complete the bid schedule for the contemplated work. Owner intends to award one (1) contract, if any award is made, to the lowest responsible and responsive Bidder. The Successful Bidder shall be required to perform the Work as a prime contractor. No assignment of the contract shall be allowed without the prior written permission of Owner.

17.7 If a contract is to be awarded, Owner will give the successful Bidder a Notice of Intent to Award not later than ninety (90) days after the date of the bid opening.

ARTICLE 18 - TAXES

Contractor shall pay all applicable sales, consumer, use, and other similar taxes required by law. Contractor shall comply with all applicable federal, state, and local requirements.

ARTICLE 19 - ORGANIZATION OF DRAWINGS AND SPECIFICATIONS

Drawings and specifications for the work are incorporated as:

19.1 Project Manual consisting of Division 0 - Bidding and Contract Requirements, Division 1- General Requirements, Division 2- Site Work, Division 3- Concrete, Appendix A- Professional Service Industries' Report, Appendix B– Ocoee Engineering Standards Manual, Appendix C– Contract Forms.

19.2 Drawings, separately bound and with the general title, "City of Ocoee, Ocoee WWTF Electrical Upgrade and Expansion."

19.3 Technical specifications may also be reflected or identified on the Drawings.

ARTICLE 20 - REQUIRED DISCLOSURE

20.1 Any contractor submitting a bid in response to this invitation must execute form PUR. 7068, SWORN STATEMENT UNDER SECTION 287.133(3)(A), FLORIDA STATUTES, ON PUBLIC ENTITY CRIMES, including proper check(s), in the space(s) provided, and enclose it with his or her bid. The required disclosure form (Section 00482) must be completed by the appropriate individual within the organization, include a notarized signature of an authorized person, and be provided with the Bid. Corrections to the form will not be allowed after the bid opening time and date. Failure to complete this form in every detail and to submit it with the bid may result in disqualification.

20.2 SCRUTINIZED COMPANIES: The Respondent certifies that the company is not participating in a boycott of Israel. The Respondent certifies that the Respondent is not on the Scrutinized Companies that Boycott Israel List, not on the Scrutinized Companies with Activities in Sudan List, not on the Scrutinized Companies with activities in the Iran Petroleum Energy Sector List, or has been engaged in business operations in Cuba or Syria, as those terms are used and defined in sections 287.135 and 215.473 of the Florida Statutes. In the event that the Respondent is unable to provide such certification but still seeks to be considered for award of this solicitation, the Respondent shall, on a separate piece of paper, clearly state that it is on one or both of the Scrutinized Companies lists and shall furnish together with its proposal a duly executed written explanation of the facts supporting any exception to the requirement for certification that it claims under Section 287.135 of the Florida Statutes. The Respondent agrees to cooperate fully with the City in any investigation undertaken by the City to determine whether the claimed exception would be applicable. The City shall have the right to terminate any contract resulting from this solicitation for default if the Respondent is found to have submitted a false certification, or to have been placed on the Scrutinized Companies that Boycott Israel List, or to have been placed on the Scrutinized Companies for Activities in Sudan List, or the Scrutinized Companies with Activities in the Iran Petroleum Energy Sector List, or has been engaged in business operations in Cuba or Syria.

20.3 Owner has the sole discretion to reject any Bidder whose present or former employees, officers, directors, stockholders, partners, or owners are found by Owner to lack high standards of honesty, integrity, or responsibility. The discretion of Owner may be exercised based on the disclosure required herein, Owner's own investigation, public records, or any other reliable sources of information. Owner may also reject any Bidder failing to make the disclosure required herein. By submitting a bid, Bidder recognizes and

accepts that Owner may reject the bid based upon the exercise of its sole discretion and Bidder waives any claim it might have for damages or other relief resulting from the rejection of its bid based on these grounds.

ARTICLE 21 - QUALIFICATIONS OF SURETY COMPANIES

In order to be acceptable to Owner, a surety company issuing bid guaranty bonds, or 100 percent performance/ payment bonds, or 25 percent maintenance bonds called for in the Bidding Documents shall meet and comply with the following minimum standards:

21.1 Surety company shall comply with the provisions of s. 255.05, Florida Statutes.

21.2 Surety companies executing bonds must appear on the United States Treasury Department's most current list (Circular 570, as amended).

21.3 Attorneys-in-fact who sign bid bonds or performance/payment bonds must file with such bond a certified copy of their power of attorney to sign such bond.

21.4 Agents of surety companies must list their name, address, and telephone number on all bonds.

21.5 Surety shall have at least the following minimum ratings:

CONTRACT AMOUNT		BEST'S RATINGS
to 50,000	Class IV	B+ or better
50,000 to 500,000	Class V	A or better
500,000 to 2,500,000	Class VI	A or better
2,500,000 and over	Class VII	A or better

RATINGS SCHEDULE (net worth of bonding company)

Class IV	3,750,000 to 5,000,000
Class V	7,500,000 to 12,500,000
Class VI	25,000,000 to 50,000,000
Class VII	75,000,000 to 100,000,000

21.6 All bonds must be provided on the forms contained in the Bidding Documents. Failure to provide bonds on Owner's forms may result in the rejection of the bid and the forfeiture of the bid security.

ARTICLE 22 - QUALIFICATIONS SUBMITTALS

22.1 It is the intention of Owner to award this contract to a Bidder competent to perform and complete the work in a satisfactory manner. Accordingly, Owner shall require the successful Bidder to submit prior to award of any contract: (a) evidence of Bidder's certification and license to perform the work and services; (b) experience statement; (c) a

preliminary progress schedule; (d) a preliminary schedule of values; and (e) such business references as may be required to evaluate the Bidder's performance on work of a similar nature.

22.2 The experience statement shall provide data additional to that information provided in the bid form pertaining to Contractor's adequacy of plant and equipment, organization, and prior experience. Owner may specifically request certain items to be addressed in the experience statement.

22.3 The preliminary progress schedule shall consist of three copies of a diagram and a narrative prepared in accordance with the formats set forth in Paragraph 2.05 of Project Manual Section 00700 – General Requirements for an initial work schedule and written narrative. (Note that the preliminary progress schedule is only prepared in a manner consistent with the initial work schedule; it does not constitute the initial work schedule, which is prepared within twenty-one (21) days following contract execution.) Activities in the diagram shall show the order in which the Bidder proposes to perform the work within the constraints and sequencing conditions set forth in the specification and shall indicate starting and completion dates for key milestones and work pertaining to each division of the specifications within each major structure or geographical area of work. Activities shall further identify significant submittals/approvals, major deliveries, testing, Owner's responsibilities, and responsibilities of affected utilities and other similarly involved third parties. The preliminary progress schedule shall not replace, but serve as a basis for, the progress schedule submittals to be developed later in conformance with the requirements of Paragraph 2.07 of Project Manual Section 00700 – General Requirements.

22.4 It is assumed that the schedule of values under which progress payments and change order negotiations will be based is the same as the bid prices. If this is not the case, the preliminary schedule of values shall consist of an itemization of the unit-price bid items listed in the bid form. It may also modify lump-sum items when the nature of the work changes to such a degree as to affect that part of the project.

22.5 The successful Bidder and its surety, if any, hereby agree that any delays within Bidder's control in the delivery of these qualifications submittals shall constitute a request by Bidder for an extension of the time during which the bid shall remain open for Owner's acceptance. Should Owner agree to such extension, Bidder shall be required to comply with this submittal requirement within five (5) additional days. At Owner's option, failure by the successful Bidder to deliver these qualifications submittals within the extended period shall void evaluation of the bid and shall constitute proof that the successful Bidder has abandoned his bid, the Bidder's bid security may be declared forfeited to Owner as liquidated damages, and the work may be awarded to another Bidder.

22.6 If, upon receipt and evaluation of the submittals, the successful Bidder does not pass the evaluations to Owner's satisfaction, Owner reserves the right to reject the bid.

ARTICLE 23 - INTERPRETATION OF QUANTITIES

In the case of unit-price items, the quantities of work to be done or materials to be furnished, as identified in the bid form provided in the Bidding Documents, are to be considered as approximate only and are to be used solely for the comparison of bids received. The Owner and/or its representative do not expressly, or by implication, represent that the actual quantities involved shall correspond exactly therewith; nor shall the Bidder plead misunderstanding or deception because of such estimate or quantities or of the character, location, or other conditions pertaining to the work. Payment to the Contactor shall be made only for the actual quantities of work performed or material furnished in accordance with the Drawings and other Contract Documents, and it is understood that the quantities may be increased or decreased, as provided in the General Conditions, without, in any way, invalidating any of the unit or lump-sum prices bid, provided that the parties may negotiate changes to unit prices under the provisions of Section 12.8, above.

ARTICLE 24 - DRUG-FREE WORKPLACE

Every Bidder shall provide a certification on the form provided (Section 00303) indicating whether the Bidder has implemented a drug-free workplace program pursuant to the requirements of Section 287.087, Florida Statutes. Preference in the award process shall be given, according to the statutory requirements, to a business that certifies it has implemented a drug-free workplace program.

ARTICLE 25 - CONSTRUCTION SAFETY

25.1 In instances where such is applicable due to the nature of the work matter with which this bid is concerned, all materials, equipment, etc., as proposed and offered by Bidders must meet and conform to all Occupational Safety and Health Act (OSHA) requirements. The Bidders' signature upon the Bid Form (Section 00300) is considered certification of conformance to such requirements.

25.2 In the event this contract requires trench excavation, the requirements of Florida Statutes 553.60, et seq., shall be adhered to by all Bidders and acknowledged on Form 00302. All costs associated with complying with these requirements shall be included in the offered price for any applicable bid item(s).

ARTICLE 26 - SPECIAL WARRANTY, PERFORMANCE BOND, INSURANCE, AND CORRECTION PERIOD REQUIREMENTS

Detailed requirements pertaining to warranty, performance bond, insurance, and the correction period are described elsewhere in the Bidding Documents. Bidders are hereby notified that, in the event of an overpayment to Contractor as a result of an error on the part of either party in the preparation and/or processing of change orders, invoices, or other documents affecting the cost of the work, Contractor will refund any such overpaid amount within ten (10) calendar days of notification by Owner via certified U.S. mail of the overpayment. This obligation of Contractor is not limited to the term of the construction project.

ARTICLE 27 - SIGNING OF AGREEMENT

27.1 When Owner gives a Notice of Intent to Award to the successful Bidder, Owner will provide two (2) unsigned Agreements and all other Contract Documents shall accompany it. Within ten (10) days of receipt, successful Bidder shall sign and deliver the Agreements to Owner together with the required bonds, insurance certificates, and endorsements. Owner must be satisfied with regard to the submitted documents prior to its execution of the Agreement. In addition, the award is contingent upon action of the City Commission of the City of Ocoee, at which time the Mayor of the City of Ocoee may be authorized to sign the Agreement. Within ten (10) days after Owner signs the Agreement, Owner shall deliver a fully signed copy of the Agreement to the successful Bidder (Contractor).

27.2 A successful Bidder that is awarded the Work and fails to execute the Agreement or furnish the required bonds or insurance certificates and endorsements within the period specified in Paragraph 27.1, above, shall have its Notice of Intent to Award rescinded and shall forfeit its bid security to Owner as liquidated damages for its failure to enter into a contract with Owner.

ARTICLE 28 - BID PROTESTS

All Bid Protests shall be submitted to the Purchasing Technician at shopper@ocoee.org with a copy to the Procurement Manager at jtolbert@ocoee.org in the following manner:

28.1 A Bidder **shall** file a written bid protest under this Article or be barred any relief; oral protests shall not be acknowledged.

28.2 A bid protest **shall** be limited to the following grounds: (a) issues arising from the procurement provisions of the Project Manual, its addenda, and other Bidding Documents; and/or (b) applicable federal, state, or local law. No bid protest may be based upon questions concerning the design documents (drawings and specifications). The Bidder shall clarify all questions concerning the design documents of the project prior to submitting its bid.

28.3 The content of the bid protest **shall** fully state the factual and legal grounds for the protest and the legal basis for the relief requested.

28.4 The bid protest **shall** be filed with the Purchasing Technician with a copy to the Procurement Manager not later than five (5) calendar days after the posting of the Notice of Intent to Award or Recommendation of Award by staff, whichever is earlier.

28.5 The Procurement Manager or Purchasing Technician, on behalf of the Owner, shall make a determination of the merits of the protest not later than five (5) business days after receipt of the protest. If Owner denies the protest, Owner may proceed with award of the contract unless enjoined by order of a court of competent jurisdiction.

ARTICLE 29 - UNIT PRICES INFORMATION

29.1 Within thirty (30) days after the effective date of the Agreement, the Contractor shall submit a detailed list of unit prices (schedule of values) to be used as a basis to negotiate change orders, if such prices are proposed to differ from the unit prices included in the Bid Form. Otherwise, the bid unit prices will be used for change orders, subject to the provisions of Section 12.8, above. The successful Bidder shall submit a detailed breakdown of unit costs for performing additional work or deleting work of the types requested by Owner or Owner's representative.

29.2 The information supporting the proposed unit prices proposed in a schedule of values shall be submitted in sufficient detail to allow comprehensive analysis and review, shall show all "Cost of the Work," as defined in Article 11 of the General Conditions (Section 00700), and shall be in accordance with generally accepted accounting principles and applicable government regulations. Owner and the appropriate State agency(ies) shall have the right to audit these costs.

29.3 If Owner accepts such proposed unit prices, in whole or in part, they shall be binding on the Contractor for change orders to the extent of such acceptance and subject to any ancillary terms and conditions such as escalation clauses. However, if the Owner rejects all or any portion of such proposed unit prices, the parties shall rely on the provisions of Article 11 of the General Conditions (Section 00700), as supplemented, for changes in contract price (to the extent of such rejection). Owner may accept or reject such unit prices at its sole discretion.

ARTICLE 30 - LICENSES AND PERMITS

30.1 The contractor shall obtain and pay for all necessary building permits and all right-of-way utilization permits utilizing an allowance provided in the bid schedule (see Division 1 – General Requirements of the bidding documents). **However, any permit required from the City of Ocoee shall be provided by Owner without payment of the usual and customary fee.**

30.2 The contractor shall obtain and pay for all other federal, state, and county permits, licenses, and other authorizations required for the prosecution of the work, including the cost of all work performed in compliance with the terms and conditions of such permits, licenses, and authorizations, whether by itself or others.

ARTICLE 31 - RETAINAGE

Provisions concerning retainage and contractors' rights to deposit securities in lieu of retainage are set forth in the Proposed Scope of Work Agreement, Section 00500.

ARTICLE 32 – STORED MATERIAL ALLOWANCE

Provisions concerning stored material allowances are set forth in Sections 00710 & 01025.

ARTICLE 33 – E-VERIFY CERTIFICATION

By entering into the Contract, the awarded Contractor is obligated to comply with the provisions of § 448.095, Fla. Stat., "Employment Eligibility." This includes, but is not limited to utilization of the E-Verify System to verify the work authorization status of all newly hired employees, and requiring all subcontractors to provide an affidavit attesting that the subcontractor does not employ, contract with, or subcontract with, an alien unauthorized to work in the USA. Failure to comply will lead to termination of this contract, or if a subcontractor knowingly violates the statute, the subcontractor must be terminated immediately. If the Contract is terminated pursuant to Section 448.095, Fla. Stat., such termination is not a breach of contract and may not be considered as such. Any challenge to termination under this provision must be filed in the Ninth Judicial Circuit Court of Florida no later than 20 calendar days after the date of termination. If the Contract is terminated for a violation of Section 448.095 Fla. Stat., by the Contractor, the Contractor shall be liable for any additional costs incurred by the City as a result of the termination of the Contract. Nothing in the E-Verify Certification shall be construed to allow intentional discrimination of any class protected by law.

E-VERIFY REGISTRATION AND USE.

A. Pursuant to section 448.095, Florida Statutes, Contractor shall register with and use the U.S. Department of Homeland Security's E-Verify system, https://e-verify.uscis.gov/emp, to verify the work authorization status of all Contractor employees hired on and after January 1, 2021.

B. Subcontractors

(i) Contractor shall also require all subcontractors performing work under this Agreement to use the E-Verify system for any employees they may hire during the term of this Agreement.

(ii) Contractor shall obtain from all such subcontractors an affidavit stating the subcontractor does not employ, contract with, or subcontract with an unauthorized alien, as defined in section 448.095, Florida Statutes.

(iii) Contractor shall maintain a copy of all subcontractor affidavits for the duration of the Agreement.

C. Contractor must provide evidence of compliance with section 448.095, Florida Statutes. Evidence shall consist of an affidavit from the Contractor stating all employees hired on and after January 1, 2021 have had their work authorization status verified through the E-Verify system and a copy of their proof of registration in the E-Verify system.

D. Failure to comply with this provision is a material breach of the Agreement, and shall result in the immediate termination of the Agreement without penalty to the City. Contractor shall be liable for all costs incurred by the City to secure a replacement Agreement, including but not limited to, any increased costs for the same services, any costs due to delay, and rebidding costs, if applicable.

ARTICLE 34 – FEDERAL FUNDING (ARPA) REQUIREMENTS

34.1 All procurements by Federal Grant recipients and sub-recipients shall comply with the provisions of 2 C.F.R. Section 200.317 – 327. All procurement transactions shall be conducted in a manner providing full and open competition consistent with the standards of 2 C.F.R. Section 200.317 – 327.

34.2 Proper documentation is required by the American Rescue Plan Act, per the federal requirements and corresponding forms.

34.3 RETENTION OF RECORDS FOR ARPA PROJECTS. The U. S. Department of Treasury requires records to be maintained for a period of five years for the ARP/CSLFRF award. Contractor shall retain all records for ARPA projects and make available upon request for a period of five (5) years following final payment to the contractor.

34.3. For federal grant funded ARPA projects, the Davis-Bacon Act applies to infrastructure projects over $10 million. Additionally, recipients may be otherwise subject to the requirements of the Davis-Bacon Act, when CSFRF/CLFRF award funds are used on a construction project in conjunction with funds from another federal program that requires enforcement of the Davis-Bacon Act. Wage Determinations can be located at https://sam.gov/content/wage-determinations.

END OF SECTION

SECTION 00200

INFORMATION AVAILABLE TO BIDDERS

1. The City reserves the right to award the "Project" based on the Base Bid.

2. This project will be funded in part by the American Rescue Plan Act (ARPA).

3. Utilities: The location and existence of such utilities has been identified by the Owner or Engineer. However, the contractor is responsible to verify all existing utilities located within the project area. If conflict(s) arise requiring modification of the project elements, the contractor shall submit a change order request. The Contractor shall identify and verify the location of all existing utilities and preserve as necessary, applicable existing utilities required to be preserved under The Contract, whether shown on the Drawings or not. If the Contractor encounters utility conflicts during construction, the Contractor shall give sufficient notice to the Owners so that they may make the necessary adjustments. Damage to any utilities that is caused by carelessness of the Contractor shall be repaired at the Contractor's expense. Any delays ensuing from this damage shall be considered a delay that is within the Contractor's control.

4. Permits: The Contractor shall obtain all necessary building permits from City of Ocoee. If fees are required for the City of Ocoee issued permits, the Utilities Department will pay the fee upon notification from the Contractor. The Contractor shall obtain and pay for all other federal, state, and county permits, licenses, and other authorizations required for the prosecution of the Work, including the cost of all Work performed in compliance with the terms and conditions of such permits, licenses, and authorizations, whether by himself or others. The Contractor shall strictly adhere to the specific conditions or requirements of all such permits issued by the governmental unit(s) or agency (ies) having jurisdiction over the Work. Whenever there is a difference in the requirements of a jurisdictional body and these Specifications, the more stringent shall apply.

   The project does not require a SJRWMD permit, FDEP permit, or City Right-of-way Permit.

5. Contract Forms: Contract Forms are part of this manual in Appendix "A".

6. Geotechnical Data: Subsurface exploration report by Professional Service Industry, Inc. (PSI), an Intertek company.

7. Land Survey: Land Survey is basis of the plan preparation and is available upon request in electronic format (Acad).

8. Ocoee Plans are available in PDF and electronic (Acad) formats upon request.

9. Field Trailer: No field trailer is required for this contract.

10. Bid Form: The enclosed Bid Form is a Unit Item bid form. The Contractor's Bid Bond shall be five percent (5%) of the total of the Bid Form.

END OF SECTION

SECTION 00300

BID FORM

SUBMITTED: _____
(Date)

PROJECT IDENTIFICATION: CITY OF OCOEE ITB #24-001
Ocoee WWTF Electrical Upgrade and Expansion

NAME OF BIDDER: _____

BUSINESS ADDRESS: _____PHONE NO.: _____
CITY, STATE, ZIP: _____

CONTRACTOR'S FEDERAL I.D. NUMBER _____

CONTRACTOR'S FLORIDA LICENSE NO.: _____

THIS BID IS SUBMITTED TO: City of Ocoee, Florida (hereinafter called Owner)

1. The undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into an Agreement with Owner in the form included in the Contract Documents to perform and furnish all Work, as specified or indicated in the Contract Documents for the Contract Price and within the Contract Times indicated in this Bid Form and in accordance with the other terms and conditions of the Contract Documents.

2. Bidder accepts all of the terms and conditions of the Bidding Documents, including, without limitation, those dealing with the disposition of Bid Bond. This Bid will remain open for ninety (90) calendar days after the day of Bid opening. Bidder will sign and deliver the required number of counterparts of the Amendment to the Agreement with the Bonds and other documents required by the Bidding Requirements within ten (10) days after the date of Owner's Notice of Intent to Award.

3. In submitting this Bid, Bidder makes all representations required by the Instructions to Bidders and the Agreement and further warrants and represents that:

   a. Bidder has examined copies of all the Bidding Documents and of the following Addenda:

   No. _____ Dated _____ No. _____ Dated: _____
   No. _____ Dated _____ No. _____ Dated: _____
   No. _____ Dated _____ No. _____ Dated: _____
   No. _____ Dated _____ No. _____ Dated: _____

   (Receipt of all which is hereby acknowledged) and also copies of the Invitation to Bid and the Instructions to Bidders.

b. Bidder has familiarized itself with the nature and extent of the Contract Documents, work, site, locality, and all local conditions and laws and regulations that in any manner may affect cost, progress, performance or furnishing the Work.

c. Bidder has carefully studied all reports of explorations and tests of subsurface conditions at or contiguous to the site and all drawings of physical conditions in or relating to existing surface of subsurface structures at or contiguous to the site (except Underground Facilities) which have been identified in the Supplementary Conditions, as provided in paragraph 4.02.1 of the General Conditions. Bidder accepts the determination set forth in paragraph SC-4.02 of the Supplementary Conditions of the extent of the "technical data" contained in such reports and drawings upon which Bidder is entitled to rely, as provided in paragraph 4.02 of the General Conditions. Bidder acknowledges that such reports and drawings are not Contract Documents and may not be complete for Bidder's purposes. Bidder acknowledges that Owner and Engineer do not assume responsibility for the accuracy or completeness of information and data shown or indicated in the Bidding Documents with respect to Underground Facilities at or contiguous to the site.

d. Bidder has obtained and carefully studied (or assumes responsibility for having done so) all such additional or supplementary examinations, investigations, explorations, tests, studies and data concerning conditions (surface, subsurface and Underground Facilities) at or contiguous to the site or otherwise which may affect cost progress, performance or furnishing of the Work, or which relate to any aspect of the means, methods, techniques, sequences and procedures of construction to be employed by Bidder and safety precautions and programs incident thereto. Bidder does not consider that any additional examinations, investigations, explorations, tests, studies or data are necessary for the determination of this Bid for performance and furnishing of the Work in accordance with the times, price and other terms and conditions of the Contract Documents.

e. Bidder understands the full extent and scope of Work to be performed by Owner and others at the site that relates to Work for which this Bid is submitted.

f. Bidder has correlated the information known to Bidder, information and observations obtained from visits to the site, reports and drawings identified in the Contract Documents and all additional examinations, investigations, explorations, tests, studies and date with the Contract Documents.

g. Bidder has given Engineer written notice of all conflicts, errors, ambiguities or discrepancies that Bidder has discovered in the Contract Documents and the written resolution thereof by Engineer is acceptable to Bidder, and the Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performing and furnishing the Work for which this Bid is submitted.

h. This Bid is genuine and not made in the interest of or on behalf of any undisclosed person, firm or corporation and is not submitted in conformity with any agreement or rules of any group, association, organization or corporation; Bidder has not directly or indirectly induced or solicited any other Bidder to submit a farce or sham Bid; Bidder has not solicited or induced any person, firm or corporation to refrain from bidding; and Bidder has not sought by collusion to obtain for itself any advantage over any other Bidder or over Owner.

i. Bidder hereby agrees to commence Work under this contract on or before a date to be specified in the Notice to Proceed and to fully complete all work of the project within the Contract Time specified in the Scope of Work Agreement (Section 00500). Bidder further accepts the provisions of the Scope of Work Agreement as to liquidated damages and agrees to pay as liquidated damages the amount stated in the Scope of Work Agreement (Section 00500), for each consecutive calendar day completion of the Work is delayed.

Completion Schedule:

1) The Work shall be Substantially Complete within the Contract Time specified in Article 3.1 of the Proposed Scope of Work Agreement (Section 00500).

2) The Work shall be finally complete within the Contract Time specified in Article 3.1 of the Proposed Scope of Work Agreement (Section 00500).

4. All bid items shall include all materials, equipment, labor, permit fees, taxes, tests, miscellaneous costs of all types, overhead, and profit for the item to be complete, in place, and ready for operation in the manner contemplated by the Contract Documents. Bidder submits the **TOTAL BID OR TOTAL BASE BID** to perform all the Work, as required by the Drawings and Specifications.

5. The following documents are made a condition of this Bid:

a. **Bidding Documents and shall include the following**:
1. Bid Forms (entire Section 00300, 00301, 00301A, 00302, 00303, 00310, 00311, and 00312)
2. Bid Bond (Surety Bond or Cashier's Check) (Section 00410)
3. Non-collusion Affidavit (Section 00480)
4. Conflict of Interest Disclosure Form (Section 00480A)
5. Certification of Non-segregated Facilities (Section 00481)
6. Sworn Statement on Public Entity Crimes (Section 00482)
7. Certification of Nondiscriminatory Labor Practices (Section 00483)
8. Certification Regarding Scrutinized Companies' Lists (Section 00484)

(Remainder of page intentionally left blank)

Bid Form: ITB #24-001 Ocoee WWTF Electrical Upgrade and Expansion

Item No:	Description	Units	Contract Quantity	Unit Price (in Numbers)	Total Price (in Numbers)
1	**Mobilization, Bonds, and General Conditions**				
1.1	Mobilization/ Demobilization	Lump Sum	1.00		
1.2	General Conditions	Lump Sum	1.00		
1.3	Utility Locates	Lump Sum	1.00		
1.4	Erosion Control	Lump Sum	1.00		
1.5	Construction Photographs and Audio - Visual Recording	Lump Sum	1.00		
1.6	Survey (Horizontal and Vertical Controls & As-Builts)	Lump Sum	1.00		
2	**Site Work**				
2.1	Demolition	Lump Sum	1.00		
2.2	Fill	Cubic Yards	250.00		
2.3	Grading	Lump Sum	1.00		
2.4	Concrete Sidewalk and Pads	Cubic Yards	75.00		
2.5	Sod	Square Yards	500.00		
2.6	Concrete Parking	Cubic Yards	35.00		
2.7	Bollards	Each	13.00		
2.8	Install (2) Blowers (Blowers Purchased by City of Ocoee)	Lump Sum	1.00		
3	**Building**				
3.1	Electrical Building	Lump Sum	1.00		
3.2	Electrical Building HVAC	Lump Sum	1.00		
4	**Electrical System and Instrumentation Control**				
4.1	Electrical Equipment	Lump Sum	1.00		
4.2	Furnish and Integrate SCADA	Lump Sum	1.00		
4.3	Install 1000 kW Generator (Generator Purchased by City of Ocoee)	Lump Sum	1.00		
				Total Base Bid	

Written Total Base Bid:

COMPANY NAME: _____

BID PREPARED BY (PRINT): _____

SIGNATURE: _____

7. The Bidder acknowledges that the City specifically reserves the right to accept and make an award to a Bidder that has not submitted the lowest Bid when, in Owner's sole and absolute discretion, it determines that action to be in its best interest. The terms used in this Invitation to Bid, which are defined in the General Conditions and included as part of the Contract Documents, have the meanings assigned to them in the General Conditions.

8. The work shall be performed under a Florida General Contractor license. Contract shall not be awarded unless proof of valid license(s) is provided.

9. It is understood that where quantities for unit price work have been presented on the Bid Form, they are approximate only and are solely for the purpose of facilitating the comparison of bids, and that the Contractor's compensation will be computed upon the basis, described in the measurement and payment clauses in the specifications contained herein.

10. BASE BID - SCHEDULE OF MANUFACTURERS/SUPPLIERS

If the foregoing Schedule of Bid Items is presented in a Base Bid format, the undersigned as Bidder, agrees that the Contract, if awarded, will be on the basis of the materials and equipment named in the Contract Documents, in accordance with Article 10 of the Instructions to Bidders (Section 00100). The undersigned, as Bidder, also agrees that the Total Bid reflects the equipment and material supplied by one of the manufacturers/suppliers listed in the City's Approved Materials List. If the Bidder desires to propose an alternate manufacturer/supplier, he may write in the name of such alternate in the substitution list included within this Bid Form, but he must, nevertheless, also choose an approved manufacturer/supplier. If the proposed alternate manufacturer/supplier is determined "not equivalent" by the Engineer, the Bidder must furnish equipment and/or material items by the Bidder's chosen approved manufacturer/supplier. If the Bidder fails to indicate which listed manufacturer/supplier he intends to use if an alternate is rejected, he must use the manufacturer/supplier chosen by the City. Also, if the Bidder choses more than one approved manufacturer/supplier, he must use the first manufacturer/supplier written in the schedule of Base/Alternative Bid Manufactures/Suppliers table within this Bid Form (unless an alternate is approved).

11. SUBSTITUTIONS AND "OR EQUAL"

The undersigned as Bidder agrees that substitutions, or "equal," items will not be considered until after the effective date of the Agreement and will be evaluated in accordance with paragraphs 6.05.1 and 6.05.2 of the General Conditions. In addition to the reimbursement required under the General Conditions, the Contractor shall also reimburse the Owner for any engineering costs directly attributable to the change in manufacturers/suppliers caused by the acceptance of proposed alternates, such as, additional field trips for the Engineer, additional redesign costs, additional review costs, etc. Other costs directly attributable to the change in manufacturers/suppliers caused by the acceptance of proposed alternates, such as; increased electrical requirements, larger building, additional pumps or tankage, etc., shall be borne by others and not the Owner. If

Bidder intends to propose substitutions or "equal" items after the effective date of the Agreement, it is agreed that these items must be listed on the Substitution List included within this Bid Form, with a deductive amount representing 50 percent of the total savings between the named Base Bid/Alternative Bid item and the proposed item. "Base Bid/Alternative Bid" item substitutions providing to the Owner equipment or material cost savings of less than $1,000 will not be considered. The undersigned, as Bidder, also agrees that if a substitution or "equal" item is not listed on the Substitution List included with the Bid, all of the savings between the named item and the proposed item will go to the Owner, if the Owner accepts the proposed item in accordance with paragraphs 6.05.1 and 6.05.2 of the General Conditions. The Owner may request, and the undersigned Bidder shall supply, complete information on proposed substitutions. Such information shall be the manufacturer's current published or preprinted information for the specific substitution.

12. As Bidder, I hereby certify that I am aware and understand that the City of Ocoee in its sole discretion reserves the right to waive technicalities or irregularities, to reject any or all Bids, and/or to accept that Bid which is in the best interest of the City. The award of this Bid, if made, may be based on considerations other than total cost, and may be awarded based on various considerations, including but not limited to: Bidder experience and whether the Bid, in the judgment of the City, is the most responsive to the City's needs.

(Remainder of page intentionally left blank)

SUBSTITUTION LIST Bidder offers the following substitutions and "equal" items.			
Equipment Item or Material	**Spec Section**	**Alternative Manufacturer/Supplier (List One Only)**	**Deductible Amount* (Indicate Whether Lump Sum or Unit Price)**
Represents 50 percent of the difference in cost in accordance with the General Conditions (Minimum Deductible Amount per Substitution Item shall be $1,000) (Bidder may make additional copies of this page as required.)			

Strike out (X) non-applicable signature block and complete applicable block. (ALL SIGNATORIES MUST HAVE THEIR NAMES PRINTED OR TYPED BELOW THEIR SIGNATURES)

If Bidder is:

SOLE PROPRIETORSHIP

(SEAL)

(Individual's Signature)

(Individual's Name)

doing business as

Business Address:

Phone No.:

Florida License No.: _____

A PARTNERSHIP

(SEAL)

(Partnership Name)

(General Partner's Signature)

(General Partner's Name)

Business address:

Phone No.:

Florida License No.: _____

Strike out (X) non-applicable signature block and complete applicable block. (ALL SIGNATORIES MUST HAVE THEIR NAMES PRINTED OR TYPED BELOW THEIR SIGNATURES)

If Bidder is:

A CORPORATION

(Corporation Name)

(State of Incorporation)

By

(Name of person authorized to sign)

(Title)

(Authorized Signature)

(Corporate Seal)

Attest

(Secretary)

Business address:

Phone No.:

Corporation President:

Florida License No.:

Strike out (X) non-applicable signature block and complete applicable block. (ALL SIGNATORIES MUST HAVE THEIR NAMES PRINTED OR TYPED BELOW THEIR SIGNATURES)

If Bidder is:

A JOINT VENTURE

By

(Name)

(Address)

By

(Name)

(Address)

Business Address:

Phone No.:

Florida License No.:

(Each joint venturer must sign. The manner of signing for each individual, partnership, and corporation that is a party to the joint venture should be in the manner indicated above.)

Florida License No.:

13. List the following in connection with the Surety which is providing the Bid Bond:

Surety's Name: _____

Surety's Address: _____

14. Name and address of Surety's resident agent for service of process in Florida:

_____

_____

_____

(Remainder of page intentionally left blank.)

CORPORATE AUTHORITY TO EXECUTE DOCUMENTS

I HEREBY CERTIFY that a meeting of the Board of Directors of _____ _____, a corporation under
(Contractor's Corporate Name)
the laws of the State of _____, held on the _____ day of _____, 20__, the following resolution was duly passed and adopted:

"RESOLVED, that _____ _____
(signature of individual) (typed name of individual)
as _____ of the corporation, is hereby authorized to execute and all documents required to be signed by an officer of the Corporation in order to submit a valid bid, contract and bond for

CITY OF OCOEE
Ocoee WWTF Electrical Upgrade and Expansion
ITB #24-001

between the CITY OF OCOEE, a municipal corporation, and this corporation, and that his execution thereof, attested by the Secretary of the corporation and with corporate seal affixed shall be the official act and deed of this corporation."

I FURTHER CERTIFY that said resolution is now in full force and effect.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the official seal of the corporation this _____ day of _____, 2020.
(CORPORATE SEAL)

_____ (Corporate Secretary)

STATE OF _____
CITY OF _____

The foregoing instrument was acknowledged before me this _____ day of _____, 20__ by _____
(name of officer or agent, title of officer or agent), by means of ☐ physical presence or ☐ online notarization, of _____ (name of corporation acknowledging), a _____ (state or place of incorporation) corporation, on behalf of the corporation. He/She is personally known to me or has produced _____ (type of identification) as identification and did/did not take an oath.

_____
(Notary Public)
My Commission Expires: _____

END OF SECTION

SECTION 00301-A

SUBCONTRACTOR & SUPPLIER LIST

Will your firm be doing all the Work with your own forces? Yes____ No____ (Check yes only if no subcontracting opportunities exist. If you will be doing portions of the Work with your own forces, list these areas and approximate dollar amount allocated for this Work. List suppliers).

List all proposed subcontractors and suppliers to be used to include company names, contractor license number, contact, addresses, phone numbers, type of work subcontracted (trade/commodity), and dollar amount of work. Provide all information requested. Use additional sheets if necessary.

Submit Update Subcontractor/Supplier List with each progress payment requested. Submit Final Subcontractor/Supplier List with Final Payment Request.

COMPANY NAME, CONTACT ADDRESS, PHONE NUMBER	WORK TO BE PERFORMED (TRADE) OR COMMODITY TO BE SUPPLIED	ESTIMATED DOLLAR AMOUNT
1		
2		
3		
4		
5		
6		
7		

END OF SECTION

SECTION 00302

COMPLIANCE WITH FLORIDA TRENCH SAFETY ACT
(90-96, LAWS OF FLORIDA)

Bidder hereby acknowledges that all costs for complying with the Florida Trench Safety Act are included in the various items of the bid and in the Lump Sum Total Bid Price shown in Section 00300 - Bid Form, "Schedule of Bid Items". For informational purposes only, the bidder is required to further identify these costs in the summary below.

	Trench Safety Measure (Description)	**Unit of Measure (LF, SY)**	**Unit (Quantity)**	**Unit Cost**	**Extended Cost**
A				$	$
B				$	$
C				$	$
D				$	$
				TOTAL	$

BIDDER: _____

SIGNED:_____

BY: _____
(Print or type name)

TITLE: _____

DATE: _____

THIS IS NOT A PAY ITEM: The purpose of this form is to gather information on the costs associated with trench safety measures and to ensure Bidder has considered these costs and included them in the Lump Sum Total Bid price. Contractor will not receive additional payment if actual quantities differ from those estimated or if the Contractor uses a safety measure different than those listed.

(Failure to complete this Form may result in the Bid being declared non-responsive.)

END OF SECTION

SECTION 00301
QUESTIONNAIRE

Bidder shall fill out questionnaire form with all information pertinent to his/her company and the OCOEE WWTF Electrical Upgrade and Expansion.

DATE:_____

PROJECT IDENTIFICATION: City of Ocoee
ITB #24-001 OCOEE WWTF ELECTRICAL UPGRADE AND EXPANSION

NAME OF BIDDER:_____

BUSINESS ADDRESS:_____

TELEPHONE NO.:_____EMAIL:_____

GENERAL CONTRACTOR'S LICENSE NO. (PROVIDE COPY):_____

_____

SUNBIZ REGISTRATION NUMBER:_____

This questionnaire is intended to provide descriptive information about Bidder and to offer the opportunity for Bidder to demonstrate its compliance with the minimum requirements of this Invitation to Bid. **Minimum Requirements**: **Bidders must have the following experience in order to meet the minimum requirements of this Invitation to Bid: Prime Contractor on five (5) wastewater projects similar to the proposed Project and completed within the last ten (10) years, with at least three (3) of those projects being constructed in the last 5 years. Similar wastewater/water projects being either complete builds or electrical upgrades or a variation thereof.** The City reserves the right to disqualify a Bidder that does not provide this information within its Bid submission. The relevance and quality of prior experience necessary to identify a responsive Bidder shall solely be judged by the City of Ocoee at its discretion and is not reviewable through the bid protest process. Resumes of key project team members and their expected role in the project should be attached to this section and included in the Bid package submitted by the Bidder.

The undersigned warrants the truth and accuracy of all statements and answers herein contained. Include additional sheets if necessary.

1. How many years has your organization been in business?
   _____

2. REFERENCES/EXPERIENCE: List and provide information regarding the last five (5) projects you have completed in the last ten (10) years of similar in type, size, and nature as the one proposed, preferably with a governmental agency. Three of these projects must

have been completed in the past 5 years. Bidder must demonstrate the ability to perform services of similar complexity, nature, and size. For each project list the name of the project, contract performance dates, estimated total value of the contract, name and address of government agency or commercial agency, description of work performed, Bidder's role in the project, and special conditions present that had to be overcome, Bidder's project manager, the client's project manager, a reference person familiar with your work on the project, and contact information for that person. The relevant project may be removed from the list of references if the listed contact person refuses to provide information regarding your performance. Letters of Reference may also be provided. Only contracts for which Bidder was the prime contractor will be considered to be relevant. Attach additional sheets if necessary

Minimum Requirements: **Bidders must have the following experience in order to meet the minimum requirements of this Invitation to Bid: Prime Contractor on five (5) wastewater projects similar to the proposed Project and completed within the last ten (10) years, with at least three (3) of those projects being constructed in the last 5 years. Similar wastewater/water projects being either complete builds or electrical upgrades or a variation thereof.**

Name of Project: _____
Project Details: _____
_____
_____

Start date: _____ Completion date: _____
Contract amount: _____
Owner: _____
Owner's POC: Name and Title: _____
Phone number: _____
Email address: _____

Name of Project: _____
Project Details: _____
_____
_____

Start date: _____ Completion date: _____
Contract amount: _____
Owner: _____
Owner's POC: Name and Title: _____
Phone number: _____
Email address: _____

Name of Project: _____
Project Details: _____
_____
_____

Start date: _____ Completion date: _____
Contract amount: _____
Owner: _____
Owner's POC: Name and Title: _____
Phone number: _____
Email address: _____

Name of Project: _____
Project Details: _____
_____
_____

Start date: _____ Completion date: _____
Contract amount: _____
Owner: _____
Owner's POC: Name and Title: _____
Phone number: _____
Email address: _____

Name of Project: _____
Project Details: _____
_____
_____

Start date: _____ Completion date: _____
Contract amount: _____
Owner: _____
Owner's POC: Name and Title: _____
Phone number: _____
Email address: _____

3. Do you have any similar work in progress at this time? Yes___ No ___.

4. Have you ever failed to complete work awarded to you? If so, where and why?
_____
_____
_____

5. Name the proposed members of your project leadership team. For each person provide the name, title and years with the company. Attach the resume for all key personnel for this project.:

_____
_____
_____
_____
_____
_____

6. Name three (3) municipalities for which you have performed similar work and contact information:

_____
_____
_____

7. Have you personally inspected the site of the proposed Work? _____ Describe any anticipated problems with the site and your proposed solutions.

_____
_____
_____

8. Will you Subcontract any part of the Work? If so, describe which portions by listing the name of the subcontractor, the part of the project they are to perform, and the percentage proportion of the Work represented by that activity. Confirm that no day labor shall be used unless approved by the City. If approved by the City, day labor may only be used for tidying the site.

_____
_____
_____
_____
_____

9. What equipment do you plan on using to complete the Work?

_____
_____
_____
_____
_____
_____

10. State the true and exact, correct, and complete name under which you do business and give the company officer and the address of the office that will be responsible for the Work:

_____
_____
_____
_____

SECTION 00303

DRUG-FREE WORKPLACE CERTIFICATION

IDENTICAL TIE BIDS: Preference shall be given to businesses with drug-free workplace programs. In accordance with Florida Statute 287.087, whenever two or more bids that are equal with respect to price, quantity, and service are received by the state or by any political subdivision for the procurement of commodities or contractual services, a bid from a business that certifies that it has implemented a drug-free workplace program shall be given preference in the award process. Established procedures for processing tie bids will be followed if none of the tied vendors have a drug-free workplace program. In order to have a drug-free workplace program, a business shall:

1. Publish a statement notifying employees that the unlawful manufacture, distribution, dispensing, possession, or use of a controlled substance is prohibited in the workplace and specifying the actions that will be taken against employees for violations of such prohibition.

2. Inform employees about the dangers of drug abuse in the workplace, the business's policy of maintaining a drug-free workplace, and available drug counseling, rehabilitation, and employee assistance programs, and the penalties that may be imposed upon employees for drug abuse violations.

3. Give each employee engaged in providing the commodities or contractual services that are under bid a copy of the statement specified in subsection (1).

4. In the statement specified in subsection (1), notify the employees that, as a condition of working on the commodities or contractual services that are under bid, the employee will abide by the terms of the statement and will notify the employer of any conviction of, or pleas of guilty or *nolo contendere* to, any violation of Chapter 893 or of any controlled substance law of the United States or any state, for a violation occurring in the workplace no later than five (5) days after such conviction.

5. Impose a sanction on, or require the satisfactory participation in a drug abuse assistance or rehabilitation program is such is available in the employee's community, by any employee who is so convicted.

6. Make a good faith effort to continue to maintain a drug-free workplace through implementation of this section.

As the person authorized to sign the statement, I certify that this firm complies fully with the above requirements.

Bidder:_____

Signed:_____

By: _____
(Print or Type Name)

Title: _____

Date:_____

END OF SECTION

SECTION 00310

CONTRACTOR E-VERIFY AFFIDAVIT

I hereby certify that _____ [contractor] does not employ, contract with, or subcontract with an unauthorized alien, and is otherwise in full compliance with Section 448.095, Florida Statutes.

All employees hired on or after January 1, 2021 have had their work authorization status verified through the E-Verify system.

A true and correct copy of _____ [contractor] proof of registration in the E-Verify system is attached to this Affidavit.

_____

Print Name: _____

Date: _____

STATE OF _____

COUNTY OF _____

The foregoing instrument was acknowledged before me by means of ☐physical presence or ☐online notarization, this _____(date) by _____ (name of officer or agent, title of officer or agent) of _____ (name of contractor company acknowledging), a _____ (state or place of incorporation) corporation, on behalf of the corporation. He/she is personally known to me or has produced _____ (type of identification) as identification.

[Notary Seal]

_____
Notary Public

_____
Name typed, printed or stamped

My Commission Expires: _____

SECTION 00311

SAM.GOV REGISTRATION INFORMATION

In compliance with federal requirements, the City will verify all Bidders on SAM.gov (System for Award Management) for federal debarment or suspension exclusions as a responsibility determination. Return the attached SAM.gov registration verification if you have already registered.

Bidder: _____

Unique Entity ID (UEI) number: _____

CAGE Code: _____

Physical Address: _____
_____
_____

Expiration date of Registration: _____

END OF SECTION

SECTION 00312

BYRD ANTI-LOBBYING AMENDMENT CERTIFICATION

The undersigned, [Company]_____certifies, to the best of his or her knowledge, that:

1. No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of an agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

2. If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form - LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

3. The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all subrecipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by 31, U.S.C. § 1352 (as amended by the Lobbying Disclosure Act of 1995). Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

Contractor, [Company]_____, certifies or affirms the truthfulness and accuracy of each statement of its certification and disclosure, if any. In addition, the Contractor understands and agrees that the provisions of 31 U.S.C. § 3801 *et seq*., apply to this certification and disclosure, if any.

_____
Signature of Contractor's Authorized Official

_____
Name and Title of Contractor's Authorized Official

END OF SECTION

CONFIDENTIAL DISCLOSURE AGREEMENT

This Agreement is entered into by and between _____ (hereinafter "Recipient") and the City of Ocoee (hereinafter "City").

RECITALS

WHEREAS, City needs to disseminate certain building plans, blueprints, specifications, schematic drawings, and diagrams, including draft, preliminary, and final formats, which depict the internal layout and structural elements of a water treatment facility ("design information"), in order for it to be designed and constructed pursuant to **ITB #24-001 Ocoee WWTF Electrical Upgrade and Expansion** (the Project); and

WHEREAS, such design information is exempt from public records disclosure requirements of Florida Statutes Section 119.07(1) and s. 24(a), Art. I of the Florida State Constitution. This exemption provides that design information made exempt by law may be disclosed to another governmental entity if disclosure is necessary for the receiving entity to perform its duties and responsibilities; to a licensed architect, engineer, or contractor who is performing work on or related to a public building or water treatment facility; and that the entities or persons receiving such information shall maintain the exempt status; and

WHEREAS, Recipient is willing to receive disclosure of the design information pursuant to the terms of this Agreement for the purpose of bidding on the project and/or performing design services;

NOW THEREFORE, for good and sufficient consideration Recipient agrees as follows:

1. The above Recitals are acknowledged by Recipient and are incorporated herein by reference.

2. Recipient agrees that it shall prevent and protect the design information, or any part thereof, from disclosure as a public record and shall not disclose the design information to any person or entity other than one having a need for disclosure in connection with Recipient's authorized use of the design information for the purposes of submitting a response to the bid solicitation.

3. Recipient agrees to take all steps reasonably necessary to protect the secrecy of the design information, and to require all entities or persons receiving the design information to maintain its exempt status and to prevent the design information from being disclosed as a public record or coming into the possession of a person or entity that is not authorized.

4. Recipient agrees that all design information shall remain the property of City. All design information and all copies thereof shall be returned to City not later than thirty (30) days after the bid opening together with a list of all of the names and addresses of all entities or persons to which the design information has been disclosed; or, in the case of a designer, not later than thirty (30) days after the project is finally completed.

Dated this _____ day of _____, 20__ .

RECIPIENT

Signed:_____

Print Name:_____

Title:_____

Company:_____

Address:_____

_____

Phone No:_____

Date:_____

SECTION 00410

BID BOND

Bidder shall provide the City with a Bid Bond in the amount of five percent (5%) of the contract bid.

KNOW ALL MEN BY THESE PRESENTS, that we, the undersigned, _____ _____, as Principal, and _____ _____ as Surety, are hereby held and firmly bound unto the City of Ocoee, Florida, as Owner, in the penal sum of, (5 percent of the Contract Bid) $_____ _____

(written amount in dollars and cents)

for the payment of which, well and truly to be made, we hereby jointly and severally bind ourselves, successors and assigns.

Signed, this _____ day of _____, 20__. The Condition of the above obligation is such that whereas the Principal has submitted to the City of Ocoee, Florida a certain Bid, attached hereto and hereby made a part hereof to enter into a contract in writing, for the Project: "ITB #24-001 Ocoee WWTF Electrical Upgrade and Expansion".

NOW THEREFORE

1. Bidder and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to pay to Owner upon default of Bidder any damages, costs, or expenses, including attorney's fees, incurred by Owner that are proximately caused by such default. In no event shall Bidder's and Surety's obligation hereunder exceed the penal sum set forth on the face of this Bond.

2. Default of Bidder shall occur upon the failure of Bidder to deliver within the time required by the Bidding Documents (or any extension thereof agreed to in writing by Owner) the executed Agreement required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents and Contract Documents.

3. This obligation shall be null and void if:

   3.1 Owner accepts Bidder's bid and Bidder delivers within the time required by the Bidding Documents (or any extension thereof agreed to in writing by Owner) the executed Agreement required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents and Contract Documents,

   or

3.2 All bids are rejected by Owner, or

3.3 Owner fails to issue a Notice of Intent to Award to Bidder within ninety (90) days from the time and date fixed for the opening of Bids (or any extension thereof agreed to in writing by Bidder and, if applicable, consented to by Surety when required by paragraph 5 hereof).

4. Payment under this Bond will be due and payable upon default by Bidder and within 30 calendar days after receipt by Bidder and Surety of written notice of default from Owner, which notice will be given with reasonable promptness, identifying this Bond and the Project and including a statement of the amount due.

5. Surety waives notice of and any and all defenses based on or arising out of any time extension to issue notice of award agreed to in writing by Owner and Bidder, provided that the total time for issuing notice of award including extensions shall not in the aggregate exceed 120 days from Bid Due Date without Surety's written consent.

6. No suit or action shall be commenced under this bond prior to 30 calendar days after the notice of default required in paragraph 4 above is received by Bidder and Surety and in no case later than one year after Bid Due Date.

7. Any suit or action under this Bond shall be commenced only in a court of competent jurisdiction located in the state in which the Project is located.

8. Notices required hereunder shall be in writing and sent to Bidder and Surety at their respective addresses shown on the face of this Bond. Such notices may be sent by personal delivery, commercial courier or by United States Registered or Certified Mail, return receipt requested, postage pre-paid, and shall be deemed to be effective upon receipt by the party concerned.

9. Surety shall cause to be attached to this Bond, a current and effective Power of Attorney evidencing the authority of the officer, agent or representative who executed this Bond on behalf of Surety to execute, seal and deliver such Bond and bind the Surety thereby.

10. This Bond is intended to conform to all applicable statutory requirements. Any applicable requirement of any applicable statute that has been omitted from this Bond shall be deemed to be included herein as if set forth at length. If any provision of this Bond conflicts with any applicable provision of any applicable statute, then the provision of said statute shall govern and the remainder of this Bond that is not in conflict therewith shall continue in full force and effect.

11. The term "bid" as used herein includes a bid, offer, or proposal as applicable.

IN WITNESS WHEREOF, the Principal and the Surety have hereunto set their hands and seals, and such of them as are corporations have caused their corporate seals to be hereto affixed and these presents to be signed by their proper officers, the day and year first set forth above.

BIDDER:	Strike out (X) non-applicable signature blocks and complete applicable block. All signatures must have their names printed or type below their signature.

If Bidder is **SOLE PROPRIETORSHIP**, complete this signature block.	
_____ (Individual's Signature) _____ (Individual's Signature) doing business as _____ _____ (Business Address) _____ _____ (Telephone No.) (Florida License No.)	(1) _____ (Witness) (2) _____ (Witness) **(SEAL)**

If Bidder is **PARTNERSHIP**, complete this signature block.	
_____ (Partnership Name) _____ (General Partner's Signature) _____ (General Partner's Name) _____ (Business Address) _____ _____ (Telephone No.) (Florida License No.)	(1) _____ (Witness) (2) _____ (Witness) **(SEAL)**

If Bidder is **CORPORATION,** complete this signature block.	
_____ (Corporation Name) _____ (State of Incorporation) By:_____ (Name of Person Authorized to Sign - See Note 1) _____ (Title) _____ (Authorized Signature) _____ (Corporation President) _____ (Business Address) _____ _____ (Telephone No.) (Florida License No.)	(1) _____ (Witness) (2) _____ (Witness) **(SEAL)**

SURETY

_____ (Surety Business Name) _____ (Principal Place of Business) By:_____ (Surety Agent's Signature - See Note 2) _____ (Surety Agent's Name) _____ (Surety Agent's Title) _____ (Business Name of Local Agent for Surety) _____ (Business Address) _____ _____ (Telephone No.) (Bond No.)	Witness: (If agency is not a Corporation) (1) _____ (Witness) (2) _____ (Witness) Attest: (If Agency is a Corporation) _____ (Corporate Secretary Signature) _____ (Corporate Secretary Name) (Corporate Seal)

NOTES:

(1) Complete and attach "Corporate Authority to Execute Documents" if executed by any corporate employee other than president or vice-president.

(2) Complete and attach a certified copy of "Power-of-Attorney" prepared by Surety appointing individual "Attorney-in-Fact" for execution of Bid Bond on behalf of Surety and corresponding notarized "Attorney-in-Fact".

(3) Above addresses are to be used for giving required notice.

(4) Any singular reference to Bidder, Surety, Owner or other party shall be considered plural where applicable.

(5) Surety companies executing bonds must appear on the Treasury Department's most current list (Circular 570 as amended) and be authorized to transact business in the state where the project is located.

ATTORNEY-IN-FACT AFFIDAVIT

STATE OR COMMONWEALTH OF_____)

COUNTY OR CITY OF _____)

The foregoing instrument was acknowledged before me by means of ☐ physical presence or ☐ online notarization, this ___ day of _____, 20__ by _____ as Attorney-in-Fact, who is personally known to me or who has produced _____ as identification on behalf of _____, a _____ Corporation,
(Surety Company) (State)
which executed the attached bond as surety, who deposed and said that his signature and the corporate seal of said _____ were affixed by order and authority of said
(Surety Company)

Company's Board of Directors, and that the execution of the attached bond is the free act and deed of

_____.
(Surety Company)

Given under my hand and seal this _____ day of _____, 202___.

_____
(Notary Public)

My Commission Expires _____

END OF SECTION

SECTION 00480

NON-COLLUSION AFFIDAVIT

STATE OF_____
COUNTY OF_____

_____, being first duly swore deposes and says:

1. He/She is the _____
(Owner, Partner, Office, Representative or Agent)
of _____ , the Bidder that has submitted the attached Bid;

2. He/She is fully informed respecting the preparation and contents of the attached Bid and of all pertinent circumstances respecting such Bid;

3. Such Bid is genuine and is not a collusive or sham Bid;

4. Neither the said Bidder nor any of its officers, partners, owners, agents, representatives, employees, or parties in interest, including this affidavit, have in any way, colluded, conspired, connived or agreed, directly or indirectly, with any other Bidder, firm or person to submit a collusive or sham Bid in connection with the Contract for which the attached Bid has been submitted; or to refrains from bidding in connection with such Contract; or have in any manner, directly or indirectly, sought by agreement or collusion, or communication, or conference with any Bidder, firm, or person to fix the price or prices in the attached Bid or of any other Bidder, or to fix any overhead, profit, or cost elements of the Bid price or the Bid price in any other Bidder, or to secure through any collusion, conspiracy, connivance, or unlawful agreement any advantage against (Recipient), or any person interested in the proposed Contract;

5. The price or prices quoted in the attached Bid are fair and proper and are not tainted by any collusion, conspiracy, connivance, or unlawful agreement on the part of the Bidder or any other of its agents, representatives, owners, employees or parties in interest, including this affidavit.

By: _____
Title: _____

Sworn to and subscribed before me by means of ☐ physical presence or ☐ online notarization, this ____ day of _____, 202___, by _____ in the state of _____ County of _____.

_____
Notary Public
My Commission Expires: _____

END OF SECTION

BID CONFLICT OF INTEREST DISCLOSURE FORM

Award of this contract is subject to the provisions of Chapter 112, Florida Statutes. All Bidders must disclose within their Bid: the name of any City of Ocoee employee, Mayor or City Commissioner, other City Official, or City Consultants, who owns assets or capital stock, directly or indirectly, in the Bidder's firm or any of its branches, or would directly or indirectly benefit by the profits or emoluments of this Bid. (Indirect ownership or benefit applies to any members of his or her immediate family.) Bidder certifies that no member of the entity's ownership or management is presently applying for an employee position or actively seeking an elected position with the City. In the event that a conflict of interest is identified in the provision of services, Bidder agrees to immediately notify the City in writing.

The purpose of this disclosure form is to give the City the information needed to identify potential conflicts of interest for the City Commission, Staff, and other key City employees and consultants involved in the award and administration of this contract.

According to Chapter 112, Florida Statutes, the term "conflict of interest" "means a situation in which regard for a private interest tends to lead to disregard of a public duty or interest", and refers to situations in which financial or other personal considerations may adversely affect, or have the appearance of adversely affecting, an employee's professional judgment in exercising any City duty or responsibility in administration, management, instruction, research, or other professional activities.

Please check one of the following statements and attach additional documentation if necessary:

_____ To the best of our knowledge, the undersigned firm has no potential conflict of interest for this Bid.

_____ The undersigned firm, by attachment to this form, submits information which may be a potential conflict of interest for this Bid.

Acknowledged by:

_____
Firm Name

_____
Signature

_____
Name and Title (Print or Type)

_____
Date

SECTION 00481

CERTIFICATION OF NONSEGREGATED FACILITIES

Bidder certifies that he does not maintain or provide for his employees any segregated facilities at any of his establishments, and that he does not permit his employees to perform their services at any location, under this control, where segregated facilities are maintained. The Bidder certifies further that he will not maintain or provide for his employees any segregated facilities at any of his establishments, and that he will not permit his employees to perform their services at any location under his control where segregated facilities are maintained. The Bidder agrees that a breach of this certification will be a violation of the Equal Opportunity clause in any contract resulting from acceptance of this Bid. As used in this certification, the term "segregated facilities" means any waiting rooms, work areas, restrooms and washrooms, restaurants and other eating areas, time clocks, locker rooms and other storage and dressing areas, parking lots, drinking fountains, recreation or entertainment area, transportation, and housing facilities provided for employees on the basis of race, color, religion, or national origin, because of habit, local custom, or otherwise. Bidder agrees that (except where he has obtained identical certification from proposed subcontractors for specific time periods) he will obtain identical certifications from proposed subcontractors prior to the award of subcontracts exceeding $10,000 which are not exempt from the provisions of the Equal Opportunity clause, and that he will retain such certifications in his files.

The nondiscriminatory guidelines as promulgated in Section 202, Executive Order 11246, and as amended by Executive Order 11375 and as amended, relative to Equal Opportunity for all persons and implementations of rules and regulations prescribed by the United States Secretary of Labor are incorporated herein.

Note:

The penalty for making false statements in offers is prescribed in 18 U.S.C. 1001.

Date _____, 20___. _____

By: _____

_____
(Title)

Official Address (including Zip Code):

_____

_____

ATTACH AND INCLUDE AS PART OF PROPOSAL FORM; FAILURE TO DO SO MAY BE CAUSE FOR DISQUALIFICATION OF YOUR BID.

END OF SECTION

SECTION 00482

SWORN STATEMENT UNDER SECTION 287.133(3)(a),
FLORIDA STATUTES, ON PUBLIC ENTITY CRIMES

THIS FORM MUST BE SIGNED IN THE PRESENCE OF A NOTARY PUBLIC OR OTHER OFFICER AUTHORIZED TO ADMINISTER OATHS.

1. 1. This sworn statement is submitted to City of Ocoee, Florida by_____
(Entity)

by _____
(Print individual's Name & Title)

whose business address is _____

_____

2. I understand that a "public entity crime" as defined in Paragraph 287.133(1)(g), Florida Statutes, means a violation of any state or federal law by a person with respect to and directly related to the transaction of business with any public entity or with an agency or political subdivision of any other state or with the United States, including, but not limited to, any bid or contract for goods or services to be provided to any public entity or an agency or political subdivision of any other state or of the United States and involving antitrust, fraud, theft, bribery, collusion, racketeering, conspiracy, or material representation.

3. I understand that "convicted" or "conviction" as defined in Paragraph 287.133(1)(b), Florida Statutes, means a finding of guilt or a conviction of a public entity crime, with or without an adjudication of guilt, in any federal or state trial court of record relating to charges brought by indictment or information after July 1, 1989, as a result of a jury verdict, non-jury trial, or entry of a plea of guilty or nolo contendere.

4. I understand that an "affiliate" as defined in Paragraph 287.133(1)(a), Florida Statutes, means:

   a. A predecessor or successor of a person convicted of a public entity crime: or

   b. An entity under the control of any natural person who is active in the management of the entity and who has been convicted of a public entity crime. The term "affiliate" includes those officers, directors, executives, partners, shareholders, employees, members, and agents who are active in the management of an affiliate. The ownership by one person of shares constituting a controlling interest in another person, or a pooling of equipment or income among persons when not for fair market value under an arm's length agreement, shall be a *prima facie* case that one person controls another person. A person who knowingly enters into a joint venture with a person who has been convicted of a public entity crime in Florida during the preceding 36 months shall be considered an affiliate.

5. I understand that a "person" as defined in Paragraph 287.133(1)(e), Florida Statutes, means any natural person or entity organized under the laws of any state or of the United States with the legal power to enter into a binding contract and which bids or applies to bid on contracts for the provision of goods or services let by a public entity, or which otherwise transacts or applies to transact business with a public entity. The term "person" includes those officers, directors, executives, partners, shareholders, employees, members, and agents who are active in management of an entity.

6. Based on information and belief, the statement I have marked below is true in relation to the entity submitting this sworn statement. (please indicate which statement applies).

_____Neither the entity submitting this sworn statement, or one or more of its officers, directors, executives, partners, shareholders, employees, members, or agents who are active in management of the entity, nor any affiliate of the entity have been charged with and convicted of a public entity crime subsequent to July 1, 1989.

_____The entity submitting this sworn statement, or one or more of the officers, directors, executives, partners, shareholders, employees, members, or agents who are active in management of the entity, or an affiliate of this entity has been charged with and convicted of a public entity crime subsequent to July 1, 1989.

_____The entity submitting this sworn statement, or one or more of the officers, directors, executives, partners, shareholders, employees, members, or agents who are active in management of the entity, or an affiliate of this entity has been charged with and convicted of a public entity crime subsequent to July 1, 1989. However, there has been a subsequent proceeding concerning the conviction before a Hearing Officer of the State of Florida, Division of Administrative Hearings. The final order entered by the Hearing Officer determined that it was not in the public interest to place the entity submitting this sworn statement on the convicted vendor list. (Please attach a copy of the final order.)

I UNDERSTAND THAT THE SUBMISSION OF THIS FORM TO THE CONTRACTING OFFICER FOR THE PUBLIC ENTITY IDENTIFIED IN PARAGRAPH 1 (ONE) ABOVE IS FOR THAT PUBLIC ENTITY ONLY, AND THAT THIS FORM IS VALID FOR A PERIOD OF ONE YEAR. I ALSO UNDERSTAND THAT I AM REQUIRED TO INFORM THE PUBLIC ENTITY PRIOR TO ENTERING INTO A CONTRACT IN EXCESS OF THE THRESHOLD AMOUNT PROVIDED IN SECTION 287.017, FLORIDA STATUTES, FOR CATEGORY TWO OF CHANGE IN THE INFORMATION CONTAINED IN THIS FORM.

_____
(Signature)

Date: _____

_____
Name of Bidder (Contractor)

STATE OF _____

COUNTY OF _____

Sworn to (or affirmed) and subscribed before me by means of ☐ physical presence or ☐ online notarization, this _____ day of _____, 20___ by _____ affixed his/her signature in the place provided above on this _____ day of _____, 20___.

Notary Public _____

My Commission Expires: _____

END OF SECTION

SECTION 00483

CERTIFICATION OF NONDISCRIMINATORY LABOR PRACTICES

This certification relates to a construction contract proposed by the City of Ocoee for ITB #24-001.

Equal Opportunity Employment: The Contractor shall not discriminate on the basis of race, color, national origin, gender, age, handicapped status, veteran status, and/or religion in performing the work governed by this contract. The City is an Equal Opportunity Employer (EOE) and as such encourages all contractors to comply with EOE regulations. Any subcontract the Contractor may enter into shall include this clause with the same degree of application being encouraged.

I am the undersigned prospective construction contractor or subcontractor. I certify that:

(1) I have _____ I have not _____ participated in a previous contract or subcontract subject to the Equal Opportunity Clause and

(2) if I have participated in a previous contract or subcontract subject to the Equal Opportunity Clause, I have _____ I have not _____ filed with the Joint Reporting Committee, the Director of the Office of Federal Contract Compliance Programs, or the Equal Employment Opportunity Commission all reports due under the applicable filing requirements.

I understand that, if I have participated in a previous contract or subcontract subject to the Equal Opportunity Clause and have failed to file all reports due under the applicable filing requirements, I am not eligible, and will not be eligible, to have my bid or offer considered, or to enter into the proposed contract or subcontract, unless and until I make an arrangement regarding such reports that is satisfactory to the office where the reports are required to be filed.

I agree that I will obtain identical certifications from prospective lower-tier sub-contractors when I receive bids or offers or initiate negotiations for any lower-tier construction subcontracts with a price exceeding $10,000. I also agree that I will retain such certifications in my files.

Date _____, 20___. By:_____
(Signature of Authorized Official)

_____
(Name of Construction Contractor or Subcontractor)

_____
(Address of Construction Contractor or Subcontractor)

_____ _____
(Telephone Number) (Employer Identification No.)

END OF SECTION

SECTION 00484

CERTIFICATION REGARDING SCRUTINIZED COMPANIES' LISTS

Bidder certifies that the company is not participating in a boycott of Israel. Bidder certifies that Bidder is not on the Scrutinized Companies that Boycott Israel List, not on the Scrutinized Companies with Activities in Sudan List, not on the Scrutinized Companies with activities in the Iran Petroleum Energy Sector List, and is not engaged in business operations in Cuba or Syria, as those terms are used and defined in sections 287.135 and 215.473 of the Florida Statutes. In the event that Bidder is unable to provide such certification but still seeks to be considered for award of this solicitation, Bidder shall, on a separate piece of paper, clearly state that it is on one or both of the Scrutinized Companies lists and shall furnish together with its proposal a duly executed written explanation of the facts supporting any exception to the requirement for certification that it claims under Section 287.135 of the Florida Statutes. Bidder agrees to cooperate fully with the City in any investigation undertaken by the City to determine whether the claimed exception would be applicable. City shall have the right to terminate any contract resulting from this solicitation for default if Bidder is found to have submitted a false certification, or to have been placed on the Scrutinized Companies that Boycott Israel List, or to have been placed on the Scrutinized Companies for Activities in Sudan List, or the Scrutinized Companies with Activities in the Iran Petroleum Energy Sector List, or has been engaged in business operations in Cuba or Syria.

Bidder: _____

By:_____
(Authorized Signature)

Printed Name and Title:_____

Date:_____

END OF SECTION

SECTION 00500
DRAFT CONTRACT FOR CONSTRUCTION

THIS AGREEMENT is dated as of the _____ day of _____ in the year _____ by and between the City of Ocoee, a municipal corporation, hereinafter called Owner, and _____, hereinafter called Contractor.

Owner and Contractor, in consideration of the mutual covenants hereinafter set forth, agree as follows:

ARTICLE 1. WORK

Contractor shall complete all Work as specified or indicated in the Contract Documents. The work is generally described as follows:

Ocoee WWTF Electrical Upgrade and Expansion
ITB #24-001

General Scope of Work:

A. The project will consist of, but is not limited to, the following:
   i. Construct one (1) Electrical Building and furnish and install new electrical equipment
   ii. Install new 1000 KW generator with weatherproof sound-attenuating walk-in type enclosure and belly tank (generator, automatic transfer switches, and fuel monitoring system to be provided by the City)
   iii. Construct blower pad and install new blowers (blowers to be provided by the City)
   iv. Demolish existing generator, diesel fuel tank, transformer, sidewalk and aboveground blower piping
   v. Furnish and install electrical conduit and electrical pullboxes.
   vi. Construct generator pad, grade site and install new concrete sidewalk.
   vii. Construct transformer pad per Duke Energy Specifications
   viii. Remove existing asphalt pavement and replace with concrete pavement

B. Furnish all materials, equipment, tools, and labor which is reasonably and properly inferable and necessary for the proper completion of the Work, whether specifically indicated in the Contract Documents or not.

C. All permits, licenses and fees, other than those permits included in the appendicies shall be secured and paid for by the CONTRACTOR.

D. Repair, replace, or otherwise settle with the Owner, if damage to property or existing facilities occurs, including damage to pavements, utilities, lawns, structures, etc.

E. Construct the Project under a single lump sum contract.

All work is to be conducted and in accordance with the specifications within the Bidding Documents

ARTICLE 2. ENGINEER

The Project has been designed by CPH, LLC and the City of Ocoee Utilities Department; however, the City Utilities Director (within here and other references in the contract documents as "Engineer") or his designee is to act as Owner's representative, assume all duties and responsibilities of the project engineer, and have the rights and authority assigned Director in the Contract Documents in connection with completion of the Work.

ARTICLE 3. CONTRACT TIME

3.1 The work shall be substantially complete within **Five Hundred Forty (540) calendar days**. The entire work shall be complete and ready for its intended use, including final dressing and cleanup, within **Six Hundred (600) calendar days**. All time periods begin from the effective date of the Notice to Proceed, as provided in paragraph 2.03 of the General Conditions (Commencement of Contract Time; Notice to Proceed).

In accordance with Florida Statutes Section §218.735, within 30 calendar days, or 45 days if over $10 million construction cost, of reaching substantial completion of the construction services, the Owner and Contractor shall work together to develop the single list of items and the estimated cost to complete each item on the list required to render complete, satisfactory, and acceptable the construction services purchased by the Owner. See also General Conditions Section 710, and Section 5 of the Contract, Payment Procedures.

3.2 Placing of permanent pavement markings on all final asphaltic concrete surfaces, if applicable, shall not be accomplished before thirty (30) calendar days have elapsed after placement of the final surfaces. The charging of Contract Time will be suspended during the thirty (30) calendar-day period provided the work is considered to be Substantially Complete, as provided in paragraph 3.1 above. The charging of Contract Time will resume on the 31st day.

3.3 Contractor recognizes that time is of the essence of this Agreement and that Owner will suffer financial loss if the work is not completed within the times as specified, plus any extensions thereof allowed in accordance with the General and Supplementary Conditions. Contractor acknowledges that proving the actual loss and damages suffered by Owner if the work is not completed on time is impracticable and not susceptible to exact calculation. Accordingly, instead of requiring any such proof, Contractor agrees that as liquidated damages for delay (but not as a penalty) Contractor shall pay to Owner for work not completed as specified paragraph 3.1 the following:

Substantial Completion: Two Hundred Dollars ($200.00) for each day
Entire Completion: Two Hundred and Fifty Dollars ($250.00) for each day
Note: Each Day(s) in this section shall be referred to as calendar day(s)

3.4 In addition to the liquidated damages, there shall be additional incidental damages paid by Contractor to the Owner for failure to timely complete the work. These may include, but not be limited to, delay damage settlements or awards owed by Owner to others, inspection and engineering services, interest and bond expense, delay penalties, fines or penalties imposed by regulatory agencies, contract damages, and professional fees (including attorneys' fees) incurred by Owner in connection with Contractor's failure to timely complete the work.

3.5 In addition to liquidated damages and incidental damages arising from Contractor's failure to perform the work, Contractor may be required to repay Owner for the cost of corrective actions undertaken by Owner to resolve construction defects. Such corrective actions include, but are not limited to, restoration of damaged areas, clearing of reclaimed water customer facilities to remove construction debris, repair and replacement of damaged reclaimed water customer equipment, and emergency repairs to the reclaimed water distribution system during the one-year warranty period.

3.6 Suspension of Work and Termination as stated in Article 15 of the General Conditions.

ARTICLE 4. CONTRACT PRICE

4.1 Owner shall pay Contractor for performance of the work in accordance with the Contract Documents in current funds at the lump sum or unit prices presented in the Bid Form (Contract Total Bid Amount):

_____,
DOLLARS AND ____CENTS, ($ _____), which is incorporated herein and made a part hereof by this reference.

4.2 Contractor agrees that the Contract Price is a stipulated sum except with regard to those items in the bid which are subject to unit prices and agrees to perform all of the work as described in the Contract Documents, subject to additions and deductions by Change Order, and comply with the terms therein for the Bid stated in the attached Bid Form.

ARTICLE 5. PAYMENT PROCEDURES

Contractor shall submit applications for payment in accordance with Article 14 of the General Conditions. Applications for payment will be processed by Engineer, as provided in the General Conditions.

5.1 Progress Payments. In accordance with Section §218.735 Florida Statutes, Owner shall make progress payments on account of the Contract Price on the basis of Contractor's properly submitted and approved Applications for Payment, as recommended by Engineer, not later than the Twenty-fifth (25th) business day after the date on which the properly submitted Application for Payment is initially received by Owner. All such progress payments will be on the basis of the progress of the work measured by the Schedule of Values established in paragraph 2.07 of the General Conditions (Initial

Acceptance of Schedules) (and in the case of Unit Price, work based on the number of units completed) and included in Contractor's qualifications submittals.

5.1.1 Owner shall submit a monthly Certificate of payment based on the provided Paid to Date Summary may withhold, in accordance with the Division 1: General Conditions (Progress Payments).

5.1.2 Progress payments shall be equal to ninety-five percent (95%) of the value of work completed to date and Ongoing Stored Material Allowance as defined in Section 01025 Measurement and Payment, to include materials and equipment not incorporated into the work but delivered and suitably stored and accompanied by documentation satisfactory to Owner, with the remaining five percent 5% of the work being retainage.

5.1.3 Retainage shall be five (5) percent of work to date based on the progress payment, including all change orders,

5.2 Final Payment - Within 20 business days after the list is created, upon receipt of a proper invoice or Application for Payment, the Owner shall pay the contractor the remaining contract balance that includes all retainage previously withheld by the Owner less an amount equal to 150 percent of the estimated cost to complete the items on the list, less any liquidated damages. Upon completion of all items on the list, the contractor may submit a payment request for the amount withheld by the Owner. If a good faith dispute exists as to whether one or more items identified on the list have been completed pursuant to the contract, the local governmental entity may continue to withhold up to 150 percent of the total costs to complete such items. If the Owner has provided written notice to the contractor specifying the failure of the contractor to meet contract requirements in the development of the list of items to be completed, the Owner must pay the contractor the remaining balance of the contract, less any items in dispute, less an amount equal to 150 percent of the estimated cost to complete the items that the local governmental entity intended to include on the list.

ARTICLE 6. INTEREST

All monies not paid when due shall bear interest at the rate set in accordance with Chapter 218, Part VII, the Local Government Payment Act.

ARTICLE 7. CONTRACTOR'S REPRESENTATIONS

In order to induce Owner to enter into this Agreement, Contractor makes the following representations:

7.1 Contractor has examined and carefully studied the Contract Documents (including the Addenda listed in paragraph 8) and the other related data identified in the Bidding Documents including "technical data."

7.2 Contractor has visited the site and become familiar with and is satisfied as to the general, local and site conditions that may affect cost, progress, performance and furnishings of the work.

7.3 Contractor is familiar with and is satisfied as to all federal, state, and local laws and regulations that may affect cost, progress, performance, and furnishing of the work.

7.4 Contractor has carefully studied all reports of explorations and tests of subsurface conditions at or contiguous to the site and all drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the site (except Underground Facilities) that are identified in Section 00200 "Information Available to Bidders".

7.5 Contractor has obtained and carefully studied (or assumes responsibility for having done so) all such additional supplementary examinations, investigations, explorations, tests, studies and data concerning conditions (surface, subsurface and Underground Facilities) at or contiguous to the site or otherwise which may affect costs, progress, performance or furnishing of the work or which relate to any aspect of the means, methods, techniques, sequences and procedures of construction to be employed by Contractor and safety precautions and programs incident thereto. Contractor does not consider that any additional examinations, investigations, explorations, tests, studies or data are necessary for the performance and furnishing of the work at the Contract Price, within the Contract Times and in accordance with the other terms and conditions of the Contract Documents.

7.6 Contractor is aware of the general nature of work to be performed by Owner and others at the site that relates to the work as indicated in the Contract Documents.

7.7 Contractor has correlated the information known to Contractor, information and observations obtained from visits to the site, reports and drawings identified in the Contract Documents and all additional examinations, investigations, explorations, tests, studies and data with the Contract Documents.

7.8 Contractor has given Engineer written notice of all conflicts, errors, ambiguities or discrepancies that Contractor has discovered in the Contract Documents and the written resolution thereof by Engineer is acceptable to Contractor, and the Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the work.

7.9 Contractor shall perform work with a value of not less than thirty percent (30%) of the Contract Price with his own forces.

7.10 **Warranty**. Contractor warrants that the Work including equipment and materials provided shall conform to professional standards of care and practice in effect at the time the Work is performed; be free from all faults, defects or errors; and be of the highest quality. If Contractor is notified in writing of a fault, deficiency or error in the Work provided within one (1) year from expiration date of this Agreement, Contractor shall, at

City's option, either redo such portions of the Work to correct such fault, defect or error, at no additional cost to City; or refund to City the amount paid by City which is attributable to such portions of the faulty, defective or erroneous Work, including the costs for obtaining another Contractor to redo the Work.

ALL MATERIALS AND SERVICES PROVIDED BY CONTRACTOR, SHALL BE MERCHANTABLE AND FIT FOR THE PURPOSES INTENDED.

CONTRACTOR SHALL BE LIABLE FOR SECONDARY, INCIDENTAL OR CONSEQUENTIAL DAMAGES OF ANY NATURE RESULTING FROM ANY WORK PERFORMED UNDER THIS AGREEMENT.

ARTICLE 8. CONTRACT DOCUMENTS

The Contract Documents, which comprise the entire agreement between Owner and Contractor concerning the work, are attached to this Agreement, made a part hereof, and consist of the following:

8.1 This Scope of work Agreement (Section 00500).

8.2 Exhibits to this Scope of work Agreement (if any).

8.3 Performance Bond, Payment Bonds and Certificates of Insurance (Sections 00610, 00620 and 00650, respectively).

8.4 Notice of Award and Notice to Proceed.

8.5 General Conditions (Section 00710 - NSPE - ACEC Document 1910-8 (1996 Edition), as modified and supplemented.

8.6 Supplementary Conditions (Section 00800) (If Applicable).

8.7 Specific Technical Specifications.

8.9 Project Manual bearing the general title "**City of Ocoee, Florida, ITB #24-001 Ocoee WWTF Electrical Upgrade and Expansion ITB #24-001** consisting of Divisions 0 through 3 and Appendix A through C, as listed in the Table of Contents thereof, including the Invitation to Bid (Section 00020) and Instructions to Bidders (Section 00100).

8.10 Drawings consisting of a cover sheet and the sheets bearing the following general title:

City of Ocoee
Ocoee WWTF Electrical Upgrade and Expansion

8.11 Addenda numbers __to __, inclusive.

8.12 Contractor's Bid (Section 00300) including all required forms.

8.13 Documentation submitted by Contractor prior to Notice of Intent to Award.

There are no Contract Documents other than those listed above in this Article 8. The Contract Documents may only be amended, modified, or supplemented, as provided in paragraphs 3.04 of the General Conditions.

ARTICLE 9. TERMINATION

9.1 **Termination for Cause.** If Contractor fails or neglects to perform a material obligation under this Agreement the City shall provide written notice to the Contractor that the Contractor is in default and that City intends to terminate this Agreement if the default(s) are not cured. If the Contractor fails to cure the default(s) or, if such default(s) cannot practicably be cured within five (5) days and Contractor fails to diligently commence to correct the default(s), then the City may, without prejudice to any other remedy, cure such default(s) and/or rectify such deficiencies and charge the Contractor the reasonable cost thereof; or, at the City's option, may terminate this Agreement. In the event of such termination for cause the Contractor shall turn over to the City all documents, materials, plans, specifications, manuals, records, submittals, correspondence, minutes, memoranda, tape recordings, videos, or other things or electronic data that relate to or concern the work performed by the Contractor under this Agreement. If it is later determined that the City's termination for cause under this Agreement was improper or not justified, then the parties agree that the termination of the Contractor shall be deemed and treated as a termination for convenience and, the Contractor's sole and exclusive remedy shall be to receive compensation in the same manner as prescribed for a termination for convenience.

9.2 **Termination for Convenience**. The City may terminate this Agreement at any time solely for its convenience by providing the Contractor with thirty (30) days written notice. In the event of such a termination by the City for convenience, the City shall be shall pay for all Work properly performed prior to the effective date of the termination and for all materials, supplies and services, which were reasonably utilized to perform the Work through the effective date of the termination for convenience and other normal and reasonable costs incurred by the Contractor that are caused by or reasonably arise out of the termination for convenience.

ARTICLE 10. FEDERAL REQUIREMENTS

10.1 All procurements by Federal Grant recipients and sub-recipients shall comply with the provisions of 2 C.F.R. Section 200.317 – 327. All procurement transactions shall be conducted in a manner providing full and open competition consistent with the standards of 2 C.F.R. Section 200.317 – 327.

10.2 The Federal Government is not a party to this contract and is not subject to any

obligations or liabilities to the City, Contractor, or any other party pertaining to any matter resulting from this contract. In the event of a conflict between the City's Purchasing Policy, codified at Chapter 21 of the City's Code of Ordinances, and Federal Code, the more restrictive rule shall prevail.

10.3 Proper documentation is required by the American Rescue Plan Act, per the federal requirements and corresponding forms.

10.4 Media Interaction - The contractor, including all sub-contractors, will not provide any information to the media without the expressed written permission of the City's Utilities Director. This includes on site interviews requested from any media outlet. All inquiries by a member of the media or any elected official will be directed to the City's Utilities Director. The Contractor will ensure this guidance is disseminated to all employees and sub-contractors on the project.

10.5 Federal Seal, Logo and Flags - The contractor shall not use the Federal agency's seal(s), logos, crests, or reproductions of flags or likenesses of Federal agency officials without specific Federal pre-approval.

10.6 Contractor shall comply with the Energy Policy and Conservation Act (42 U.S.C. section 6201). Mandatory standards and policies relating to energy efficiency, contained in any applicable State Energy Conservation Plan, shall be utilized.

10.7 RETENTION OF RECORDS FOR ARPA PROJECTS. The U. S. Department of Treasury requires records to be maintained for a period of five years for the ARP/CSLFRF award. Contractor shall retain all records for ARPA projects and make available upon request for a period of five (5) years following final payment to the contractor.

10.8 2 C.F.R Appendix II to Part 200 - Contract Provisions for Non-Federal Entity Contracts Under Federal Awards:

In addition to other provisions required by the Federal agency or non-Federal entity, all contracts made by the non-Federal entity under the Federal award must contain provisions covering the following, as applicable.

(A) Contracts for more than the simplified acquisition threshold, which is the inflation adjusted amount determined by the Civilian Agency Acquisition Council and the Defense Acquisition Regulations Council (Councils) as authorized by 41 U.S.C. 1908, must address administrative, contractual, or legal remedies in instances where contractors violate or breach contract terms, and provide for such sanctions and penalties as appropriate.

(B) All contracts in excess of $10,000 must address termination for cause and for convenience by the non-Federal entity including the manner by which it will be affected and the basis for settlement.
(C) Equal Employment Opportunity. Except as otherwise provided under 41 CFR Part 60, all

contracts that meet the definition of "federally assisted construction contract" in 41 CFR Part 60-1.3 must include the equal opportunity clause provided under 41 CFR 60-1.4(b), in accordance with Executive Order 11246, "Equal Employment Opportunity" (30 FR 12319, 12935, 3 CFR Part, 1964-1965 Comp., p. 339), as amended by Executive Order 11375, "Amending Executive Order 11246 Relating to Equal Employment Opportunity," and implementing regulations at 41 CFR part 60, "Office of Federal Contract Compliance Programs, Equal Employment Opportunity, Department of Labor."

*(D) Davis-Bacon Act, as amended (40 U.S.C. 3141-3148). When required by Federal program legislation, all prime construction contracts in excess of $2,000 awarded by non-Federal entities must include a provision for compliance with the Davis-Bacon Act (40 U.S.C. 3141-3144, and 3146-3148) as supplemented by Department of Labor regulations (29 CFR Part 5, "Labor Standards Provisions Applicable to Contracts Covering Federally Financed and Assisted Construction"). In accordance with the statute, contractors must be required to pay wages to laborers and mechanics at a rate not less than the prevailing wages specified in a wage determination made by the Secretary of Labor. In addition, contractors must be required to pay wages not less than once a week. The non-Federal entity must place a copy of the current prevailing wage determination issued by the Department of Labor in each solicitation. The decision to award a contract or subcontract must be conditioned upon the acceptance of the wage determination. The non-Federal entity must report all suspected or reported violations to the Federal awarding agency. The contracts must also include a provision for compliance with the Copeland "Anti-Kickback" Act (40 U.S.C. 3145), as supplemented by Department of Labor regulations (29 CFR Part 3, "Contractors and Subcontractors on Public Building or Public Work Financed in Whole or in Part by Loans or Grants from the United States"). The Act provides that each contractor or subrecipient must be prohibited from inducing, by any means, any person employed in the construction, completion, or repair of public work, to give up any part of the compensation to which he or she is otherwise entitled. The non-Federal entity must report all suspected or reported violations to the Federal awarding agency.

*See notes on the last page of this section regarding the application of the Davis-Bacon Act for ARPA funded projects.

(E) Contract Work Hours and Safety Standards Act (40 U.S.C. 3701-3708). Where applicable, all contracts awarded by the non-Federal entity in excess of $100,000 that involve the employment of mechanics or laborers must include a provision for compliance with 40 U.S.C. 3702 and 3704, as supplemented by Department of Labor regulations (29 CFR Part 5). Under 40 U.S.C. 3702 of the Act, each contractor must be required to compute the wages of every mechanic and laborer on the basis of a standard work week of 40 hours. Work in excess of the standard work week is permissible provided that the worker is compensated at a rate of not less than one and a half times the basic rate of pay for all hours worked in excess of 40 hours in the work week. The requirements of 40 U.S.C. 3704 are applicable to construction work and provide that no laborer or mechanic must be required to work in surroundings or under working conditions which are unsanitary, hazardous or dangerous. These requirements do not apply to the purchases of supplies or materials or articles ordinarily available on the open market, or contracts for transportation or transmission of intelligence.
(F) Rights to Inventions Made Under a Contract or Agreement. If the Federal award meets the

definition of "funding agreement" under 37 CFR § 401.2 (a) and the recipient or subrecipient wishes to enter into a contract with a small business firm or nonprofit organization regarding the substitution of parties, assignment or performance of experimental, developmental, or research work under that "funding agreement," the recipient or subrecipient must comply with the requirements of 37 CFR Part 401, "Rights to Inventions Made by Nonprofit Organizations and Small Business Firms Under Government Grants, Contracts and Cooperative Agreements," and any implementing regulations issued by the awarding agency.

(G) Clean Air Act (42 U.S.C. 7401-7671q.) and the Federal Water Pollution Control Act (33 U.S.C. 1251-1387), as amended - Contracts and subgrants of amounts in excess of $150,000 must contain a provision that requires the non-Federal award to agree to comply with all applicable standards, orders or regulations issued pursuant to the Clean Air Act (42 U.S.C. 7401-7671q) and the Federal Water Pollution Control Act as amended (33 U.S.C. 1251-1387). Violations must be reported to the Federal awarding agency and the Regional Office of the Environmental Protection Agency (EPA).

(H) Debarment and Suspension (Executive Orders 12549 and 12689) - A contract award (see 2 CFR 180.220) must not be made to parties listed on the governmentwide exclusions in the System for Award Management (SAM), in accordance with the OMB guidelines at 2 CFR 180 that implement Executive Orders 12549 (3 CFR part 1986 Comp., p. 189) and 12689 (3 CFR part 1989 Comp., p. 235), "Debarment and Suspension." SAM Exclusions contains the names of parties debarred, suspended, or otherwise excluded by agencies, as well as parties declared ineligible under statutory or regulatory authority other than Executive Order 12549.

(I) Byrd Anti-Lobbying Amendment (31 U.S.C. 1352) - Contractors that apply or bid for an award exceeding $100,000 must file the required certification. Each tier certifies to the tier above that it will not and has not used Federal appropriated funds to pay any person or organization for influencing or attempting to influence an officer or employee of any agency, a member of Congress, officer or employee of Congress, or an employee of a member of Congress in connection with obtaining any Federal contract, grant or any other award covered by 31 U.S.C. 1352. Each tier must also disclose any lobbying with non-Federal funds that takes place in connection with obtaining any Federal award. Such disclosures are forwarded from tier to tier up to the non-Federal award.

(J) § 200.323. Procurement of recovered materials - A non-Federal entity that is a state agency or agency of a political subdivision of a state and its contractors must comply with section 6002 of the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act. The requirements of Section 6002 include procuring only items designated in guidelines of the Environmental Protection Agency (EPA) at 40 CFR part 247 that contain the highest percentage of recovered materials practicable, consistent with maintaining a satisfactory level of competition, where the purchase price of the item exceeds $10,000 or the value of the quantity acquired during the preceding fiscal year exceeded $10,000; procuring solid waste management services in a manner that maximizes energy and resource recovery; and establishing an affirmative procurement program for procurement of recovered materials identified in the EPA guidelines.

(K) § 200.216. Prohibition on certain telecommunications and video surveillance services or equipment

(a) Recipients and subrecipients are prohibited from obligating or expending loan or grant

funds to:

(1) Procure or obtain;

(2) Extend or renew a contract to procure or obtain; or

(3) Enter into a contract (or extend or renew a contract) to procure or obtain equipment, services, or systems that uses covered telecommunications equipment or services as a substantial or essential component of any system, or as critical technology as part of any system. As described in Public Law 115-232, section 889, covered telecommunications equipment is telecommunications equipment produced by Huawei Technologies Company or ZTE Corporation (or any subsidiary or affiliate of such entities).

(i) For the purpose of public safety, security of government facilities, physical security surveillance of critical infrastructure, and other national security purposes, video surveillance and telecommunications equipment produced by Hytera Communications Corporation, Hangzhou Hikvision Digital Technology Company, or Dahua Technology Company (or any subsidiary or affiliate of such entities).

(ii) Telecommunications or video surveillance services provided by such entities or using such equipment.

(iii) Telecommunications or video surveillance equipment or services produced or provided by an entity that the Secretary of Defense, in consultation with the Director of the National Intelligence or the Director of the Federal Bureau of Investigation, reasonably believes to be an entity owned or controlled by, or otherwise connected to, the government of a covered foreign country.

(b) In implementing the prohibition under Public Law 115-232, section 889, subsection (f), paragraph (1), heads of executive agencies administering loan, grant, or subsidy programs shall prioritize available funding and technical support to assist affected businesses, institutions and organizations as is reasonably necessary for those affected entities to transition from covered communications equipment and services, to procure replacement equipment and services, and to ensure that communications service to users and customers is sustained.

(c) See Public Law 115-232, section 889 for additional information.

(d) See also § 200.471.

(L) § 200.322. Domestic preferences for procurements –

(a) As appropriate and to the extent consistent with law, the non-Federal entity should, to the greatest extent practicable under a Federal award, provide a preference for the purchase, acquisition, or use of goods, products, or materials produced in the United States (including but not limited to iron, aluminum, steel, cement, and other manufactured products). The requirements of this section must be included in all subawards including all contracts and purchase orders for work or products under this award.

(b) For purposes of this section:

(1) "Produced in the United States" means, for iron and steel products, that all manufacturing processes, from the initial melting stage through the application of coatings, occurred in the United States.

(2) "Manufactured products" means items and construction materials composed in whole or in part of non-ferrous metals such as aluminum; plastics and polymer-based products such as polyvinyl chloride pipe; aggregates such as concrete; glass, including optical fiber; and lumber.

[78 FR 78608, Dec. 26, 2013, as amended at 79 FR 75888, Dec. 19, 2014; 85 FR 49577, Aug. 13, 2020]

End of 2 C.F.R. Appendix II to Part 200

*NOTE: For federal grant funded ARPA projects, the Davis-Bacon Act applies to infrastructure projects over $10 million. Additionally, recipients may be otherwise subject to the requirements of the Davis-Bacon Act, when CSFRF/CLFRF award funds are used on a construction project in conjunction with funds from another federal program that requires enforcement of the Davis-Bacon Act.
Wage Determinations can be located at https://sam.gov/content/wage-determinations.

ARTICLE 11. MISCELLANEOUS

11.1 Terms used in this Agreement that are defined in Article 1 (Definitions) of the General Conditions shall have the meanings indicated in the General Conditions, as may be modified in the Supplementary Conditions.

11.2 No assignment by a party hereto of any rights under, or interests in, the Contract Documents will be binding on another party hereto without the written consent of the party sought to be bound; and specifically, but without limitation, moneys that may become due, and moneys that are due, may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the contrary in any written consent to an assignment, no assignment will release or discharge the assignor from any duty or responsibility under the Contract Documents. Notwithstanding the foregoing, the Owner may assign this contract to the State of Florida or any political subdivision, municipality, special district or authority thereof without Contractor's consent and without recourse.

11.3 Owner and Contractor each binds himself, his partners, successors, assigns and legal representatives to the other party hereto, his partners, successors, assigns, and legal representatives in respect to all covenants, agreements, and obligations contained in the Contract Documents.

11.4 Chapter 558, Florida Statutes: The parties agree that the provisions of Chapter 558, Florida Statutes are not applicable to this Agreement.

11.5 Waiver of Jury Trial; Legal Costs. It is mutually agreed by and between the Contract and Owner that each of the parties do hereby waive trial by jury in any action, proceeding or claim which may be brought by either of the parties hereto against the other on any matters concerning or arising out of this Agreement. The parties further agree that the sole and exclusive venue for any action to enforce this agreement shall be in The Circuit Court of the Ninth Judicial Circuit in and for Orange County, Florida.

11.6 SCRUTINIZED COMPANIES: The Respondent certifies that the company is not participating in a boycott of Israel. The Respondent certifies that the Respondent is not on the Scrutinized Companies that Boycott Israel List, not on the Scrutinized Companies with Activities in Sudan List, not on the Scrutinized Companies with

activities in the Iran Petroleum Energy Sector List, or has been engaged in business operations in Cuba or Syria, as those terms are used and defined in sections 287.135 and 215.473 of the Florida Statutes. In the event that the Respondent is unable to provide such certification but still seeks to be considered for award of this solicitation, the Respondent shall, on a separate piece of paper, clearly state that it is on one or both of the Scrutinized Companies lists and shall furnish together with its proposal a duly executed written explanation of the facts supporting any exception to the requirement for certification that it claims under Section 287.135 of the Florida Statutes. The Respondent agrees to cooperate fully with the City in any investigation undertaken by the City to determine whether the claimed exception would be applicable. The City shall have the right to terminate any contract resulting from this solicitation for default if the Respondent is found to have submitted a false certification, or to have been placed on the Scrutinized Companies that Boycott Israel List, or to have been placed on the Scrutinized Companies for Activities in Sudan List, or the Scrutinized Companies with Activities in the Iran Petroleum Energy Sector List, or has been engaged in business operations in Cuba or Syria.

11.7 Any provision or part of the Contract Documents held to be void or unenforceable under any Law or Regulation shall be deemed stricken, and all remaining provisions shall continue to be valid and binding upon Owner and Contractor, who agree that the Contract Documents shall be reformed to replace such stricken provision or part thereof with a valid and enforceable provision that comes as close as possible to expressing the intention of the stricken provision.

11.8 To the degree records are not exempt or confidential under Florida's Public Records law, Contractor agrees to comply with Chapter 119, Florida Statutes, and particularly Section 119.0701, Florida Statutes, relating to a contractor's obligation with regard to public records.

11.9 PUBLIC RECORDS COMPLIANCE

The City of Ocoee (City) is a public agency subject to Chapter 119, Florida Statutes. Contractor agrees to comply with Florida's Public Records Law. Specifically, Contractor shall:

1. Keep and maintain public records required by City to perform the service.
2. Upon request from City's custodian of public records, provide City with a copy of the requested records or allow the records to be inspected or copied within a reasonable time at a cost that does not exceed the cost provided in chapter 119, Florida Statutes, or as otherwise provided by law.
3. Ensure that public records that are exempt or confidential and exempt from the public records disclosure requirements are not disclosed except as authorized by law for the duration of the contract term and following completion of the contract if Contractor does not transfer the records to City.
4. Upon completion of the contract, Contractor agrees to transfer at no cost to City all public records in possession of Contractor or keep and maintain public records

required by City to perform the service. If Contractor transfers all public record to City upon completion of the contract, Contractor shall destroy any duplicate public records that are exempt or confidential and exempt from public records disclosure requirements. If Contractor keeps and maintains public records upon completion of the contract, Contractor shall meet all applicable requirements for retaining public records. All records stored electronically must be provided to City, upon request from City's custodian of public records, in a format that is compatible with the information technology systems of City.

5. A Contractor who fails to provide the public records to City within a reasonable time may be subject to penalties under section 119.10, Florida Statutes.

IF CONTRACTOR HAS QUESTIONS REGARDING THE APPLICATION OF CHAPTER 119, FLORIDA STATUTES, TO CONTRACTOR'S DUTY TO PROVIDE PUBLIC RECORDS RELATING TO THIS CONTRACT, CONTACT THE CUSTODIAN OF PUBLIC RECORDS AT 407-905-3100, EXTENSION 1022, CCDL@OCOEE.ORG, WITH AN OFFICE LOCATED AT 1 N. BLUFORD AVENUE, OCOEE, FLORIDA 34761.

11.10 By entering into this Contract, the awarded Contractor is obligated to comply with the provisions of § 448.095, Fla. Stat., "Employment Eligibility." This includes, but is not limited to utilization of the E-Verify System to verify the work authorization status of all newly hired employees, and requiring all subcontractors to provide an affidavit attesting that the subcontractor does not employ, contract with, or subcontract with, an alien unauthorized to work in the USA. Failure to comply will lead to termination of this contract, or if a subcontractor knowingly violates the statute, the subcontractor must be terminated immediately. If the Contract is terminated pursuant to Section 448.095, Fla. Stat., such termination is not a breach of contract and may not be considered as such. Any challenge to termination under this provision must be filed in the Ninth Judicial Circuit Court of Florida no later than 20 calendar days after the date of termination. If the Contract is terminated for a violation of Section 448.095 Fla. Stat., by the Contractor, the Contractor shall be liable for any additional costs incurred by the City as a result of the termination of the Contract. Nothing in the E-Verify Certification shall be construed to allow intentional discrimination of any class protected by law.

E-VERIFY REGISTRATION AND USE.

A. Pursuant to section 448.095, Florida Statutes, Contractor shall register with and use the U.S. Department of Homeland Security's E-Verify system, https://e-verify.uscis.gov/emp, to verify the work authorization status of all Contractor employees hired on and after January 1, 2021.

B. Subcontractors

(i) Contractor shall also require all subcontractors performing work under this Agreement to use the E-Verify system for any employees they may hire during the term of this Agreement.

(ii) Contractor shall obtain from all such subcontractors an affidavit stating the subcontractor does not employ, contract with, or subcontract with an unauthorized alien, as defined in section 448.095, Florida Statutes.

(iii) Contractor shall maintain a copy of all subcontractor affidavits for the duration of the Agreement.

C. Contractor must provide evidence of compliance with section 448.095, Florida Statutes. Evidence shall consist of an affidavit from the Contractor stating all employees hired on and after January 1, 2021 have had their work authorization status verified through the E-Verify system and a copy of their proof of registration in the E-Verify system.

D. Failure to comply with this provision is a material breach of the Agreement, and shall result in the immediate termination of the Agreement without penalty to the City. Contractor shall be liable for all costs incurred by the City to secure a replacement Agreement, including but not limited to, any increased costs for the same services, any costs due to delay, and rebidding costs, if applicable.

(Remainder of page left blank intentionally.)

IN WITNESS WHEREOF, the parties hereto have signed this Agreement. All portions of the Contract Documents have been signed or identified by Owner and Contractor or by Engineer on his behalf.

CONTRACTOR:

BY: _____

PRINT NAME: _____

TITLE: _____

WITNESSES:

NAME:_____ NAME:_____

TITLE: _____ TITLE: _____

OWNER: CITY OF OCOEE, FLORIDA

ATTEST:

BY: _____
Melanie Sibbitt, City Clerk

(SEAL)

APPROVED:

BY: _____
Rusty Johnson, Mayor

FOR USE AND RELIANCE ONLY BY
THE CITY OF OCOEE, FLORIDA
APPROVED AS TO FORM AND LEGALITY
this ___ day of _____, 202__

FISHBACK DOMINICK

BY: _____
Richard S. Geller, Esq., City Attorney

APPROVED BY CITY OF OCOEE
COMMISSION AT A MEETING HELD
on _____, under Agenda Item __.

END OF SECTION

SECTION 00610

PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS that _____ _____, (hereinafter referred to as "Principal"), and _____, a corporation organized under the laws of the State of _____and licensed to do business in the State of _____, (hereinafter referred to as "Surety"), and held and firmly bound unto the City of Ocoee, Florida, as Obligee, (hereinafter referred to as "Obligee"), in the Penal Sum of _____, for the payment of which sum well and truly made, Principal and Surety bind themselves, their heirs, personal representatives, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, Principal has by written agreement dated _____, 20___, entered into a contract, (hereinafter referred to as the "Contract") with Obligee for the construction of **Ocoee WWTF Electrical Upgrade and Expansion** (hereinafter referred to as the "Project") in accordance with the plans and specifications dated October 2023 and the Project Manual prepared by CPH, LLC and the City of Ocoee dated October 2023; and

NOW, THEREFORE, THE CONDITIONS OF THIS OBLIGATION IS SUCH THAT IF Principal shall well and truly perform all the undertakings, covenants, terms, conditions, and agreements of said Contract including, but not limited to, the making of payments to persons or entities providing labor, materials or services to Principal under the Contract, as well as, fulfilling all warranty obligations required after the Certificate of Completion is issued, within the time provided therein, and any extensions thereof that may be granted by Obligee, and also during the life of any warranty or guaranty required under said Contract, and shall also well and truly perform all undertakings, covenants, terms, conditions, and agreements of any and all duly authorized and modifications of said Contract that may hereafter be made, and shall pay, compensate, indemnify and save harmless the said Obligee of and from any and all loss, damage and expense, or from any breach or default by Principal under the Contract, including, but not limited to, liquidated damages, damages caused by delays in performance of the Principal, expenses, cost and attorneys' fees, including appellate proceedings, that Obligee sustains resulting directly or indirectly from failure of the Principal to perform the Work identified by the Contract, then this obligations shall be null and void; otherwise, it shall remain in full force and effect and Surety shall be liable to Obligee under this Performance Bond.

The Surety's obligations hereunder shall be direct and immediate and not conditional or contingent upon Obligee's pursuit of its remedies against Principal, and shall remain in full force and effect notwithstanding (i) amendments or modifications to the contract or contract entered into by Obligee and Principal without the Surety's knowledge or consent; (ii) waivers of compliance with or any default under the Contract granted by Obligee to Principal or by Principal to Obligee without the Surety's knowledge or consent; (iii) the discharge of Principal from its obligations under the Contract as a result of any proceeding initiated under The Bankruptcy Code of 1978, as the same may be amended, or any similar state or federal law, or any limitation of the liability of Principal or its estate as a result of any such proceedings; or (iv)

any other action taken by Obligee or Principal that would, in the absence of this clause, result in the release or discharge by operation of law of the Surety from its obligations hereunder.

In the event that the Surety fails to fulfill its obligations under this Performance Bond, then the Surety shall also indemnify and save the Obligee harmless from any and all loss, damage, cost and expense, including reasonable attorneys' fees and other legal costs for all trial and appellate proceedings, resulting directly or indirectly from the Surety's failure to fulfill its obligations hereunder. This paragraph shall survive the termination or cancellation of this Performance Bond. The obligations set forth in this paragraph shall not be limited by the Penal Sum of this Bond.

Any changes in or under the Contract or the Contract and compliance or noncompliance with any formalities connected with the Contract or the Contract or the changes therein shall not affect Surety's obligations under this bond, and Surety hereby waives notice of any such changes. Further, Principal and Surety acknowledge that the Penal Sum of this bond shall increase or decrease in accordance with approved changes or modifications to the Contract.

The said Principal and the said surety agree that this bond shall inure to the benefit of all persons supplying labor and material in the prosecution of the work provided for in the said subcontract, as well as to the Obligee, and that such persons may maintain independent actions upon this bond in their own names.

IN WITNESS WHEREOF, Principal and Surety have executed this instrument under their several seals on the _____ day of _____, 20__, the name and corporate seal of each corporate party being hereto affixed and these presents fully signed by its undersigned representative, pursuant to the authority of its governing body.

Signed, sealed and delivered in the presence of:

_____Principal

By:_____(SEAL)

_____ (Official Title)

_____Surety

By:_____ (SEAL)

_____ (Official Title)

NOTES: If Principal and Surety are corporations, the respective corporate seal should be affixed and attached.

Surety shall execute and attach a certified copy of Power of Attorney Appointing Individual Attorney-In-Fact for execution of Performance Bond on behalf of Surety.

END OF SECTION

SECTION 00620
STATUTORY PAYMENT BOND

Bidder shall provide the City with a Statutory Payment Bond in the amount of the contract bid.

Statutory Payment Bond
Pursuant to Florida Statutes, 255.05, et seq.

KNOW ALL MEN BY THESE PRESENTS, THAT _____ (hereinafter called the "Principal"), as Principal, and _____, a corporation organized and existing under the laws of the State of _____, hereinafter called the "Surety"), as Surety, are held and firmly bound unto the City of Ocoee, Florida, (hereinafter called the "Obligee"), by bond number _____ in the sum of _____ _____ Dollars and ____Cents ($_____), for the payment of which sum well and truly to be made, the said Principal and Surety bind themselves, and their respective heirs, administrators, executors, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has entered into a written Contract with the Obligee dated ____ _____, 20__ to perform, as Contractor, in accordance with the Contract and Contract Documents, which Contract and Contract Documents are hereby incorporated herein by reference.

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION IS SUCH, that if the Principal promptly makes payments to all claimants, as defined in Section 255.05 (1), Florida Statutes, that provide or furnish the Principal with labor, materials, or supplies, used directly or indirectly by Principal in the prosecution of the work provided for in the contract, then this obligation shall be null and void; otherwise it shall remain in full force and effect.

The Principal and the Surety agree that this Bond shall inure to the benefit of all claimants, as defined in Section 255.05 (1), Florida Statutes, that provide or furnish the Principal with labor, materials, or supplies, used directly or indirectly by Principal in the prosecution of the work provided for in said Contract, and that any such claimant may maintain an independent action upon this Bond in its own name.

The provisions of Florida Statutes, Section 255.05, et seq. are hereby incorporated herein by reference and made a part of this payment bond including, but not limited to, the notice and time limitation provisions in subsection (2). Any action instituted by a claimant under this bond for payment must be in accordance with the notice and time limitation provisions in Section 255.05 (2), Florida Statutes.

IN WITNESS WHEREOF, the above bounden parties have executed this instrument under their several seals this _____ day of _____, 20__, the name and corporate seal of each corporate party being hereto affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body.

_____(Seal)
(Principal)

By _____
(Name & Title)

_____
(Signature)

_____
Witness or Secretary's Attestation

_____(Seal)
(Surety)

By _____
(Name & Title*)

_____
(Signature)

_____
Witness or Secretary's Attestation

*Attach Power-Of-Attorney

END OF SECTION

SECTION 00630

CONSTRUCTION PERFORMANCE AND PAYMENT BONDS

CITY OF OCOEE

ITB #24-001 Ocoee WWTF Electrical Upgrade and Expansion

I, _____, certify that I am the Secretary of the corporation named as Principal in the foregoing Construction Performance and Payment Bonds; that _____, who signed the said Bonds on behalf of the Principal, was then _____of said corporation; that I know (his, her) signature, and (his, her) signature thereto is genuine, and that said Bonds were duly signed, sealed, and attested for and in behalf of said corporation by authority of its governing body.

_____

Secretary

(Corporate Seal)

(SURETY COMPANY LETTERHEAD)

_____, 20__

Shannon Hopper
Purchasing Technician
City of Ocoee
1 N. Bluford Avenue
Ocoee, FL 34761
(407) 905-3100 ext. 1524

RE: Construction Performance and Payment Bonds
Authority to Date Bond and Power of Attorney
Bond No.: _____
Project Name: CITY OF OCOEE
ITB #24-001 Ocoee WWTF Electrical Upgrade and Expansion

Dear Ms. Hopper:

Please be advised that as Obligee on the above referenced bond executed in your behalf for the captioned project, you are hereby authorized to date the bonds and the powers of attorney concurrent with the date of the contract.

Best Regards,

_____
(Surety Company's Name)

_____
Attorney-in-Fact

END OF SECTION

SECTION 00640

WAIVER OF RIGHT TO CLAIM AGAINST THE PAYMENT BOND (FINAL PAYMENT) (Section 255.05)

The undersigned, in consideration of the final payment in the amount of $_____

hereby waives its right to claim against the payment bond for labor, services, or materials furnished

to _____insert the name of your customer) on the job of _____

(insert name of the owner), for improvements to the following described project:

DESCRIPTION OF PROJECT:

- Ocoee WWTF Electrical Upgrade and Expansion project is located in, Ocoee, Florida. All Work for the project shall be constructed in accordance with the drawings and specifications prepared for the City by CPH, LLC. The project will be awarded and constructed, in conformance with these plans, specifications, Project Manual and City of Ocoee Engineering Standards Manual. Bids shall be deemed to include all items necessary for the furnishing, delivering, and installing of all materials, equipment, incidentals, and services, including all labor for the work to construct and make complete the Ocoee WWTF Electrical Upgrade and Expansion.
- Work under this contract comprises furnishing the labor, material, equipment, tools, services and other incidentals required to construct and make complete for use the construction of Ocoee WWTF Electrical Upgrade and Expansion. The project consists generally of the construction of a new electrical building for the City's wastewater treatment facility.
- This Scope of Work is not to be limited by this description and will include additional and incidental related work as required and more fully set forth in the Contract Documents.
- Omission of a specific item or component part of a system obviously necessary for the proper functioning of the system shall not relieve the Contractor of the responsibility of furnishing the item as part of the work at no additional cost to the Owner.
- The Contractor shall perform the work complete, in place, and ready for continuous service, and shall include repairs, testing, permits, cleanup, replacements and restoration required as a result of damages caused during this construction.

DATE _____,

_____ (Claimant)

By:_____

END OF SECTION

SECTION 00650
INSURANCE CERTIFICATE

Bidder is to provide City of Ocoee with completed Certificate Liability Insurance listing City of Ocoee as a Certificate Holder, and listing the City of Ocoee as Additional Insured.

ACORD **CERTIFICATE OF LIABILITY INSURANCE**

OP ID JC
FRAZE-1

DATE (MM/DD/YYYY) 11/04/04

PRODUCER

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW.

INSURED

Contractor's Name
Address

INSURERS AFFORDING COVERAGE	NAIC #
INSURER A: AM Best Rating A- or Better	
INSURER B:	
INSURER C:	
INSURER D:	
INSURER E:	

COVERAGES

THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. AGGREGATE LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	ADD'L INSRD	TYPE OF INSURANCE	POLICY NUMBER	POLICY EFFECTIVE DATE (MM/DD/YY)	POLICY EXPIRATION DATE (MM/DD/YY)	LIMITS	
	X	GENERAL LIABILITY				EACH OCCURRENCE	$ 1,000,000
		X COMMERCIAL GENERAL LIABILITY				DAMAGE TO RENTED PREMISES (Ea occurence)	$ 50,000
		CLAIMS MADE X OCCUR				MED EXP (Any one person)	$ 5,000
						PERSONAL & ADV INJURY	$ 1,000,000
						GENERAL AGGREGATE	$ 2,000,000
		GEN'L AGGREGATE LIMIT APPLIES PER:				PRODUCTS - COMP/OP AGG	$ 2,000,000
		POLICY X PRO-JECT LOC					
		AUTOMOBILE LIABILITY				COMBINED SINGLE LIMIT (Ea accident)	$ 1,000,000
		X ANY AUTO				BODILY INJURY (Per person)	$
		ALL OWNED AUTOS					
		SCHEDULED AUTOS				BODILY INJURY (Per accident)	$
		X HIRED AUTOS					
		X NON-OWNED AUTOS				PROPERTY DAMAGE (Per accident)	$
		GARAGE LIABILITY				AUTO ONLY - EA ACCIDENT	$
		ANY AUTO				OTHER THAN AUTO ONLY: EA ACC	$
						AGG	$
		EXCESS/UMBRELLA LIABILITY				EACH OCCURRENCE	$ 1,000,000
	X	X OCCUR CLAIMS MADE				AGGREGATE	$ 2,000,000
							$
		DEDUCTIBLE					$
		RETENTION $					$
		WORKERS COMPENSATION AND EMPLOYERS' LIABILITY				X WC STATU-TORY LIMITS / OTH-ER	
		ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED?				E.L. EACH ACCIDENT	$ 500,000
		If yes, describe under SPECIAL PROVISIONS below				E.L. DISEASE - EA EMPLOYEE	$ 500,000
						E.L. DISEASE - POLICY LIMIT	$ 500,000
		OTHER					
		Builders Risk				Any 1 Loc	100,000
						Any 1 Occ	1,000,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES / EXCLUSIONS ADDED BY ENDORSEMENT / SPECIAL PROVISIONS

The insurance evidenced by this certificate shall name the certificate holders as an additional insured on the General Liability & Umbrella Liability. Workers' Compensation, Employers' Liability & General Liability shall contain a Waiver of Subrogation in favor of the certificate holder. The certificate holder is added as a named insured for Builders Risk.

CERTIFICATE HOLDER

OCOEE01

City of Ocoee
150 N. Lakeshore Drive
Ocoee FL 34761-2258

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, THE ISSUING INSURER WILL ENDEAVOR TO MAIL 10 DAYS WRITTEN NOTICE TO THE CERTIFICATE HOLDER NAMED TO THE LEFT, BUT FAILURE TO DO SO SHALL IMPOSE NO OBLIGATION OR LIABILITY OF ANY KIND UPON THE INSURER, ITS AGENTS OR REPRESENTATIVES.

AUTHORIZED REPRESENTATIVE

ACORD 25 (2001/08)

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SAMPLE

STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

City of Ocoee

(Revised November, 2023)

Notice: This section of the Project Manual is derived and adapted from the EJCDC C-710 Standard General Conditions of the Construction Contract, Funding Agency Edition, *but has been substantially modified to conform to the needs of the City of Ocoee. The City does not represent or imply that this is an EJCDC document. Those portions included from EJCDC publications are copyrighted and subject to the terms and conditions of a license granted to the City of Ocoee for their use.*

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GENERAL CONDITIONS

ARTICLE 1 – DEFINITIONS AND TERMINOLOGY

1.01 *Defined Terms*

A. Wherever used in the Bidding Requirements or Contract Documents and printed with initial capital letters, the terms listed below will have the meanings indicated which are applicable to both the singular and plural thereof. In addition to terms specifically defined, terms with initial capital letters in the Contract Documents include references to identified articles and paragraphs, and the titles of other documents or forms.

1. *Addenda* – Written or graphic instruments issued prior to the opening of Bids which clarify, correct, or change the Bidding Requirements or the proposed Contract Documents.

2. *Agency* – The Federal or state governmental agency named as such in the Agreement, which in this instance is the City of Ocoee. .

3. *Agreement* – The written instrument which is evidence of the agreement between Owner and Contractor covering the Work.

4. *Application for Payment* – The form acceptable to Engineer which is to be used by Contractor during the course of the Work in requesting progress or final payments and which is to be accompanied by such supporting documentation as is required by the Contract Documents.

5. *Asbestos* – Any material that contains more than one percent asbestos and is friable or is releasing asbestos fibers into the air above current action levels established by the United States Occupational Safety and Health Administration.

6. *Bid* – The offer or proposal of a Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.

7. *Bidder* – The individual or entity who submits a Bid directly to Owner in accordance with the Bidding Documents.

8. *Bidding Documents* – The Bidding Requirements and the proposed Contract Documents (including all Addenda). This may include the Invitation To Bid and the Instructions to Bidders

9. *Bidding Requirements* – The Advertisement or Invitation to Bid, Instructions to Bidders, bid security of acceptable form, if any, and the Bid Form with any supplements.

10. *Change Order* – A document recommended by Engineer which is signed by Contractor and Owner and Agency and authorizes an addition, deletion, or revision in the Work or an adjustment in the Contract Price or the Contract Times, issued on or after the Effective Date of the Agreement.

11. *Claim* – A demand or assertion by Owner or Contractor seeking an adjustment of Contract Price or Contract Times, or both, or other relief with respect to the terms of the Contract. A demand for money or services by a third party is not a Claim.

12. *Contract* – The entire and integrated written agreement between the Owner and Contractor concerning the Work. The Contract supersedes prior negotiations, representations, or agreements, whether written or oral.

13. *Contract Documents* – Those items so designated in the Agreement. Only printed or hard copies of the items listed in the Agreement are Contract Documents. Approved Shop Drawings, other Contractor's submittals, and the reports and drawings of subsurface and physical conditions are not Contract Documents.

14. *Contract Price* – The moneys payable by Owner to Contractor for completion of the Work in accordance with the Contract Documents as stated in the Agreement (subject to the provisions of Paragraph 11.03 in the case of Unit Price Work).

15. *Contract Times* – The number of days or the dates stated in the Agreement to: (i) achieve Milestones, if any, (ii) achieve Substantial Completion; and (iii) complete the Work so that it is ready for final payment as evidenced by Engineer's written recommendation of final payment.

16. *Contractor* – The individual or entity with whom Owner has entered into the Agreement.

17. *Cost of the Work* – See Paragraph 11.01.A for definition.

18. *Drawings* – That part of the Contract Documents prepared or approved by Engineer which graphically shows the scope, extent, and character of the Work to be performed by Contractor. Shop Drawings and other Contractor submittals are not Drawings as so defined.

19. *Effective Date of the Agreement* – The date indicated in the Agreement on which it becomes effective, but if no such date is indicated, it means the date on which the Agreement is signed and delivered by the last of the two parties to sign and deliver.

20. *Engineer* – The individual or entity named as such in the Agreement.

21. *Field Order* – A written order issued by Engineer which requires minor changes in the Work but which does not involve a change in the Contract Price or the Contract Times.

22. *General Requirements* – Sections of Division 1 of the Specifications. The General Requirements pertain to all sections of the Specifications.

23. *Hazardous Environmental Condition* – The presence at the Site of Asbestos, PCBs, Petroleum, Hazardous Waste, or Radioactive Material in such quantities or circumstances that may present a substantial danger to persons or property exposed thereto in connection with the Work.

24. *Hazardous Waste* – The term Hazardous Waste shall have the meaning provided in Section 1004 of the Solid Waste Disposal Act (42 USC Section 6903) as amended from time to time.

25. *Laws and Regulations; Laws or Regulations* – Any and all applicable laws, rules, regulations, ordinances, codes, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.

26. *Liens* – Charges, security interests, or encumbrances upon Project funds, real property, or personal property.

27. *Milestone* – A principal event specified in the Contract Documents relating to an intermediate completion date or time prior to Substantial Completion of all the Work.

28. *Notice of Award* – The written notice by Owner to the Successful Bidder stating that upon timely compliance by the Successful Bidder with the conditions precedent listed therein, Owner will sign and deliver the Agreement.

29. *Notice to Proceed* – A written notice given by Owner to Contractor fixing the date on which the Contract Times will commence to run and on which Contractor shall start to perform the Work under the Contract Documents.

30. *Owner* – The individual or entity with whom Contractor has entered into the Agreement and for whom the Work is to be performed. For purposes of this Agreement, the Owner is the City of Ocoee, referred to either as the City or the Owner.

31. *PCBs* – Polychlorinated biphenyls.

32. *Petroleum* – Petroleum, including crude oil or any fraction thereof which is liquid at standard conditions of temperature and pressure (60 degrees Fahrenheit and 14.7 pounds per square inch absolute), such as oil, petroleum, fuel oil, oil sludge, oil refuse, gasoline, kerosene, and oil mixed with other non-Hazardous Waste and crude oils.

33. *Progress Schedule* – A schedule, prepared and maintained by Contractor, describing the sequence and duration of the activities comprising the Contractor's plan to accomplish the Work within the Contract Times.

34. *Project* – The total construction of which the Work to be performed under the Contract Documents may be the whole, or a part.

35. *Project Manual* – The bound documentary information prepared for bidding and constructing the Work. A listing of the contents of the Project Manual, which may be bound in one or more volumes, is contained in the table(s) of contents.

36. *Radioactive Material* – Source, special nuclear, or byproduct material as defined by the Atomic Energy Act of 1954 (42 USC Section 2011 et seq.) as amended from time to time.

37. *Related Entity* – An officer, director, partner, employee, agent, consultant, or subcontractor.

38. *Resident Project Representative* – The authorized representative of Engineer who may be assigned to the Site or any part thereof.

39. *Samples* – Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and which establish the standards by which such portion of the Work will be judged.

40. *Schedule of Submittals* – A schedule, prepared and maintained by Contractor, of required submittals and the time requirements to support scheduled performance of related construction activities.

41. *Schedule of Values* – A schedule, prepared and maintained by Contractor, allocating portions of the Contract Price to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.

42. *Shop Drawings* – All drawings, diagrams, illustrations, schedules, and other data or information which are specifically prepared or assembled by or for Contractor and submitted by Contractor to illustrate some portion of the Work.

43. *Site* – Lands or areas indicated in the Contract Documents as being furnished by Owner upon which the Work is to be performed, including rights-of-way and easements for access thereto, and such other lands furnished by Owner which are designated for the use of Contractor.

44. *Specifications* – That part of the Contract Documents consisting of written requirements for materials, equipment, systems, standards and workmanship as applied to the Work, and certain administrative requirements and procedural matters applicable thereto. The Specifications are included in the Project Manual for the project.

45. *Subcontractor* – An individual or entity having a direct contract with Contractor or with any other Subcontractor for the performance of a part of the Work at the Site.

46. *Substantial Completion* – The time at which the Work (or a specified part thereof) has progressed to the point where, in the opinion of Engineer, the Work (or a specified part thereof) is sufficiently complete, in accordance with the Contract Documents, so that the Work (or a specified part thereof) can be utilized for the purposes for which it is intended. The terms "substantially complete" and "substantially completed" as applied to all or part of the Work refer to Substantial Completion thereof. Final Completion shall be achieved only be acceptance of all of the Work by the Owner, as evidenced by its signature on the Final Certificate of Completion, which, in any event, shall only occur after the Owner has observed and approved such demonstration testing of the Project or has otherwise assured itself that all of the provisions and requirements of the Contract Documents have been fully satisfied.

47. *Successful Bidder* – The Bidder submitting a responsive Bid to whom Owner makes an award.

48. *Supplementary Conditions* – That part of the Contract Documents which amends or supplements these General Conditions.

49. *Supplier* – A manufacturer, fabricator, supplier, distributor, materialman, or vendor having a direct contract with Contractor or with any Subcontractor to furnish materials or equipment to be incorporated in the Work by Contractor or any Subcontractor.

50. *Underground Facilities* – All underground pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or attachments, and any encasements containing such facilities, including those that convey electricity, gases, steam, liquid petroleum products, telephone or other communications, cable television, water, wastewater, storm water, other liquids or chemicals, or traffic or other control systems.

51. *Unit Price Work* – Work to be paid for on the basis of unit prices.

52. *Work* – The entire construction or the various separately identifiable parts thereof required to be provided under the Contract Documents. Work includes and is the result of performing or providing all labor, services, and documentation necessary to produce such construction, and furnishing, installing, and incorporating all materials and equipment into such construction, all as required by the Contract Documents.

53. *Work Change Directive* – A written statement to Contractor issued on or after the Effective Date of the Agreement and signed by Owner and Agency upon recommendation of the Engineer ordering an addition, deletion, or revision in the Work, or responding to differing or unforeseen subsurface or physical conditions under which the Work is to be performed or to emergencies. A Work Change Directive will not change the Contract Price or the Contract Times but is evidence that the parties expect that the change ordered or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order following negotiations by the parties as to its effect, if any, on the Contract Price or Contract Times.

1.02 *Terminology*

A. The following words or terms are not defined but, when used in the Bidding Requirements or Contract Documents, have the following meaning.

B. *Intent of Certain Terms or Adjectives*

1. The Contract Documents include the terms "as allowed," "as approved," "as ordered", "as directed" or terms of like effect or import to authorize an exercise of professional judgment by Engineer. In addition, the adjectives "reasonable," "suitable," "acceptable," "proper," "satisfactory," or adjectives of like effect or import are used to describe an action or determination of Engineer as to the Work. It is intended that such exercise of professional judgment, action or determination will be solely to evaluate, in general, the Work for compliance with the requirements of and information in the Contract Documents and conformance with the design concept of the completed Project as a functioning whole as shown or indicated in the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective is not intended to and shall not be effective to assign to Engineer any duty or authority to supervise or direct the performance of the Work

or any duty or authority to undertake responsibility contrary to the provisions of Paragraph 9.09 or any other provision of the Contract Documents.

C. *Day*

1. The word "day" means a calendar day of 24 hours measured from midnight to the next midnight.

D. *Defective*

1. The word "defective," when modifying the word "Work," refers to Work that is unsatisfactory, faulty, or deficient in that it:

   a. does not conform to the Contract Documents, or

   b. does not meet the requirements of any applicable inspection, reference standard, test, or approval referred to in the Contract Documents, or

   c. has been damaged prior to Engineer's recommendation of final payment (unless responsibility for the protection thereof has been assumed by Owner at Substantial Completion in accordance with Paragraph 14.04 or 14.05).

E. *Furnish, Install, Perform, Provide*

1. The word "furnish," when used in connection with services, materials, or equipment, shall mean to supply and deliver said services, materials, or equipment to the Site (or some other specified location) ready for use or installation and in usable or operable condition.

2. The word "install," when used in connection with services, materials, or equipment, shall mean to put into use or place in final position said services, materials, or equipment complete and ready for intended use.

3. The words "perform" or "provide," when used in connection with services, materials, or equipment, shall mean to furnish and install said services, materials, or equipment complete and ready for intended use.

4. When "furnish," "install," "perform," or "provide" is not used in connection with services, materials, or equipment in a context clearly requiring an obligation of Contractor, "provide" is implied.

F. Unless stated otherwise in the Contract Documents, words or phrases which have a well-known technical or construction industry or trade meaning are used in the Contract Documents in accordance with such recognized meaning.

ARTICLE 2 – PRELIMINARY MATTERS

2.01 *Delivery of Bonds and Evidence of Insurance*

A. When Contractor delivers the executed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner such bonds as Contractor may be required to furnish in accordance with applicable Florida Law..

B. *Evidence of Insurance:* Before any Work at the Site is started, Contractor and Owner shall each deliver to the other, with copies to each additional insured identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance which either of them or any additional insured may reasonably request) which Contractor and Owner respectively are required to purchase and maintain in accordance with Article 5.

2.02 *Copies of Documents*

A. After the Contract has been executed, the Contractor will be furnished one (1) complete set of reproducible plans in electronic format, three (3) signed and sealed full-size prints, and one (1) 11"x17" print of the Drawings, one (1) complete set of the Project Manual (Contract Requirements and Specifications), and one (1) complete set of all addenda. The Contractor shall furnish each of the subcontractors, manufacturers, and material men such copies of the Contract Documents as may be required for their work. All copies of the Contract Documents shall be printed from the reproducible sets furnished to the Contractor. All costs of reproduction and printing shall be borne by the Contractor. The Contractor shall submit a complete set of reproducible Mylar ® sepias back to the Engineer as Project Record Drawings, as addressed in Section 1.07.E of the Contract General Requirements..

2.03 *Commencement of Contract Times; Notice to Proceed*

A. A Notice to Proceed may be given to Contractor at any time within thirty (30) days after the Effective Date of the Agreement. The Contract Time will commence to run on the date specified in the Notice to Proceed.

2.04 *Starting the Work*

A. Contractor shall start to perform the Work on the date when the Contract Times commence to run. No Work shall be done at the Site prior to the date on which the Contract Times commence to run.

2.05 *Before Starting Construction*

A. *Preliminary Schedules:* Within 21 days after the Contract Award, but in any event no later than the Preconstruction Conference, Contractor shall submit to Engineer for timely review**:**

1. a preliminary Progress Schedule;

2. a preliminary Schedule of Submittals; and

3. a preliminary Schedule of Values for all of the Work which includes quantities and prices of items which when added together equal the Contract Price and subdivides the Work into component parts in sufficient detail to serve as the basis for progress payments during performance of the Work. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work.

2.06 *Preconstruction Conference*

A. Before any Work at the Site is started, a conference attended by Owner, Contractor, Engineer, Agency, and others as appropriate will be held to establish a working understanding among the parties as to the Work and to discuss the schedules referred to in Paragraph 2.05.A, procedures for handling Shop Drawings and other submittals, processing Applications for Payment, and maintaining required records.

2.07 *Initial Acceptance of Schedules*

A. At least 10 days before submission of the first Application for Payment a conference attended by Contractor, Engineer, and others as appropriate will be held to review for acceptability to Engineer as provided below the schedules submitted in accordance with Paragraph 2.05.A. Contractor shall have an additional 10 days to make corrections and adjustments and to complete and resubmit the schedules. No progress payment shall be made to Contractor until acceptable schedules are submitted to Engineer.

1. The Progress Schedule will be acceptable to Engineer if it provides an orderly progression of the Work to completion within the Contract Times. Such acceptance will not impose on Engineer responsibility for the Progress Schedule, for sequencing, scheduling, or progress of the Work nor interfere with or relieve Contractor from Contractor's full responsibility therefor.

2. Contractor's Schedule of Submittals will be acceptable to Engineer if it provides a workable arrangement for reviewing and processing the required submittals.

3. Contractor's Schedule of Values will be acceptable to Engineer as to form and substance if it provides a reasonable allocation of the Contract Price to component parts of the Work.

ARTICLE 3 – CONTRACT DOCUMENTS: INTENT, AMENDING, REUSE

3.01 *Intent*

A. The Contract Documents are complementary; what is required by one is as binding as if required by all.

B. It is the intent of the Contract Documents to describe a functionally complete Project (or part thereof) to be constructed in accordance with the Contract Documents. Any labor, documentation, services, materials, or equipment that may reasonably be inferred from the Contract Documents or from prevailing custom or trade usage as being required to produce the intended result will be provided whether or not specifically called for at no additional cost to Owner.

C. Clarifications and interpretations of the Contract Documents shall be issued by Engineer as provided in Article 9.

3.02 *Reference Standards*

A. Standards, Specifications, Codes, Laws, and Regulations

1. Reference to standards, specifications, manuals, or codes of any technical society, organization, or association, or to Laws or Regulations, whether such reference be specific or by implication, shall mean the standard, specification, manual, code, or Laws or Regulations in effect at the time of opening of Bids (or on the Effective Date of the Agreement if there were no Bids), except as may be otherwise specifically stated in the Contract Documents.

2. No provision of any such standard, specification, manual or code, or any instruction of a Supplier shall be effective to change the duties or responsibilities of Owner, Contractor, or Engineer, or any of their subcontractors, consultants, agents, or employees from those set forth in the Contract Documents. No such provision or instruction shall be effective to assign to Owner, or Engineer, or any of their Related Entities, any duty or authority to supervise or direct the performance of the Work or any duty or authority to undertake responsibility inconsistent with the provisions of the Contract Documents.

3.03 *Reporting and Resolving Discrepancies*

A. Reporting Discrepancies

1. *Contractor's Review of Contract Documents Before Starting Work*: Before undertaking each part of the Work, Contractor shall carefully study and compare the Contract Documents and check and verify pertinent figures therein and all applicable field measurements. Contractor shall promptly report in writing to Engineer any conflict, error, ambiguity, or discrepancy which Contractor may discover and shall obtain a written interpretation or clarification from Engineer before proceeding with any Work affected thereby.

2. *Contractor's Review of Contract Documents During Performance of Work*: If, during the performance of the Work, Contractor discovers any conflict, error, ambiguity, or discrepancy within the Contract Documents or between the Contract Documents and any provision of any Law or Regulation applicable to the performance of

the Work or of any standard, specification, manual or code, or of any instruction of any Supplier, Contractor shall promptly report it to Engineer in writing. Contractor shall not proceed with the Work affected thereby (except in an emergency as required by Paragraph 6.16.A) until an amendment or supplement to the Contract Documents has been issued by one of the methods indicated in Paragraph 3.04.

3. Contractor shall not be liable to Owner or Engineer for failure to report any conflict, error, ambiguity, or discrepancy in the Contract Documents unless Contractor knew or reasonably should have known thereof.

B. Resolving Discrepancies

1. Except as may be otherwise specifically stated in the Contract Documents, the provisions of the Contract Documents shall take precedence in resolving any conflict, error, ambiguity, or discrepancy between the provisions of the Contract Documents and:

a. the provisions of any standard, specification, manual, code, or instruction (whether or not specifically incorporated by reference in the Contract Documents); or

b. the provisions of any Laws or Regulations applicable to the performance of the Work (unless such an interpretation of the provisions of the Contract Documents would result in violation of such Law or Regulation).

3.04 *Amending and Supplementing Contract Documents*

A. The Contract Documents may be amended to provide for additions, deletions, and revisions in the Work or to modify the terms and conditions thereof by either a Change Order or a Work Change Directive.

B. The requirements of the Contract Documents may be supplemented, and minor variations and deviations in the Work may be authorized, by one or more of the following ways:

1. A Field Order;

2. Engineer's approval of a Shop Drawing or Sample; (Subject to the provisions of Paragraph 6.17.D.3) or

3. Engineer's written interpretation or clarification.

3.05 *Reuse of Documents*

A. Contractor and any Subcontractor or Supplier shall not:

1. have or acquire any title to or ownership rights in any of the Drawings, Specifications, or other documents (or copies of any thereof) prepared by or bearing the seal of Engineer or Engineer's consultants, including electronic media editions; or

2. reuse any of such Drawings, Specifications, other documents, or copies thereof on extensions of the Project or any other project without written consent of Owner and Engineer and specific written verification or adaption by Engineer.

B. The prohibition of this Paragraph 3.05 will survive final payment, or termination of the Contract. Nothing herein shall preclude Contractor from retaining copies of the Contract Documents for record purposes.

3.06 *Electronic Data*

A. Copies of data furnished by Owner or Engineer to Contractor or Contractor to Owner or Engineer that may be relied upon are limited to the printed copies (also known as hard copies). Files in electronic media format of text, data, graphics, or other types are furnished only for the convenience of the receiving party. Any conclusion or

information obtained or derived from such electronic files will be at the user's sole risk. If there is a discrepancy between the electronic files and the hard copies, the hard copies govern.

B. Because data stored in electronic media format can deteriorate or be modified inadvertently or otherwise without authorization of the data's creator, the party receiving electronic files agrees that it will perform acceptance tests or procedures within 60 days, after which the receiving party shall be deemed to have accepted the data thus transferred. Any errors detected within the 60-day acceptance period will be corrected by the transferring party.

C. When transferring documents in electronic media format, the transferring party makes no representations as to long term compatibility, usability, or readability of documents resulting from the use of software application packages, operating systems, or computer hardware differing from those used by the data's creator.

ARTICLE 4 – AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS; REFERENCE POINTS

4.01 *Availability of Lands*

A. Owner shall furnish the Site. Owner shall notify Contractor of any encumbrances or restrictions not of general application but specifically related to use of the Site with which Contractor must comply in performing the Work. Owner will obtain in a timely manner and pay for easements for permanent structures or permanent changes in existing facilities. If Contractor and Owner are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, as a result of any delay in Owner's furnishing the Site or a part thereof, Contractor may make a Claim therefor as provided in Paragraph 10.05.

B. Upon reasonable written request, Owner shall furnish Contractor with a current statement of record legal title and legal description of the lands upon which the Work is to be performed and Owner's interest therein as necessary for giving notice of or filing a mechanic's or construction lien against such lands in accordance with applicable Laws and Regulations.

C. Contractor shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

D. If all lands and rights-of-way are not obtained as herein contemplated before construction begins, CONTRACTOR shall begin the Work upon such land and rights-of-way as OWNER has previously acquired and no claim for damages whatsoever will be allowed by reason of the delay in obtaining the remaining lands and rights-of-way. Should OWNER be prevented or enjoined from proceeding with the Work, or from authorizing its prosecution, either before or after the commencement, by reason of any litigation, or by reason of its inability to procure any lands or rights-of-way for the Work, CONTRACTOR shall not be entitled to make or assert a claim for Additional Compensation by reason of said delay, or to withdraw from the Agreement except by consent of OWNER. Time for completion of the Work will be extended as provided in Article 12, to such time as OWNER determines will compensate for the time lost by such delay." An extension of Contract time will be Contractor's sole and exclusive remedy of delay.

4.02 *Subsurface and Physical Conditions*

A. *Reports and Drawings:* The Contract Documents may identify:

1. those reports of explorations and tests of subsurface conditions at or contiguous to the Site that Engineer has used in preparing the Contract Documents; and

2. those drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the Site (except Underground Facilities) that Engineer has used in preparing the Contract Documents.

B. *Limited Reliance by Contractor on Technical Data Authorized:* Contractor may rely upon the general accuracy of the "technical data" contained in such reports and drawings, but such reports and drawings are not Contract

Documents. Such "technical data" is identified in the Supplementary Conditions. Except for such reliance on such "technical data," Contractor may not rely upon or make any claim against Owner or Engineer, or any of their Related Entities with respect to:

1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor, and safety precautions and programs incident thereto; or

2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings; or

3. any Contractor interpretation of or conclusion drawn from any "technical data" or any such other data, interpretations, opinions, or information.

4.03 *Differing Subsurface or Physical Conditions*

A. *Notice:* If Contractor believes that any subsurface or physical condition at or contiguous to the Site that is uncovered or revealed either:

1. is of such a nature as to establish that any "technical data" on which Contractor is entitled to rely as provided in Paragraph 4.02 is materially inaccurate; or

2. is of such a nature as to require a change in the Contract Documents; or

3. differs materially from that shown or indicated in the Contract Documents; or

4. is of an unusual nature, and differs materially from conditions ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents;

then Contractor shall, promptly after becoming aware thereof and before further disturbing the subsurface or physical conditions or performing any Work in connection therewith (except in an emergency as required by Paragraph 6.16.A), notify Owner and Engineer in writing about such condition. Contractor shall not further disturb such condition or perform any Work in connection therewith (except as aforesaid) until receipt of written order to do so.

B. *Engineer's Review*: After receipt of written notice as required by Paragraph 4.03.A, Engineer will promptly review the pertinent condition, determine the necessity of Owner's obtaining additional exploration or tests with respect thereto, and advise Owner in writing (with a copy to Contractor) of Engineer's findings and conclusions.

C. *Possible Price and Times Adjustments*

1. The Contract Price or the Contract Times, or both, will be equitably adjusted to the extent that the existence of such differing subsurface or physical condition causes an increase or decrease in Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:

a. such condition must meet any one or more of the categories described in Paragraph 4.03.A; and

b. with respect to Work that is paid for on a Unit Price Basis, any adjustment in Contract Price will be subject to the provisions of Paragraphs 9.07 and 11.03.

2. Contractor shall not be entitled to any adjustment in the Contract Price or Contract Times if:

a. Contractor knew of the existence of such conditions at the time Contractor made a final commitment to Owner with respect to Contract Price and Contract Times by the submission of a Bid or becoming bound under a negotiated contract; or

b. the existence of such condition could reasonably have been discovered or revealed as a result of any examination, investigation, exploration, test, or study of the Site and contiguous areas required by the Bidding Requirements or Contract Documents to be conducted by or for Contractor prior to Contractor's making such final commitment; or

c. Contractor failed to give the written notice as required by Paragraph 4.03.A.

3. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, a Claim may be made therefor as provided in Paragraph 10.05. However, Owner and Engineer, and any of their Related Entities shall not be liable to Contractor for any claims, costs, losses, or damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Contractor on or in connection with any other project or anticipated project.

4.04 *Underground Facilities*

A. *Shown or Indicated:* The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or contiguous to the Site is based on information and data furnished to Owner or Engineer by the owners of such Underground Facilities, including Owner, or by others. Unless it is otherwise expressly provided in the Supplementary Conditions:

1. Owner and Engineer shall not be responsible for the accuracy or completeness of any such information or data; and

2. the cost of all of the following will be included in the Contract Price, and Contractor shall have full responsibility for:

a. reviewing and checking all such information and data,

b. locating all Underground Facilities shown or indicated in the Contract Documents,

c. coordination of the Work with the owners of such Underground Facilities, including Owner, during construction, and

d. the safety and protection of all such Underground Facilities and repairing any damage thereto resulting from the Work.

B. *Not Shown or Indicated*

1. If an Underground Facility is uncovered or revealed at or contiguous to the Site which was not shown or indicated, or not shown or indicated with reasonable accuracy in the Contract Documents, Contractor shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as required by Paragraph 6.16.A), identify the owner of such Underground Facility and give written notice to that owner and to Owner and Engineer. Engineer will promptly review the Underground Facility and determine the extent, if any, to which a change is required in the Contract Documents to reflect and document the consequences of the existence or location of the Underground Facility. During such time, Contractor shall be responsible for the safety and protection of such Underground Facility.

2. If Engineer concludes that a change in the Contract Documents is required, a Work Change Directive or a Change Order will be issued to reflect and document such consequences. An equitable adjustment shall be made in the Contract Price or Contract Times, or both, to the extent that they are attributable to the existence or location of any Underground Facility that was not shown or indicated or not shown or indicated with reasonable accuracy in the Contract Documents and that Contractor did not know of and could not reasonably have been expected to be aware of or to have anticipated. If Owner and Contractor are unable to agree on

entitlement to or on the amount or extent, if any, of any such adjustment in Contract Price or Contract Times, Owner or Contractor may make a Claim therefor as provided in Paragraph 10.05.

4.05 The Contractor shall have no claim for an adjustment in Contract Price or Contract Times (or Milestones) under this Article 4 unless (1) CONTRACTOR has given the written notice required in as set forth herein not later than thirty (30) days after the event giving rise thereto), and (2) within sixty (60) days after the event giving rise thereto, CONTRACTOR shall submit to OWNER a detailed claim setting forth CONTRACTOR'S right to an increase in Contract Price or extension of Contract Time. No claim by the CONTRACTOR hereunder shall be allowed if asserted after final payment under this Contract.

4.06 *Reference Points*

A. Owner shall provide engineering surveys to establish reference points for construction which in Engineer's judgment are necessary to enable Contractor to proceed with the Work. Contractor shall be responsible for laying out the Work, shall protect and preserve the established reference points and property monuments, and shall make no changes or relocations without the prior written approval of Owner. Contractor shall report to Engineer whenever any reference point or property monument is lost or destroyed or requires relocation because of necessary changes in grades or locations, and shall be responsible for the accurate replacement or relocation of such reference points or property monuments by professionally qualified personnel.

B. Engineer may check the lines, elevations, reference marks, batter boards, etc., set by Contractor, and Contractor shall correct any errors disclosed by such check. Such a check shall not be considered as approval of Contractor's work and shall not relieve Contractor of the responsibility for accurate construction of the entire Work. Contractor shall furnish personnel to assist Engineer in checking lines and grades."

4.07 *Hazardous Environmental Condition at Site*

A. *Reports and Drawings:* Reference is made to the Supplementary Conditions for the identification of those reports and drawings relating to a Hazardous Environmental Condition identified at the Site, if any, that have been utilized by the Engineer in the preparation of the Contract Documents.

B. *Limited Reliance by Contractor on Technical Data Authorized:* Contractor may rely upon the general accuracy of the "technical data" contained in such reports and drawings, but such reports and drawings are not Contract Documents. Such "technical data" is identified in the Supplementary Conditions. Except for such reliance on such "technical data," Contractor may not rely upon or make any claim against Owner or Engineer, or any of their Related Entities with respect to:

1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences and procedures of construction to be employed by Contractor and safety precautions and programs incident thereto; or

2. other data, interpretations, opinions and information contained in such reports or shown or indicated in such drawings; or

3. any Contractor interpretation of or conclusion drawn from any "technical data" or any such other data, interpretations, opinions or information.

C. Contractor shall not be responsible for any Hazardous Environmental Condition uncovered or revealed at the Site which was not shown or indicated in Drawings or Specifications or identified in the Contract Documents to be within the scope of the Work. Contractor shall be responsible for a Hazardous Environmental Condition created with any materials brought to the Site by Contractor, Subcontractors, Suppliers, or anyone else for whom Contractor is responsible.

D. If Contractor encounters a Hazardous Environmental Condition or if Contractor or anyone for whom Contractor is responsible creates a Hazardous Environmental Condition, Contractor shall immediately: (i) secure or otherwise isolate such condition; (ii) stop all Work in connection with such condition and in any area affected thereby (except in an emergency as required by Paragraph 6.16.A); and (iii) notify Owner and Engineer (and promptly thereafter confirm such notice in writing). Owner shall promptly consult with Engineer concerning the necessity for Owner to retain a qualified expert to evaluate such condition or take corrective action, if any.

E. Contractor shall not be required to resume Work in connection with such condition or in any affected area until after Owner has obtained any required permits related thereto and delivered to Contractor written notice: (i) specifying that such condition and any affected area is or has been rendered safe for the resumption of Work; or (ii) specifying any special conditions under which such Work may be resumed safely. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times, or both, as a result of such Work stoppage or such special conditions under which Work is agreed to be resumed by Contractor, either party may make a Claim therefor as provided in Paragraph 10.05.

F. If after receipt of such written notice Contractor does not agree to resume such Work based on a reasonable belief it is unsafe, or does not agree to resume such Work under such special conditions, then Owner may order the portion of the Work that is in the area affected by such condition to be deleted from the Work. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of an adjustment in Contract Price or Contract Times as a result of deleting such portion of the Work, then either party may make a Claim therefor as provided in Paragraph 10.05. Owner may have such deleted portion of the Work performed by Owner's own forces or others in accordance with Article 7.

G. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, Subcontractors, and Engineer, and the officers, directors, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition, provided that such Hazardous Environmental Condition: (i) was not shown or indicated in the Drawings or Specifications or identified in the Contract Documents to be included within the scope of the Work, and (ii) was not created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 4.06.G shall obligate Owner to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

H. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 4.06. H shall obligate Contractor to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

I. The provisions of Paragraphs 4.02, 4.03, and 4.04 do not apply to a Hazardous Environmental Condition uncovered or revealed at the Site.

J. Contractor shall be responsible for all safety measures concerning the handling of all asbestos pipe to be removed as relocated under This Agreement. Contractor shall indemnify the Owner, its agents, employees, and officials from and against all claims, costs, losses and damages, including but not limited to attorneys' fees and other professional fees, arising out of and relating to the removal and/or relocation of asbestos pipe.

ARTICLE 5 – BONDS AND INSURANCE

5.01 *Performance, Payment, and Other Bonds*

A. Contractor shall furnish performance and payment bonds, each in an amount at least equal to the Contract Price as security for the faithful performance and payment of all of Contractor's obligations under the Contract Documents all in accordance with applicable Florida Statutes, including but not limited to, Florida Statutes, 255.05, et seq. . These bonds shall be in form and content as identified in the Instructions To Bidders or otherwise in the Contract Documents. Contractor shall also furnish such other bonds as are required by the Contract Documents. The City of Ocoee has specified a form of a performance bond which shall be used for this project.

B. All bonds shall be executed by such sureties as are named in the current list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (amended) by the Financial Management Service, Surety Bond Branch, U.S. Department of the Treasury. All bonds signed by an agent must be accompanied by a certified copy of the agent's authority to act.

C. If the surety on any bond furnished by Contractor is declared bankrupt or becomes insolvent or its right to do business is terminated in any state where any part of the Project is located or it ceases to meet the requirements of Paragraph 5.01.B, Contractor shall promptly notify Owner and Engineer and shall, within 20 days after the event giving rise to such notification, provide another bond and surety, both of which shall comply with the requirements of Paragraphs 5.01.B and 5.02.

5.02 *Licensed Sureties and Insurers*

A. All bonds and insurance required by the Contract Documents to be purchased and maintained by Owner or Contractor shall be obtained from surety or insurance companies that are duly licensed or authorized in the jurisdiction in which the Project is located to issue bonds or insurance policies for the limits and coverages so required. Such surety and insurance companies shall also meet such additional requirements and qualifications as may be provided in the Supplementary Conditions or below.

5.03 *Certificates of Insurance*

A. Contractor shall deliver to Owner, with copies to each additional insured identified below in this Article or in the Supplementary Conditions, certificates of insurance (and other evidence of insurance requested by Owner or any other additional insured) which Contractor is required to purchase and maintain.

B. Owner shall deliver to Contractor, with copies to each additional insured identified as identified below or in the Supplementary Conditions, certificates of insurance (and other evidence of insurance requested by Contractor or any other additional insured) which Owner is required to purchase and maintain.

5.04 *Contractor's Liability Insurance*

A. Contractor shall purchase and maintain such liability and other insurance as is appropriate for the Work being performed and as will provide protection from claims set forth below which may arise out of or result from Contractor's performance of the Work and Contractor's other obligations under the Contract Documents, whether it is to be performed by Contractor, any Subcontractor or Supplier, or by anyone directly or indirectly employed by any of them to perform any of the Work, or by anyone for whose acts any of them may be liable:

1. claims under workers' compensation, disability benefits, and other similar employee benefit acts;

2. claims for damages because of bodily injury, occupational sickness or disease, or death of Contractor's employees;

3. claims for damages because of bodily injury, sickness or disease, or death of any person other than Contractor's employees;

4. claims for damages insured by reasonably available personal injury liability coverage which are sustained:

    a. by any person as a result of an offense directly or indirectly related to the employment of such person by Contractor, or

    b. by any other person for any other reason;

5. claims for damages, other than to the Work itself, because of injury to or destruction of tangible property wherever located, including loss of use resulting therefrom; and

6. claims for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance or use of any motor vehicle.

B. The policies of insurance required by this Paragraph 5.04 shall:

1. with respect to insurance required by Paragraphs 5.04.A.3 through 5.04.A.6 inclusive, include as additional insureds (subject to any customary exclusion regarding professional liability) Owner and Engineer, and any other individuals or entities identified below or in the Supplementary Conditions, all of whom shall be listed as additional insureds, and include coverage for the respective officers, directors, partners, employees, agents, consultants and subcontractors of each and any of all such additional insureds, and the insurance afforded to these additional insureds shall provide primary coverage for all claims covered thereby;

2. include at least the specific coverages and be written for not less than the limits of liability provided below or in the Supplementary Conditions or required by Laws or Regulations, whichever is greater;

3. include completed operations insurance;

4. include contractual liability insurance covering Contractor's indemnity obligations under Paragraphs 6.11 and 6.20;

5. contain a provision or endorsement that the coverage afforded will not be canceled, materially changed or renewal refused until at least 30 days prior written notice has been given to Owner and Contractor and to each other additional insured identified below or in the Supplementary Conditions to whom a certificate of insurance has been issued (and the certificates of insurance furnished by the Contractor pursuant to Paragraph 5.03 will so provide);

6. remain in effect at least until final payment and at all times thereafter when Contractor may be correcting, removing, or replacing defective Work in accordance with Paragraph 13.07; and

7. with respect to completed operations insurance, and any insurance coverage written on a claims-made basis, remain in effect for at least two years after final payment.

C. Contractor shall furnish Owner and each other additional insured identified below or in the Supplementary Conditions, to whom a certificate of insurance has been issued, evidence satisfactory to Owner and any such additional insured of continuation of such insurance at final payment and one year thereafter.

D. The limits of liability for the insurance required by paragraph 5.04 of the General Conditions shall provide coverage for not less than the following amounts or greater where required by Laws and Regulations:

1. Workers' Compensation, and related coverages under paragraphs 5.04.A.1 and A.2 of the General Conditions:

a.	State:	Statutory
b.	Applicable Federal (e.g., Longshoreman's):	Statutory
c.	Employer's Liability:	***

2. Contractor's General Liability under paragraphs 5.04.A.3 through A.6 of the General Conditions which shall include completed operations and product liability coverages and eliminate the exclusion with respect to property under the care, custody and control of Contractor:

a.	General Aggregate	2,000,000
b.	Products - Completed Operations Aggregate	1,000,000
c.	Personal and Advertising Injury	1,000,000
d.	Each Occurrence (Bodily Injury and Property Damage)	1,000,000

e. Personal Injury Liability Coverage will include Claims arising out of Employment.

f. Property Damage liability insurance will provide Explosion, Collapse, and Underground coverages where applicable.

g.	Excess or Umbrella Liability	2,000,000
	1) General Aggregate	
	2) Each Occurrence	

3. Automobile Liability under paragraph 5.04.A.6 of the General Conditions:

a.	Bodily Injury:	
	Each person	$1,000,000
	Each Accident	$1,000,000
b.	Property Damage:	
	Each Accident	$1,000,000
	OR	
c.	Combined Single	
	Limit of	$1,000,000

4. The Contractual Liability coverage required by paragraph 5.04.B.4 of the General Conditions shall provide coverage for not less than the following amounts:

a.	Bodily Injury:	
	Each Accident	$1,000,000
	Annual Aggregate	$2,000,000
b.	Property Damage:	
	Each Accident	$1,000,000
	Annual Aggregate	$2,000,000

5. Additional Insureds:

[name and address of design firm, if any]

City of Ocoee
1 N. Bluford Avenue
Ocoee, FL 34761

Others, as may be identified by the OWNER

5.05 *Owner's Liability Insurance*

A. In addition to the insurance required to be provided by Contractor under Paragraph 5.04, Owner, at Owner's option, may purchase and maintain at Owner's expense Owner's own liability insurance as will protect Owner against claims which may arise from operations under the Contract Documents. The Owner shall not have the duty or obligation to purchase or maintain such insurance and nothing herein shall be so deemed to require same.

5.06 *Property Insurance*

A. Unless otherwise provided in the Supplementary Conditions, Contractor shall purchase and maintain property insurance upon the Work at the Site in the amount of the full replacement cost thereof (Contractor shall be responsible for any deductible or self-insured retention.). This insurance shall:

1. include the interests of Owner, Contractor, Subcontractors, and Engineer, and any other individuals or entities identified in the Supplementary Conditions, and the officers, directors, partners, employees, agents, consultants and subcontractors of any of them, each of whom is deemed to have an insurable interest and shall be listed as an insured or additional insured;

2. be written on a Builder's Risk "all-risk" or open peril or special causes of loss policy form that shall at least include insurance for physical loss or damage to the Work, temporary buildings, falsework, and materials and equipment in transit, and shall insure against at least the following perils or causes of loss: fire, lightning, extended coverage, theft, vandalism and malicious mischief, earthquake, collapse, debris removal, demolition occasioned by enforcement of Laws and Regulations, water damage (other than caused by flood), and such other perils or causes of loss as may be specifically required by the Supplementary Conditions;

3. include expenses incurred in the repair or replacement of any insured property (including but not limited to fees and charges of engineers and architects);

4. cover materials and equipment stored at the Site or at another location that was agreed to in writing by Owner prior to being incorporated in the Work, provided that such materials and equipment have been included in an Application for Payment recommended by Engineer;

5. allow for partial utilization of the Work by Owner;

6. include testing and startup; and

7. be maintained in effect until final payment is made unless otherwise agreed to in writing by Owner, Contractor, and Engineer with 30 days written notice to each other additional insured to whom a certificate of insurance has been issued.

B. Contractor shall purchase and maintain such boiler and machinery insurance or additional property insurance as may be required by the Supplementary Conditions or Laws and Regulations which will include the interests of Owner, Contractor, Subcontractors, and Engineer, and any other individuals or entities identified in the Supplementary Conditions, and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them, each of whom is deemed to have an insurable interest and shall be listed as an insured or additional insured.

C. All the policies of insurance (and the certificates or other evidence thereof) required to be purchased and maintained in accordance with Paragraph 5.06 will contain a provision or endorsement that the coverage afforded will not be canceled or materially changed or renewal refused until at least 30 days prior written notice has been given to Owner and Contractor and to each other additional insured to whom a certificate of insurance has been issued and will contain waiver provisions in accordance with Paragraph 5.07.

D. Owner shall not be responsible for purchasing and maintaining any property insurance specified in this Paragraph 5.06 to protect the interests of Contractor, Subcontractors, or others in the Work to the extent of any deductible amounts that are identified in the Supplementary Conditions. The risk of loss within such identified deductible amount will be borne by Contractor, Subcontractors, or others suffering any such loss, and if any of them wishes property insurance coverage within the limits of such amounts, each may purchase and maintain it at the purchaser's own expense.

E. Where applicable, the Contractor shall purchase and maintain adequate flood insurance for work within designated flood hazard areas as defined by P.L. 93-234 (Flood Disaster Protection Act).

5.07 *Waiver of Rights*

A. Owner and Contractor intend that all policies purchased in accordance with Paragraph 5.06 will protect Owner, Contractor, Subcontractors, and Engineer, and all other individuals or entities identified in the Supplementary Conditions to be listed as insureds or additional insureds (and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them) in such policies and will provide primary coverage for all losses and damages caused by the perils or causes of loss covered thereby. All such policies shall contain provisions to the effect that in the event of payment of any loss or damage the insurers will have no rights of recovery against any of the insureds or additional insureds thereunder. Owner and Contractor waive all rights against each other and their respective officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them for all losses and damages caused by, arising out of or resulting from any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work; and, in addition, waive all such rights against Subcontractors, and Engineer, and all other individuals or entities identified in the Supplementary Conditions to be listed as insured or additional insured (and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them) under such policies for losses and damages so caused. None of the above waivers shall extend to the rights that any party making such waiver may have to the proceeds of insurance held by Contractor as trustee or otherwise payable under any policy so issued.

B. Owner waives all rights against Contractor, Subcontractors, and Engineer, and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them for:

1. loss due to business interruption, loss of use, or other consequential loss extending beyond direct physical loss or damage to Owner's property or the Work caused by, arising out of, or resulting from fire or other perils whether or not insured by Owner; and

2. loss or damage to the completed Project or part thereof caused by, arising out of, or resulting from fire or other insured peril or cause of loss covered by any property insurance maintained on the completed Project or part thereof by Owner during partial utilization pursuant to Paragraph 14.05, after Substantial Completion pursuant to Paragraph 14.04, or after final payment pursuant to Paragraph 14.07.

C. Any insurance policy maintained by Owner covering any loss, damage or consequential loss referred to in Paragraph 5.07.B shall contain provisions to the effect that in the event of payment of any such loss, damage, or consequential loss, the insurers will have no rights of recovery against Contractor, Subcontractors, or Engineer, and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them.

5.08 *Receipt and Application of Insurance Proceeds*

A. Any insured loss under the policies of insurance required by Paragraph 5.06 will be adjusted with Contractor and made payable to Contractor as fiduciary for the insureds, as their interests may appear, subject to the requirements of any applicable mortgage clause and of Paragraph 5.08.B. Contractor shall deposit in a separate account any money so received and shall distribute it in accordance with such agreement as the parties in interest may reach. If no other special agreement is reached, the damaged Work shall be repaired or replaced, the moneys so received applied on account thereof.

B. Contractor as fiduciary shall have power to adjust and settle any loss with the insurers unless one of the parties in interest shall object in writing within 15 days after the occurrence of loss to Contractor's exercise of this power. If such objection be made, Contractor as fiduciary shall make settlement with the insurers in accordance with such agreement as the parties in interest may reach.

5.09 *Acceptance of Bonds and Insurance; Option to Replace*

A. If Owner has any objection to the coverage afforded by or other provisions of the insurance required to be purchased and maintained by Contractor in accordance with this Article 5 on the basis of its not complying with the Contract Documents, Owner will notify Contractor in writing thereof within ten days of the date of delivery of such certificates to Owner. Contractor will provide such additional information in respect of insurance provided by him as Owner may reasonably request.

5.10 *Partial Utilization, Acknowledgment of Property Insurer*

A. If Owner finds it necessary to occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work as provided in Paragraph 14.05, no such use or occupancy shall commence before the insurers providing the property insurance pursuant to Paragraph 5.06 have acknowledged notice thereof and in writing effected any changes in coverage necessitated thereby. The insurers providing the property insurance shall consent by endorsement on the policy or policies, but the property insurance shall not be canceled or permitted to lapse on account of any such partial use or occupancy.

ARTICLE 6 – CONTRACTOR'S RESPONSIBILITIES

6.01 *Supervision and Superintendence*

A. Contractor shall supervise, inspect, and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. Contractor shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction. Contractor shall not be responsible for the negligence of Owner or Engineer in the design or specification of a specific means, method, technique, sequence, or procedure of construction which is shown or indicated in and expressly required by the Contract Documents.

B. At all times during the progress of the Work, Contractor shall assign a competent resident superintendent who shall not be replaced without written notice to Owner and Engineer except under extraordinary circumstances. The superintendent will be Contractor's representative at the Site and shall have authority to act on behalf of Contractor. All communications given to or received from the superintendent shall be binding on Contractor.

6.02 *Labor; Working Hours*

A. Contractor shall provide competent, suitably qualified personnel to survey and lay out the Work and perform construction as required by the Contract Documents. Contractor shall at all times maintain good discipline and order at the Site.

B. Except as otherwise required for the safety or protection of persons or the Work or property at the Site or adjacent thereto, and except as otherwise stated in the Contract Documents, all Work at the Site shall be performed during regular working hours. Contractor will not permit the performance of Work on a Saturday, Sunday, or any legal holiday without Owner's written consent (which will not be unreasonably withheld) given after prior written notice to Engineer.

C. Except in the event of an emergency, no work shall be performed (1) before sunrise and after sunset, (2) nor between the hours of 7:00 p.m. and 7:00 a.m. (3) nor on Saturday and Sunday and (4) nor on any holiday of the Owner "Regular Working Hours" shall be between 7:00 a.m. and 7:00 p.m. and shall be established by the Contractor at the Pre-construction Meeting, provided the total working hours shall not exceed eight (8) hours per day and forty (40) hours per week. If construction or maintenance work requires operations during other than Regular Working Hours, the

Contractor shall obtain written permission of the Owner at least forty-eight (48) hours in advance of starting such work, and shall set forth the proposed schedule for overtime to give Owner ample time to arrange for his personnel to be at the site of the work. Contractor shall pay for the additional charges to the Owner on account of such overtime work. Such additional charges shall be a subsidiary obligation of Contractor and no extra payment shall be made by Owner on account of such overtime work.

D. This Agreement is subject to the applicable provisions of the Contract Work Hours and Safety Standards Act, Public Law 87-581, 87th Congress. No Contractor or Subcontractor contracting for any part of the Work shall require or permit any laborer or mechanic to be employed on the Work in excess of forty hours in any work week unless such laborer or mechanic receives compensation at a rate not less than one and one-half times his basic rate of pay for all hours worked in excess of forty hours in such work week, as the case may be.

E. Except as may be otherwise required by law, all claims and disputes pertaining to the classification of labor employed on the project under this Contract shall be decided by Owner's governing body or other duly designated official.

F. Contractor shall employ only competent persons to do the work and whenever Owner shall notify Contractor, in writing, that any person on the Work appears to be incompetent, unfaithful, disorderly, or otherwise unsatisfactory, such person shall be removed from the Project and shall not again be employed on it except with the consent of Owner.

G. Contractor and Subcontractors shall, insofar as practicable, give preference in the hiring of workers for the Project to qualified local residents with first preference being given to citizens of the United States who have served in the armed forces of the United States and have been honorably discharged therefrom or released from active duty therein.

H. Contractor shall reimburse the Owner the reasonable and customary amounts the Owner incurs for additional engineering and/or inspection costs incurred as a result of overtime work in excess of the regular working hours. Overtime costs shall be deducted from the Contract amount by written Change Order (Contract Modification). Overtime costs for the Owner's personnel shall be based on the individual's current overtime wage rate and shall include labor burden, etc. Overtime costs for personnel employed by the Engineer or Owner's independent testing laboratory shall be calculated in accordance with the terms of their respective contracts with the Owner

I. No work shall be performed on legal holidays of the Owner, which for the Work are defined as follows:

Holiday	Calendar Date

CITY OF OCOEE TO CONFIRM HOLIDAYS

Holiday	Calendar Date
New Year's Day	January 1
Martin Luther King Day	Third Monday in January
Memorial Day	Last Monday in May
Independence Day	July 4 (may be observed on the prior Friday or following Monday)
Labor Day	First Monday in September
Thanksgiving Day	4th Thursday in November
Day after Thanksgiving	4th Friday in November
Christmas Eve	December 24

Christmas December 25

If Christmas and Christmas Eve fall on a weekend, the preceding Friday and following Monday will be observed as holidays. If Christmas falls on a Monday, the preceding Friday will be observed as a holiday. If Christmas falls on a Saturday, the preceding Thursday will be observed as a holiday.

6.03 *Services, Materials, and Equipment*

A. Unless otherwise specified in the Contract Documents, Contractor shall provide and assume full responsibility for all services, materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities, and all other facilities and incidentals necessary for the performance, testing, start-up, and completion of the Work.

B. All materials and equipment incorporated into the Work shall be as specified or, if not specified, shall be of good quality and new, except as otherwise provided in the Contract Documents. All special warranties and guarantees required by the Specifications shall expressly run to the benefit of Owner. If required by Engineer, Contractor shall furnish satisfactory evidence (including reports of required tests) as to the source, kind, and quality of materials and equipment.

C. All materials and equipment shall be stored, applied, installed, connected, erected, protected, used, cleaned, and conditioned in accordance with instructions of the applicable Supplier, except as otherwise may be provided in the Contract Documents.

6.04 *Progress Schedule*

A. Contractor shall adhere to the Progress Schedule established in accordance with Paragraph 2.07 as it may be adjusted from time to time as provided below.

1. Contractor shall submit to Engineer for acceptance (to the extent indicated in Paragraph 2.07) proposed adjustments in the Progress Schedule that will not result in changing the Contract Times. Such adjustments will comply with any provisions of the General Requirements applicable thereto.

2. Proposed adjustments in the Progress Schedule that will change the Contract Times shall be submitted in accordance with the requirements of Article 12. Adjustments in Contract Times may only be made by a Change Order.

6.05 *Substitutes and "Or-Equals"*

A. Whenever an item of material or equipment is specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular Supplier, the specification or description is intended to establish the type, function, appearance, and quality required. Unless the specification or description contains or is followed by words reading that no like, equivalent, or "or-equal" item or no substitution is permitted, other items of material or equipment or material or equipment of other Suppliers may be submitted to Engineer for review under the circumstances described below.

1. *"Or-Equal" Items:* If in Engineer's sole discretion an item of material or equipment proposed by Contractor is functionally equal to that named and sufficiently similar so that no change in related Work will be required, it may be considered by Engineer as an "or-equal" item, in which case review and approval of the proposed item may, in Engineer's sole discretion, be accomplished without compliance with some or all of the requirements for approval of proposed substitute items. For the purposes of this Paragraph 6.05.A.1, a proposed item of material or equipment will be considered functionally equal to an item so named if:

a. in the exercise of reasonable judgment Engineer determines that:

1) it is at least equal in materials of construction, quality, durability, appearance, strength, and design characteristics;

2) it will reliably perform at least equally well the function and achieve the results imposed by the design concept of the completed Project as a functioning whole;

3) it has a proven record of performance and availability of responsive service; and

b. Contractor certifies that, if approved and incorporated into the Work:

1) there will be no increase in cost to the Owner or increase in Contract Times, and

2) it will conform substantially to the detailed requirements of the item named in the Contract Documents.

2. Substitute Items

a. If in Engineer's sole discretion an item of material or equipment proposed by Contractor does not qualify as an "or-equal" item under Paragraph 6.05.A.1, it will be considered a proposed substitute item.

b. Contractor shall submit sufficient information as provided below to allow Engineer to determine that the item of material or equipment proposed is essentially equivalent to that named and an acceptable substitute therefor. Requests for review of proposed substitute items of material or equipment will not be accepted by Engineer from anyone other than Contractor.

c. The procedure requirements for review by Engineer will be as set forth in Paragraph 6.05.A.2.d, as supplemented in the General Requirements and as Engineer may decide is appropriate under the circumstances.

d. Contractor shall make written application to Engineer for review of a proposed substitute item of material or equipment that Contractor seeks to furnish or use. The application:

1) shall certify that the proposed substitute item will:

a) will perform adequately the functions and achieve the results called for by the general design,

b) be similar in substance to that specified, and

c) be suited to the same use as that specified;

2) will state:

a) the extent, if any, to which the use of the proposed substitute item will prejudice Contractor's achievement of Substantial Completion on time;

b) whether or not use of the proposed substitute item in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with Owner for other work on the Project) to adapt the design to the proposed substitute item; and

c) whether or not incorporation or use of the proposed substitute item in connection with the Work is subject to payment of any license fee or royalty;

3) will identify:

a) all variations of the proposed substitute item from that specified , and

b) available engineering, sales, maintenance, repair, and replacement services;

4) and shall contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including costs of redesign and claims of other contractors affected by any resulting change.

B. *Substitute Construction Methods or Procedures:* If a specific means, method, technique, sequence, or procedure of construction is expressly required by the Contract Documents, Contractor may furnish or utilize a substitute means, method, technique, sequence, or procedure of construction approved by Engineer. Contractor shall submit sufficient information to allow Engineer, in Engineer's sole discretion, to determine that the substitute proposed is equivalent to that expressly called for by the Contract Documents. The requirements for review by Engineer will be similar to those provided in Paragraph 6.05.A.2.

C. *Engineer's Evaluation:* Engineer will be allowed a reasonable time within which to evaluate each proposal or submittal made pursuant to Paragraphs 6.05.A and 6.05.B. Engineer may require Contractor to furnish additional data about the proposed substitute item. Engineer will be the sole judge of acceptability. No "or equal" or substitute will be ordered, installed or utilized until Engineer's review is complete, which will be evidenced by either a Change Order for a substitute or an approved Shop Drawing for an "or equal." Engineer will advise Contractor in writing of any negative determination.

D. *Special Guarantee:* Owner may require Contractor to furnish at Contractor's expense a special performance guarantee or other surety with respect to any substitute.

E. *Engineer's Cost Reimbursement*: Engineer will record Engineer's costs in evaluating a substitute proposed or submitted by Contractor pursuant to Paragraphs 6.05.A.2 and 6.05.B. Whether or not Engineer approves a substitute item so proposed or submitted by Contractor, Contractor shall reimburse Owner for the charges of Engineer for evaluating each such proposed substitute. Contractor shall also reimburse Owner for the charges of Engineer for making changes in the Contract Documents (or in the provisions of any other direct contract with Owner) resulting from the acceptance of each proposed substitute; and all costs resulting from any delays in the Work while the substitution was undergoing reviews.

F. *Contractor's Expense*: Contractor shall provide all data in support of any proposed substitute or "or-equal" at Contractor's expense.

G. Equipment specifications containing experience clauses requires equipment manufacturers to have a record (min. number installations and years of operation) of satisfactory operation. In lieu of experience, a manufacturer/supplier may provide the equipment with the mutual understanding of all parties that no payment shall be released for such equipment including installation costs until it is demonstrated that the equipment meets the specific design performance requirements. All such monies retained shall be held by the Owner in an interest bearing escrow account from the date of application for payment for such work until the date of demonstrated conformance. All such retained monies and accrued interest shall be released to the Contractor upon demonstrated conformance. All monies not paid by the Owner shall bear interest a 7 percent per annum or the maximum rate provided by law, whichever is less. Where the equipment has failed specified tests to demonstrate conformance to the design requirements, the Contract shall remove said equipment and shall substitute the equipment as approved by the Owner/Engineer as specified having the required experience. The Contractor shall install the substituted equipment as required to provide a complete and functional system without cost to the Owner. (Refer to GC-13.07). No experience restriction will be permitted which unnecessarily reduces competition or innovation.

6.06 *Concerning Subcontractors, Suppliers, and Others*

A. Contractor shall not employ any Subcontractor, Supplier, or other individual or entity (including those acceptable to Owner as indicated in Paragraph 6.06.B), whether initially or as a replacement, against whom Owner may have reasonable objection. Contractor shall not be required to employ any Subcontractor, Supplier, or other individual or entity to furnish or perform any of the Work against whom Contractor has reasonable objection.

B. If the Instructions to Bidders or the Invitation To Bid requires the identity of certain Subcontractors, Suppliers, or other individuals or entities to be submitted to Owner in advance for acceptance by Owner by a specified date prior to the Effective Date of the Agreement, and if Contractor has submitted a list thereof in accordance with those requirements, then any such Subcontractor, Supplier, or other individuals or entities so identified and not objected to in writing by Owner or Engineer prior to the execution of the Agreement will be deemed acceptable to Owner and Engineer. All other Subcontractors, Suppliers, or other individuals or entities so identified shall be deemed to have been accepted if Owner or Engineer deliver no written objection thereto within forty-five (45) days after Contractor's written identification of such Subcontractors, Suppliers, or other individuals or entities. However, if within said forty-five (45) day period, Owner or Engineer has reasonable objection to any Subcontractors, Suppliers, or other individuals or entities whether previously identified or subsequently, Contractor shall submit an acceptable substitute without entitlement to any change in Contract Price. If Owner or Engineer demands the substitution at any time and it is determined that the Owner or Engineer did not have a reasonable objection, the Contractor shall comply with the demand for substitution and shall be entitled to an adjustment in the Contract Price (by appropriate Change order or Written Amendment) for the difference in cost resulting directly from such substitution. After acceptance by the Owner or Engineer of any particular Subcontractor, Supplier, or other individuals or entities, the Contractor shall make no substitution without written approval of the Owner, which may be granted or withheld at Owner's sole discretion. No acceptance by Owner or Engineer of any such Subcontractor, Supplier or any other person or organization shall be deemed to constitute a waiver or an estoppel of any right of Owner or Engineer to reject defective work performed in whole or in part by any such Subcontractor, Supplier, or other individual or entity.

C. Contractor shall be fully responsible to Owner and Engineer for all acts and omissions of the Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work just as Contractor is responsible for Contractor's own acts and omissions. Nothing in the Contract Documents:

1. shall create for the benefit of any such Subcontractor, Supplier, or other individual or entity any contractual relationship between Owner or Engineer and any such Subcontractor, Supplier or other individual or entity, nor

2. shall anything in the Contract Documents create any obligation on the part of Owner or Engineer to pay or to see to the payment of any moneys due any such Subcontractor, Supplier, or other individual or entity except as may otherwise be required by Laws and Regulations.

D. Contractor shall be solely responsible for scheduling and coordinating the Work of Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work under a direct or indirect contract with Contractor.

E. Contractor shall require all Subcontractors, Suppliers, and such other individuals or entities performing or furnishing any of the Work to communicate with Engineer through Contractor.

F. The divisions and sections of the Specifications and the identifications of any Drawings shall not control Contractor in dividing the Work among Subcontractors or Suppliers or delineating the Work to be performed by any specific trade.

G. All Work performed for Contractor by a Subcontractor or Supplier will be pursuant to an appropriate agreement between Contractor and the Subcontractor or Supplier which specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract Documents for the benefit of Owner and Engineer. Whenever any such agreement is with a Subcontractor or Supplier who is listed as an additional insured on the property insurance provided in Paragraph 5.06, the agreement between the Contractor and the Subcontractor or Supplier will contain provisions whereby the Subcontractor or Supplier waives all rights against Owner, Contractor, and Engineer, and all other individuals or entities identified in the Supplementary Conditions to be listed as insureds or additional insureds (and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them) for all losses and damages caused by, arising out of, relating to, or resulting from any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work. If the insurers on any such policies require separate waiver forms to be signed by any Subcontractor or Supplier, Contractor will obtain the same.

6.07 *Patent Fees and Royalties*

A. Contractor shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product, or device which is the subject of patent rights or copyrights held by others. If a particular invention, design, process, product, or device is specified in the Contract Documents for use in the performance of the Work and if to the actual knowledge of Owner or Engineer its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights shall be disclosed by Owner in the Contract Documents.

B. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device not specified in the Contract Documents.

6.08 *Permits*

A. Unless otherwise provided in the Supplementary Conditions, Contractor shall obtain and pay for all construction permits and licenses. Owner shall assist Contractor, when necessary, in obtaining such permits and licenses. Contractor shall pay all governmental charges and inspection fees necessary for the prosecution of the Work which are applicable at the time of opening of Bids, or, if there are no Bids, on the Effective Date of the Agreement. Owner shall pay all charges of utility owners for connections for providing permanent service to the Work. Reference is made to the Bidding Requirements of the Contract Documents for a list of permits and licenses obtained by the OWNER before the bid advertisement.

6.09 *Laws and Regulations*

A. Contractor shall give all notices required by and shall comply with all Laws and Regulations applicable to the performance of the Work. Except where otherwise expressly required by applicable Laws and Regulations, neither Owner nor Engineer shall be responsible for monitoring Contractor's compliance with any Laws or Regulations.

B. If Contractor performs any Work knowing or having reason to know that it is contrary to Laws or Regulations, Contractor shall bear all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such Work. However, it shall not be Contractor's primary responsibility to make certain that the Specifications and Drawings are in accordance with Laws and Regulations, but this shall not relieve Contractor of Contractor's obligations under Paragraph 3.03.

C. Changes in Laws or Regulations not known at the time of opening of Bids (or, on the Effective Date of the Agreement if there were no Bids) having an effect on the cost or time of performance of the Work shall be the subject of an adjustment in Contract Price or Contract Times. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment, a Claim may be made therefor as provided in Paragraph 10.05.

6.10 *Taxes*

A. Contractor shall pay all sales, consumer, use, and other similar taxes required to be paid by Contractor in accordance with the Laws and Regulations of the place of the Project which are applicable during the performance of the Work.

6.11 *Use of Site and Other Areas*

A. *Limitation on Use of Site and Other Areas*

1. Contractor shall confine construction equipment, the storage of materials and equipment, and the operations of workers to the Site and other areas permitted by Laws and Regulations, and shall not unreasonably encumber the Site and other areas with construction equipment or other materials or equipment. Contractor shall assume full responsibility for any damage to any such land or area, or to the owner or occupant thereof, or of any adjacent land or areas resulting from the performance of the Work. Use of Owner's existing buildings or lands by the Contractor for storage of materials and equipment will not be permitted. Use of existing washrooms, lavatories, sanitary facilities or plumbing facilities by the Contractor or any of his employees or Subcontractors will not be permitted.

2. Should any claim be made by any such owner or occupant because of the performance of the Work, Contractor shall promptly settle with such other party by negotiation or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law.

3. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any claim or action, legal or equitable, brought by any such owner or occupant against Owner, Engineer, or any other party indemnified hereunder to the extent caused by or based upon Contractor's performance of the Work.

B. *Removal of Debris During Performance of the Work:* During the progress of the Work Contractor shall keep the Site and other areas free from accumulations of waste materials, rubbish, and other debris. Removal and disposal of such waste materials, rubbish, and other debris shall conform to applicable Laws and Regulations.

C. *Cleaning:* Prior to Substantial Completion of the Work, Contractor shall clean the Site and the Work and make it ready for utilization by Owner. At the completion of the Work Contractor shall remove from the Site all tools, appliances, construction equipment and machinery, and surplus materials and shall restore to original condition all property not designated for alteration by the Contract Documents.

D. *Loading Structures:* Contractor shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall Contractor subject any part of the Work or adjacent property to stresses or pressures that will endanger it.

6.12 *Record Documents*

A. Contractor shall maintain in a safe place at the Site one record copy of all Drawings, Specifications, Addenda, Change Orders, Work Change Directives, Field Orders, and written interpretations and clarifications in good order and annotated to show changes made during construction. These record documents together with all approved Samples and a counterpart of all approved Shop Drawings will be available to Engineer for reference. Upon completion of the Work, these record documents, Samples, and Shop Drawings will be delivered to Engineer for Owner.

6.13 *Safety and Protection*

A. Contractor shall be solely responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work. Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury or loss to:

1. all persons on the Site or who may be affected by the Work;

2. all the Work and materials and equipment to be incorporated therein, whether in storage on or off the Site; and

3. other property at the Site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, utilities, and Underground Facilities not designated for removal, relocation, or replacement in the course of construction.

4. In the event of temporary suspension of the Work, or during inclement weather, or whenever Engineer may direct; Contractor shall, and shall cause Subcontractors, to protect carefully the Work and materials against damage or injury from the weather. If, in the opinion of Engineer, any portion of Work or materials shall have been damaged or injured by reason of failure on the part of the Contractor or any Subcontractors to so protect the Work, such Work and materials shall be removed and replaced at the expense of Contractor.

B. Contractor shall comply with all applicable Laws and Regulations relating to the safety of persons or property, or to the protection of persons or property from damage, injury, or loss; and shall erect and maintain all necessary safeguards for such safety and protection. Contractor shall notify owners of adjacent property and of Underground Facilities and other utility owners when prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property. Contractor shall comply with the Trench Safety Act, Florida Law, Chapter 90-96 (CS/SB2626); OSHA (P.L. 91-596); the Contract Work Hours and Safety Standards Act (P.L. 91-54); and the Federal Register 29 CFR part 1926, OSHA Subpart P, and all federal requirements as part of the federal grant as stated in the solicitation and contract, as well as all other local, state and federal ordinances, laws, and regulations regarding safety.

C. All damage, injury, or loss to any property referred to in Paragraph 6.13.A.2 or 6.13.A.3 caused, directly or indirectly, in whole or in part, by Contractor, any Subcontractor, Supplier, or any other individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, shall be remedied by Contractor (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of Owner or Engineer or , or anyone employed by any of them, or anyone for whose acts any of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of Contractor or any Subcontractor, Supplier, or other individual or entity directly or indirectly employed by any of them).

D. Contractor's duties and responsibilities for safety and for protection of the Work shall continue until such time as all the Work is completed and Engineer has issued a notice to Owner and Contractor in accordance with Paragraph 14.07.B that the Work is acceptable (except as otherwise expressly provided in connection with Substantial Completion).

6.14 *Safety Representative*

A. Contractor shall designate a qualified and experienced safety representative at the Site whose duties and responsibilities shall be the prevention of accidents and the maintaining and supervising of safety precautions and programs.

6.15 *Hazard Communication Programs*

A. Contractor shall be responsible for coordinating any exchange of material safety data sheets or other hazard communication information required to be made available to or exchanged between or among employers at the Site in accordance with Laws or Regulations.

6.16 *Emergencies*

A. In emergencies affecting the safety or protection of persons or the Work or property at the Site or adjacent thereto, Contractor is obligated to act to prevent threatened damage, injury, or loss. Contractor shall give Engineer prompt written notice if Contractor believes that any significant changes in the Work or variations from the Contract Documents have been caused thereby or are required as a result thereof. If Engineer determines that a change in the

Contract Documents is required because of the action taken by Contractor in response to such an emergency, a Work Change Directive or Change Order will be issued.

6.17 *Shop Drawings and Samples*

A. Contractor shall submit Shop Drawings and Samples to Engineer for review and approval in accordance with the acceptable Schedule of Submittals (as required by Paragraph 2.07). Each submittal will be identified as Engineer may require.

1. *Shop Drawings*

a. Submit number of copies specified in the General Requirements.

b. Data shown on the Shop Drawings will be complete with respect to quantities, dimensions, specified performance and design criteria, materials, and similar data to show Engineer the services, materials, and equipment Contractor proposes to provide and to enable Engineer to review the information for the limited purposes required by Paragraph 6.17.D.

2. *Samples*

a. Submit number of Samples specified in the Specifications.

b. Clearly identify each Sample as to material, Supplier, pertinent data such as catalog numbers, the use for which intended and other data as Engineer may require to enable Engineer to review the submittal for the limited purposes required by Paragraph 6.17.D.

B. Where a Shop Drawing or Sample is required by the Contract Documents or the Schedule of Submittals, any related Work performed prior to Engineer's review and approval of the pertinent submittal will be at the sole expense and responsibility of Contractor.

C. *Submittal Procedures*

1. Before submitting each Shop Drawing or Sample, Contractor shall have determined and verified:

a. all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect thereto;

b. the suitability of all materials with respect to intended use, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work;

c. all information relative to Contractor's responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto; and

d. shall also have reviewed and coordinated each Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents.

2. Each submittal shall bear a stamp or specific written certification that Contractor has satisfied Contractor's obligations under the Contract Documents with respect to Contractor's review and approval of that submittal.

3. With each submittal, Contractor shall give Engineer specific written notice of any variations, that the Shop Drawing or Sample may have from the requirements of the Contract Documents. This notice shall be both a written communication separate from the Shop Drawings or Sample submittal; and, in addition, by a specific notation made on each Shop Drawing or Sample submitted to Engineer for review and approval of each such variation.

D. *Engineer's Review*

1. Engineer will provide timely review of Shop Drawings and Samples in accordance with the Schedule of Submittals acceptable to Engineer. Engineer's review and approval will be only to determine if the items covered by the submittals will, after installation or incorporation in the Work, conform to the information given in the Contract Documents and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.

2. Engineer's review and approval will not extend to means, methods, techniques, sequences, or procedures of construction (except where a particular means, method, technique, sequence, or procedure of construction is specifically and expressly called for by the Contract Documents) or to safety precautions or programs incident thereto. The review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.

3. Engineer's review and approval shall not relieve Contractor from responsibility for any variation from the requirements of the Contract Documents unless Contractor has complied with the requirements of Paragraph 6.17.C.3 and Engineer has given written approval of each such variation by specific written notation thereof incorporated in or accompanying the Shop Drawing or Sample. Engineer's review and approval shall not relieve Contractor from responsibility for complying with the requirements of Paragraph 6.17.C.1.

E. *Resubmittal Procedures*

1. Contractor shall make corrections required by Engineer and shall return the required number of corrected copies of Shop Drawings and submit, as required, new Samples for review and approval. Contractor shall direct specific attention in writing to revisions other than the corrections called for by Engineer on previous submittals.

6.18 *Continuing the Work*

A. Contractor shall carry on the Work and adhere to the Progress Schedule during all disputes or disagreements with Owner. No Work shall be delayed or postponed pending resolution of any disputes or disagreements, except as permitted by Paragraph 15.04 or as Owner and Contractor may otherwise agree in writing.

6.19 *Contractor's General Warranty and Guarantee*

A. Contractor warrants and guarantees to Owner for a period of one (1) year following the issuance of the Certificate of Completion for the project that all Work will be in accordance with the Contract Documents and will not be defective. Engineer and its Related Entities shall be entitled to rely on representation of Contractor's warranty and guarantee.

B. Contractor's warranty and guarantee hereunder excludes defects or damage caused by:

1. abuse, modification, or improper maintenance or operation by persons other than Contractor, Subcontractors, Suppliers, or any other individual or entity for whom Contractor is responsible; or

2. normal wear and tear under normal usage.

C. Contractor's obligation to perform and complete the Work in accordance with the Contract Documents shall be absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents or a release of Contractor's obligation to perform the Work in accordance with the Contract Documents:

1. observations by Engineer;

2. recommendation by Engineer or payment by Owner of any progress or final payment;

3. the issuance of a certificate of Substantial Completion by Engineer or any payment related thereto by Owner;

4. use or occupancy of the Work or any part thereof by Owner;

5. any review and approval of a Shop Drawing or Sample submittal or the issuance of a notice of acceptability by Engineer;

6. any inspection, test, or approval by others; or

7. any correction of defective Work by Owner.

6.20 *Indemnification*

A. The Contractor shall indemnify and hold harmless the City of Ocoee, and its agents, officials and employees, from liabilities, damages, losses and costs, including, but not limited to, reasonable attorney's fees, to the extent caused by the negligence, recklessness, or intentional wrongful misconduct of the Contractor or persons employed or utilized by the Contractor in the performance of the construction contract.

B. In any and all claims against the City of Ocoee or any of their respective consultants, agents, officers, directors, partners, or employees by any employee (or the survivor or personal representative of such employee) of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, the indemnification obligation under Paragraph 6.20.A shall not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for Contractor or any such Subcontractor, Supplier, or other individual or entity under workers' compensation acts, disability benefit acts, or other employee benefit acts.

C. The indemnification obligations of Contractor under Paragraph 6.20.A shall not extend to the liability of Engineer and Engineer's officers, directors, partners, employees, agents, consultants and subcontractors arising out of:

1. the preparation or approval of, or the failure to prepare or approve, maps, Drawings, opinions, reports, surveys, Change Orders, designs, or Specifications; or

2. giving directions or instructions, or failing to give them, if that is the primary cause of the injury or damage.

6.21 *Delegation of Professional Design Services*

A. Contractor will not be required to provide professional design services unless such services are specifically required by the Contract Documents for a portion of the Work or unless such services are required to carry out Contractor's responsibilities for construction means, methods, techniques, sequences and procedures. Contractor shall not be required to provide professional services in violation of applicable law.

B. If professional design services or certifications by a design professional related to systems, materials or equipment are specifically required of Contractor by the Contract Documents, Owner and Engineer will specify all performance and design criteria that such services must satisfy. Contractor shall cause such services or certifications to be provided by a properly licensed professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, Shop Drawings and other submittals prepared by such professional. Shop Drawings and other submittals related to the Work designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to Engineer.

C. Owner shall be entitled to rely upon the adequacy, accuracy and completeness of the services, certifications or approvals performed by such design professionals.

D. Pursuant to this Paragraph 6.21, Engineer's review and approval of design calculations and design drawings will be only for the limited purpose of checking for conformance with performance and design criteria given and the design concept expressed in the Contract Documents. Engineer's review and approval of Shop Drawings and other

submittals (except design calculations and design drawings) will be only for the purpose stated in Paragraph 6.17.D.1.

ARTICLE 7 – OTHER WORK AT THE SITE

7.01 *Related Work at Site*

A. Owner may perform other work related to the Project at the Site with Owner's employees, or via other direct contracts therefor, or have other work performed by utility owners. If such other work is not noted in the Contract Documents, then:

1. written notice thereof will be given to Contractor prior to starting any such other work; and

2. if Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times that should be allowed as a result of such other work, a Claim may be made therefor as provided in Paragraph 10.05.

B. Contractor shall afford each other contractor who is a party to such a direct contract, each utility owner and Owner, if Owner is performing other work with Owner's employees, proper and safe access to the Site, a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work, and shall properly coordinate the Work with theirs. Contractor shall do all cutting, fitting, and patching of the Work that may be required to properly connect or otherwise make its several parts come together and properly integrate with such other work. Contractor shall not endanger any work of others by cutting, excavating, or otherwise altering their work and will only cut or alter their work with the written consent of Engineer and the others whose work will be affected. The duties and responsibilities of Contractor under this Paragraph are for the benefit of such utility owners and other contractors to the extent that there are comparable provisions for the benefit of Contractor in said direct contracts between Owner and such utility owners and other contractors.

C. If the proper execution or results of any part of Contractor's Work depends upon work performed by others under this Article 7, Contractor shall inspect such other work and promptly report to Engineer in writing any delays, defects, or deficiencies in such other work that render it unavailable or unsuitable for the proper execution and results of Contractor's Work. Contractor's failure to so report will constitute an acceptance of such other work as fit and proper for integration with Contractor's Work except for latent defects and deficiencies in such other work.

D. The Contract Time stipulated for this Construction Contract may also include the time required for utility construction by others as addressed by any Utility Relocation Schedule(s) included within the Contract Documents or Information Available to Bidders, and/or pursuant to referenced utility relocation period(s) detailed under the Contract General Requirements

7.02 *Coordination*

A. If Owner intends to contract with others for the performance of other work on the Project at the Site, the following will be set forth in Supplementary Conditions:

1. the individual or entity who will have authority and responsibility for coordination of the activities among the various contractors will be identified;

2. the specific matters to be covered by such authority and responsibility will be itemized; and

3. the extent of such authority and responsibilities will be provided.

B. Unless otherwise provided in the Supplementary Conditions, Owner shall have sole authority and responsibility for such coordination.

7.03 *Legal Relationships*

A. Paragraphs 7.01.A and 7.02 are not applicable for utilities not under the control of Owner.

B. Each other direct contract of Owner under Paragraph 7.01.A shall provide that the other contractor is liable to Owner and Contractor for the reasonable direct delay and disruption costs incurred by Contractor as a result of the other contractor's actions or inactions.

C. Contractor shall be liable to Owner and any other contractor for the reasonable direct delay and disruption costs incurred by such other contractor as a result of Contractor's action or inactions.

ARTICLE 8 – OWNER'S RESPONSIBILITIES

8.01 *Communications to Contractor*

A. Except as otherwise provided in these General Conditions, Owner shall issue all communications to Contractor through Engineer.

8.02 *Replacement of Engineer*

A. In case of termination of the employment of Engineer, Owner shall appoint an engineer to whom Contractor makes no reasonable objection, whose status under the Contract Documents shall be that of the former Engineer.

8.03 *Furnish Data*

A. Owner shall promptly furnish the data required of Owner under the Contract Documents.

8.04 *Pay When Due*

A. Owner shall make payments to Contractor when they are due as provided in Paragraphs 14.02.C and 14.07.C.

8.05 *Lands and Easements; Reports and Tests*

A. Owner's duties in respect of providing lands and easements and providing engineering surveys to establish reference points are set forth in Paragraphs 4.01 and 4.05. Paragraph 4.02 refers to Owner's identifying and making available to Contractor copies of reports of explorations and tests of subsurface conditions and drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the Site that have been utilized by Engineer in preparing the Contract Documents.

8.06 *Insurance*

A. Owner's responsibilities, if any, in respect to purchasing and maintaining liability and property insurance are set forth in Article 5.

8.07 *Change Orders*

A. Owner is obligated to execute Change Orders as indicated in Paragraph 10.03.

8.08 *Inspections, Tests, and Approvals*

A. Owner's responsibility in respect to certain inspections, tests, and approvals is set forth in Paragraph 13.03.B.

8.09 *Limitations on Owner's Responsibilities*

A. The Owner shall not supervise, direct, or have control or authority over, nor be responsible for, Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Owner will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

8.10 *Undisclosed Hazardous Environmental Condition*

A. Owner's responsibility in respect to an undisclosed Hazardous Environmental Condition is set forth in Paragraph 4.06.

ARTICLE 9 – ENGINEER'S STATUS DURING CONSTRUCTION

9.01 *Owner's Representative*

A. Engineer will be Owner's representative during the construction period. The duties and responsibilities and the limitations of authority of Engineer as Owner's representative during construction are set forth in the Contract Documents and will not be changed without written consent of Owner and Engineer.

9.02 *Visits to Site*

A. Engineer will make visits to the Site at intervals appropriate to the various stages of construction as Engineer deems necessary in order to observe as an experienced and qualified design professional the progress that has been made and the quality of the various aspects of Contractor's executed Work. Based on information obtained during such visits and observations, Engineer, for the benefit of Owner, will determine, in general, if the Work is proceeding in accordance with the Contract Documents. Engineer will not be required to make exhaustive or continuous inspections on the Site to check the quality or quantity of the Work. Engineer's efforts will be directed toward providing for Owner a greater degree of confidence that the completed Work will conform generally to the Contract Documents. On the basis of such visits and observations, Engineer will keep Owner informed of the progress of the Work and will endeavor to guard Owner against defective Work.

B. Engineer's visits and observations are subject to all the limitations on Engineer's authority and responsibility set forth in Paragraph 9.09. Particularly, but without limitation, during or as a result of Engineer's visits or observations of Contractor's Work Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work.

9.03 *Project Representative*

A. Owner will furnish a Resident Project Representative to observe the performance of the Work. The duties, responsibilities and limitations of authority of this Resident Project Representative (and assistants) are as follows:

B. The Resident Project Representative (RPR) will act as directed by and under the supervision of OWNER, and will confer with Owner and Engineer. RPR's dealings in matters pertaining to the on-site work shall, in general, be only with Owner, Engineer, and Contractor, and dealings with subcontractors shall only be through or with the full knowledge and approval of Contractor.

C. DUTIES AND RESPONSIBILITIES OF RPR

1. Schedules: Review the progress schedule, schedule of Shop Drawing submittals, and schedule of values prepared by Contractor and consult with Owner and Engineer concerning the acceptability of these submittals.

2. Conferences and Meetings: Attend meetings with Contractor, such as pre-construction conferences, progress meetings, job conferences, and other project-related meetings.

3. Communications by the RPR

   a. The RPR shall communicate with the Contractor on the site working principally through the Contractor's project manager and superintendent to facilitate communications between the Engineer and the Owner and to advise the Contractor and the Engineer when the construction operations need to be adjusted to serve the purposes of the Owner on the site.

   b. As requested by Contractor obtain from Owner and Engineer additional details or information, when required for proper execution of the work.

4. Shop Drawings and Samples

   a. Record date of receipt of Field Shop Drawings and samples.

   b. Receive samples which are furnished at the site by Contractor, and notify Engineer of the availability of samples for examination.

   c. Advise Engineer and Contractor of the commencement of any Work requiring a Shop Drawing or sample if the submittal has not been approved by the Engineer.

5. Review of Work, Rejection of Defective Work, Inspections and Tests

   a. Conduct on-site observations of the Work in progress to assist Engineer in determining if the Work is, in general, proceeding in accordance with the Contract documents.

   b. Report to Owner and Engineer whenever the RPR believes that any Work will not produce a completed Project that conforms generally to the Contract Documents or will prejudice the integrity of the design concept of the completed Project as a functioning whole as indicated in the Contract Documents, or has been damaged, or does not meet the requirements of any inspection, test or approval required to be made; and advise Owner and Engineer of work the RPR believes should be corrected or rejected or should be uncovered for observation, or requires special testing, inspection or approval.

   c. Verify that tests, equipment and systems startups and operating and maintenance training are conducted in presence of appropriate personnel, and that Contractor maintains adequate records thereof; observe, record and report to Owner and Engineer appropriate details relative to the test procedures and startups.

   d. Accompany visiting inspectors representing public or other agencies having jurisdiction over the Project, record the results of these inspections, and report to Owner and Engineer.

6. Interpretation of Contract Documents: Report to Engineer when clarifications and interpretations of the Contract Documents are needed and transmit to Contractor clarifications and interpretations as issued by Engineer.

7. Modifications: Consider and evaluate Contractor's suggestions for modifications in Drawings or Specifications and report them with RPR'S recommendations to Owner and Engineer. Transmit to Contractor in writing decisions as issued by Owner and Engineer.

8. Records

a. Maintain at the job site orderly files for correspondence, reports of job conferences, Shop Drawings and samples, reproductions of original Contract Documents including all Work Change Directives, Addenda, Change Orders, Field orders, additional Drawings issued subsequent to the execution of the Contract, Engineer's clarifications and interpretations of the Contract Documents, progress reports, and other Project-related documents.

b. Prepare a daily report or keep a diary or log book, recording Contractor's hours on the job site, weather conditions, data relative to questions of Work Change Directives, Change Orders, or changed conditions, list of job site visitors, daily activities, decisions, observations in general, and specific observations in more detail as the case of observing test procedures; and send copies to Engineer.

c. Record names, addresses, and telephone numbers of Contractor, subcontractors, and major suppliers of materials and equipment.

9. Reports

a. Contractor and Engineer shall furnish the RPR with periodic reports as required of progress of the Work and Contractor's compliance with the progress schedule.

b. Contractor and Engineer shall consult with the RPR in advance of scheduled major tests, inspections or start of important phases of the Work.

c. Contractor and Engineer shall work with the RPR to draft proposed Change Orders and Work Change Directives, by providing backup material. The RPR may from time to time recommend that Change Orders, Work Change Directives and Field Orders be issued. .

10. Payment Requisitions: The RPR may assist in the review of applications for payment with Contractor for compliance with the established procedure for their submission and forward with recommendations to Engineer, noting particularly the relationship of the payment requested to the schedule of values, Work completed and materials and equipment delivered at the site but not incorporated in the Work. Initial approved percentages of completion with respect to the schedule of values.

11. Certificates, Maintenance and Operation Manuals: During the course of the Work, the RPR may assist to verify that certificates, maintenance and operation manuals and other data required to be assembled and furnished by Contractor are applicable to the items actually installed and in accordance with the Contract Documents, and have this material delivered to Engineer for review and forward same to Owner prior to final payment for the Work.

12. Completion

a. The RPR may, before the Contractor submits a request for a substantial completion inspection, submit to the Contractor a list of observed items requiring completion or correction.

b. The RPR may, but shall not be required, to advise the Contractor or the Engineer whether Contractor has performed inspections required by laws, rules, regulations, ordinances, codes, or orders applicable to the Work, including but not limited to those to be performed by public agencies having jurisdiction over the Work, including but not limited to, the City of Ocoee.

c. The RPR may also assist in conducting final inspection together with the Engineer, Owner and Contractor and assist in preparing a final list of items to be completed and corrected. In accordance with Florida Statutes Section §218.735, within 30 calendar days of reaching substantial completion of the construction services, or 45 days if over $10 million construction cost, the Owner and

Contractor shall work together to develop the single list of items and the estimated cost to complete each item on the list required to render complete, satisfactory, and acceptable the construction services purchased by the Owner. See also General Conditions Section 710 of the bid package, and Section 5 of the Contract, Payment Procedures.

d. The RPR may observe whether all items on final list have been completed or corrected and make recommendations to Engineer concerning acceptance and issuance of the Notice of Acceptability of the Work.

D. LIMITATIONS OF AUTHORITY

Resident Project Representative

1. By taking any such action as noted above, the RPR shall not be deemed to have authorized any deviation from the Contract Documents or substitution of materials or equipment (including "or-equal" items), unless same is expressly authorized by Engineer in accordance with this Agreement.

2. By taking such action as noted above, the RPR shall not be deemed to have usurped or exceeded the Engineer's authority or responsibilities , as set forth in the Agreement or the Contract Documents.

3. By taking any such action as noted above, the RPR shall not be deemed to have undertaken any of the responsibilities of the Contractor, Engineer, subcontractors, suppliers, or agents or employee's of same.

4. By taking any such action as noted above, the RPR shall not be deemed to have advised on, issued directions relative to, or assumed control over any aspect of the means, methods, techniques, sequences or procedures of construction unless such advice or directions are specifically required by the Contract Documents.

5. By taking any such action as noted above, the RPR shall not be deemed to have provided advise on, or issued directions regarding, or assumed control over safety precautions and programs in connection with the Work.

6. The RPR shall not accept Shop Drawing or sample submittals from anyone other than CONTRACTOR.

7. By taking any such action as noted above, the RPR shall not be deemed to have authorized OWNER to occupy the Project in whole or in part.

8. Shall not participate in specialized field or laboratory tests or inspections conducted by others, except as specifically authorized by OWNER and ENGINEER.

9.04 *Authorized Variations in Work*

A. Engineer may authorize minor variations in the Work from the requirements of the Contract Documents which do not involve an adjustment in the Contract Price or the Contract Times and are compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. These may be accomplished by a Field Order and will be binding on Owner and also on Contractor, who shall perform the Work involved promptly. If Owner or Contractor believes that a Field Order justifies an adjustment in the Contract Price or Contract Times, or both, and the parties are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment, a Claim may be made therefor as provided in Paragraph 10.05.

9.05 *Rejecting Defective Work*

A. Engineer will have authority to reject Work which Engineer believes to be defective, or that Engineer believes will not produce a completed Project that conforms to the Contract Documents or that will prejudice the integrity of the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. Engineer will also have authority to require special inspection or testing of the Work as provided in Paragraph 13.04, whether or not the Work is fabricated, installed, or completed.

9.06 *Shop Drawings, Change Orders and Payments*

A. In connection with Engineer's authority, and limitations thereof, as to Shop Drawings and Samples, see Paragraph 6.17.

B. In connection with Engineer's authority, and limitations thereof, as to design calculations and design drawings submitted in response to a delegation of professional design services, if any, see Paragraph 6.21.

C. In connection with Engineer's authority as to Change Orders, see Articles 10, 11, and 12.

D. In connection with Engineer's authority as to Applications for Payment, see Article 14.

9.07 *Determinations for Unit Price Work*

A. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor. Engineer will review with Contractor the Engineer's preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise). Engineer's written decision thereon will be final and binding (except as modified by Engineer to reflect changed factual conditions or more accurate data) upon Owner and Contractor, subject to the provisions of Paragraph 10.05.

9.08 *Decisions on Requirements of Contract Documents and Acceptability of Work*

A. Engineer will be the initial interpreter of the requirements of the Contract Documents and judge of the acceptability of the Work thereunder. All matters in question and other matters between Owner and Contractor arising prior to the date final payment is due relating to the acceptability of the Work, and the interpretation of the requirements of the Contract Documents pertaining to the performance of the Work, will be referred initially to Engineer in writing within 30 days of the event giving rise to the question.

B. Engineer will, with reasonable promptness, render a written decision on the issue referred. If Owner or Contractor believe that any such decision entitles them to an adjustment in the Contract Price or Contract Times or both, a Claim may be made under Paragraph 10.05. The date of Engineer's decision shall be the date of the event giving rise to the issues referenced for the purposes of Paragraph 10.05.B.

C. Engineer's written decision on the issue referred will be final and binding on Owner and Contractor, subject to the provisions of Paragraph 10.05.

D. When functioning as interpreter and judge under this Paragraph 9.08, Engineer will not show partiality to Owner or Contractor and will not be liable in connection with any interpretation or decision rendered in good faith in such capacity.

9.09 *Limitations on Engineer's Authority and Responsibilities*

A. Neither Engineer's authority or responsibility under this Article 9 or under any other provision of the Contract Documents nor any decision made by Engineer in good faith either to exercise or not exercise such authority or responsibility or the undertaking, exercise, or performance of any authority or responsibility by Engineer shall create, impose, or give rise to any duty in contract, tort, or otherwise owed by Engineer to Contractor, any Subcontractor, any Supplier, any other individual or entity, or to any surety for or employee or agent of any of them.

B. Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Engineer will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

C. Engineer will not be responsible for the acts or omissions of Contractor or of any Subcontractor, any Supplier, or of any other individual or entity performing any of the Work.

D. Engineer's review of the final Application for Payment and accompanying documentation and all maintenance and operating instructions, schedules, guarantees, bonds, certificates of inspection, tests and approvals, and other documentation required to be delivered by Paragraph 14.07.A will only be to determine generally that their content complies with the requirements of, and in the case of certificates of inspections, tests, and approvals that the results certified indicate compliance with the Contract Documents.

E. The limitations upon authority and responsibility set forth in this Paragraph 9.09 shall also apply to the Resident Project Representative, if any, and assistants, if any.

ARTICLE 10 – CHANGES IN THE WORK; CLAIMS

10.01 *Authorized Changes in the Work*

A. Without invalidating the Contract and without notice to any surety, Owner may, subject to written approval by Agency at any time or from time to time, order additions, deletions, or revisions in the Work by a Change Order, or a Work Change Directive. Upon receipt of any such document, Contractor shall promptly proceed with the Work involved which will be performed under the applicable conditions of the Contract Documents (except as otherwise specifically provided).

B. If Owner and Contractor are unable to agree on entitlement to, or on the amount or extent, if any, of an adjustment in the Contract Price or Contract Times, or both, that should be allowed as a result of a Work Change Directive, a Claim may be made therefor as provided in Paragraph 10.05.

10.02 *Unauthorized Changes in the Work*

A. Contractor shall not be entitled to an increase in the Contract Price or an extension of the Contract Times with respect to any work performed that is not required by the Contract Documents as amended, modified, or supplemented as provided in Paragraph 3.04, except in the case of an emergency as provided in Paragraph 6.16 or in the case of uncovering Work as provided in Paragraph 13.04.B.

10.03 *Execution of Change Orders*

A. Owner and Contractor shall execute appropriate Change Orders recommended by Engineer covering:

1. changes in the Work which are: (i) ordered by Owner pursuant to Paragraph 10.01.A, (ii) required because of acceptance of defective Work under Paragraph 13.08.A or Owner's correction of defective Work under Paragraph 13.09, or (iii) agreed to by the parties;

2. changes in the Contract Price or Contract Times which are agreed to by the parties, including any undisputed sum or amount of time for Work actually performed in accordance with a Work Change Directive; and

3. changes in the Contract Price or Contract Times which embody the substance of any written decision rendered by Engineer pursuant to Paragraph 10.05; provided that, in lieu of executing any such Change Order, an appeal may be taken from any such decision in accordance with the provisions of the Contract Documents and applicable Laws and Regulations, but during any such appeal, Contractor shall carry on the Work and adhere to the Progress Schedule as provided in Paragraph 6.18.A.

10.04 *Notification to Surety*

A. If notice of any change affecting the general scope of the Work or the provisions of the Contract Documents (including, but not limited to, Contract Price or Contract Times) is required by the provisions of any bond to be given to a surety, the giving of any such notice will be Contractor's responsibility. The amount of each applicable bond will be adjusted to reflect the effect of any such change.

10.05 *Claims*

A. *Engineer's Decision Required*: All Claims, except those waived pursuant to Paragraph 14.09, shall be referred to the Engineer for decision. A decision by Engineer shall be required as a condition precedent to any exercise by Owner or Contractor of any rights or remedies either may otherwise have under the Contract Documents or by Laws and Regulations in respect of such Claims.

B. *Notice:* Written notice stating the general nature of each Claim shall be delivered by the claimant to Engineer and the other party to the Contract promptly (but in no event later than 30 days) after the start of the event giving rise thereto. The responsibility to substantiate a Claim shall rest with the party making the Claim. Notice of the amount or extent of the Claim, with supporting data shall be delivered to the Engineer and the other party to the Contract within 60 days after the start of such event (unless Engineer allows additional time for claimant to submit additional or more accurate data in support of such Claim). A Claim for an adjustment in Contract Price shall be prepared in accordance with the provisions of Paragraph 12.01.B. A Claim for an adjustment in Contract Time shall be prepared in accordance with the provisions of Paragraph 12.02.B. Each Claim shall be accompanied by claimant's written statement that the adjustment claimed is the entire adjustment to which the claimant believes it is entitled as a result of said event. The opposing party shall submit any response to Engineer and the claimant within 30 days after receipt of the claimant's last submittal (unless Engineer allows additional time).

C. *Engineer's Action*: Engineer will review each Claim and, within 30 days after receipt of the last submittal of the claimant or the last submittal of the opposing party, if any, take one of the following actions in writing:

1. deny the Claim in whole or in part,

2. approve the Claim, or

3. notify the parties that the Engineer is unable to resolve the Claim if, in the Engineer's sole discretion, it would be inappropriate for the Engineer to do so. For purposes of further resolution of the Claim, such notice shall be deemed a denial.

D. In the event that Engineer does not take action on a Claim within said 30 days, the Claim shall be deemed denied.

E. Engineer's written action under Paragraph 10.05.C or denial pursuant to Paragraphs 10.05.C.3 or 10.05.D will be final and binding upon Owner and Contractor, unless Owner or Contractor invoke the dispute resolution procedure set forth in Article 16 within 30 days of such action or denial.

F. No Claim for an adjustment in Contract Price or Contract Times will be valid if not submitted in accordance with this Paragraph 10.05.

ARTICLE 11 – COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK

11.01 *Cost of the Work*

A. *Costs Included:* The term Cost of the Work means the sum of all costs, except those excluded in Paragraph 11.01.B, necessarily incurred and paid by Contractor in the proper performance of the Work. When the value of any Work covered by a Change Order or when a Claim for an adjustment in Contract Price is determined on the basis of Cost of the Work, the costs to be reimbursed to Contractor will be only those additional or incremental costs required because of the change in the Work or because of the event giving rise to the Claim. Except as otherwise

may be agreed to in writing by Owner, such costs shall be in amounts no higher than those prevailing in the locality of the Project, shall include only the following items, and shall not include any of the costs itemized in Paragraph 11.01.B.

1. Payroll costs for employees in the direct employ of Contractor in the performance of the Work under schedules of job classifications agreed upon by Owner and Contractor. Such employees shall include, without limitation, superintendents, foremen, and other personnel employed full time at the Site. Payroll costs for employees not employed full time on the Work shall be apportioned on the basis of their time spent on the Work. Payroll costs shall include, but not be limited to, salaries and wages plus the cost of fringe benefits, which shall include social security contributions, unemployment, excise, and payroll taxes, workers' compensation, health and retirement benefits, bonuses, sick leave, vacation and holiday pay applicable thereto. The expenses of performing Work outside of regular working hours, on Saturday, Sunday, or legal holidays, shall be included in the above to the extent authorized by Owner.

2. Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and Suppliers' field services required in connection therewith. All cash discounts shall accrue to Contractor unless Owner deposits funds with Contractor with which to make payments, in which case the cash discounts shall accrue to Owner. All trade discounts, rebates and refunds and returns from sale of surplus materials and equipment shall accrue to Owner, and Contractor shall make provisions so that they may be obtained.

3. Payments made by Contractor to Subcontractors for Work performed by Subcontractors. If required by Owner, Contractor shall obtain competitive bids from subcontractors acceptable to Owner and Contractor and shall deliver such bids to Owner, who will then determine, with the advice of Engineer, which bids, if any, will be acceptable. If any subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work plus a fee, the Subcontractor's Cost of the Work and fee shall be determined in the same manner as Contractor's Cost of the Work and fee as provided in this Paragraph 11.01.

4. Costs of special consultants (including but not limited to Engineers, architects, testing laboratories, surveyors, attorneys, and accountants) employed for services specifically related to the Work.

5. Supplemental costs including the following:

    a. The proportion of necessary transportation, travel, and subsistence expenses of Contractor's employees incurred in discharge of duties connected with the Work.

    b. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office, and temporary facilities at the Site, and hand tools not owned by the workers, which are consumed in the performance of the Work, and cost, less market value, of such items used but not consumed which remain the property of Contractor.

    c. Rentals of all construction equipment and machinery, and the parts thereof whether rented from Contractor or others in accordance with rental agreements approved by Owner with the advice of Engineer, and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs shall be in accordance with the terms of said rental agreements. The rental of any such equipment, machinery, or parts shall cease when the use thereof is no longer necessary for the Work.

    d. Sales, consumer, use, and other similar taxes related to the Work, and for which Contractor is liable, imposed by Laws and Regulations.

    e. Deposits lost for causes other than negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.

f. Losses and damages (and related expenses) caused by damage to the Work, not compensated by insurance or otherwise, sustained by Contractor in connection with the performance of the Work (except losses and damages within the deductible amounts of property insurance established in accordance with Paragraph 5.06.D), provided such losses and damages have resulted from causes other than the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses shall include settlements made with the written consent and approval of Owner. No such losses, damages, and expenses shall be included in the Cost of the Work for the purpose of determining Contractor's fee.

g. The cost of utilities, fuel, and sanitary facilities at the Site.

h. Minor expenses such as telegrams, long distance telephone calls, telephone service at the Site, expressages, and similar petty cash items in connection with the Work.

i. The costs of premiums for all bonds and insurance Contractor is required by the Contract Documents to purchase and maintain.

B. *Costs Excluded:* The term Cost of the Work shall not include any of the following items:

1. Payroll costs and other compensation of Contractor's officers, executives, principals (of partnerships and sole proprietorships), general managers, safety managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expediters, timekeepers, clerks, and other personnel employed by Contractor, whether at the Site or in Contractor's principal or branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in Paragraph 11.01.A.1 or specifically covered by Paragraph 11.01.A.4, all of which are to be considered administrative costs covered by the Contractor's fee.

2. Expenses of Contractor's principal and branch offices other than Contractor's office at the Site.

3. Any part of Contractor's capital expenses, including interest on Contractor's capital employed for the Work and charges against Contractor for delinquent payments.

4. Costs due to the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of defective Work, disposal of materials or equipment wrongly supplied, and making good any damage to property.

5. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in Paragraphs 11.01.A and 11.01.B.

C. Contractor's Fee: When all the Work is performed on the basis of cost-plus, Contractor's fee shall be determined as set forth in the Agreement. When the value of any Work covered by a Change Order or when a Claim for an adjustment in Contract Price is determined on the basis of Cost of the Work, Contractor's fee shall be determined as set forth in Paragraph 12.01.C.

D. *Documentation:* Whenever the Cost of the Work for any purpose is to be determined pursuant to Paragraphs 11.01.A and 11.01.B, Contractor will establish and maintain records thereof in accordance with generally accepted accounting practices and submit in a form acceptable to Engineer an itemized cost breakdown together with supporting data.

11.02 *Allowances*

A. It is understood that Contractor has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be performed for such sums and by such persons or entities as may be acceptable to Owner and Engineer.

B. Cash Allowances

1. Contractor agrees that:

a. the cash allowances include the cost to Contractor (less any applicable trade discounts) of materials and equipment required by the allowances to be delivered at the Site, and all applicable taxes; and

b. Contractor's costs for unloading and handling on the Site, labor, installation, overhead, profit, and other expenses contemplated for the cash allowances have been included in the Contract Price and not in the allowances, and no demand for additional payment on account of any of the foregoing will be valid.

C. *Contingency Allowance*

1. Contractor agrees that a contingency allowance, if any, is for the sole use of Owner to cover unanticipated costs.

D. Prior to final payment, an appropriate Change Order will be issued as recommended by Engineer to reflect actual amounts due Contractor on account of Work covered by allowances, and the Contract Price shall be correspondingly adjusted.

11.03 *Unit Price Work*

A. Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an amount equal to the sum of the unit price for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Agreement.

B. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Determinations of the actual quantities and classifications of Unit Price Work performed by Contractor will be made by Engineer subject to the provisions of Paragraph 9.07.

C. Each unit price will be deemed to include an amount considered by Contractor to be adequate to cover Contractor's overhead and profit for each separately identified item.

D. Owner or Contractor may make a Claim for an adjustment in the Contract Price in accordance with Paragraph 10.05 if:

1. the Bid price of a particular item of Unit Price Work amounts to more than 5 percent of the Contract Price and the variation in the quantity of that particular item of Unit Price Work performed by Contractor differs by more than 25 percent from the estimated quantity of such item indicated in the Agreement; and

2. there is no corresponding adjustment with respect to any other item of Work; and

3. Contractor believes that Contractor is entitled to an increase in Contract Price as a result of having incurred additional expense or Owner believes that Owner is entitled to a decrease in Contract Price and the parties are unable to agree as to the amount of any such increase or decrease.

ARTICLE 12 – CHANGE OF CONTRACT PRICE; CHANGE OF CONTRACT TIMES

12.01 *Change of Contract Price*

A. The Contract Price may only be changed by a Change Order. Any Claim for an adjustment in the Contract Price shall be based on written notice submitted by the party making the Claim to the Engineer and the other party to the Contract in accordance with the provisions of Paragraph 10.05.

B. The value of any Work covered by a Change Order or of any Claim for an adjustment in the Contract Price will be determined as follows:

1. where the Work involved is covered by unit prices contained in the Contract Documents, by application of such unit prices to the quantities of the items involved (subject to the provisions of Paragraph 11.03); or

2. where the Work involved is not covered by unit prices contained in the Contract Documents, by a mutually agreed lump sum (which may include an allowance for overhead and profit not necessarily in accordance with Paragraph 12.01.C.2); or

3. where the Work involved is not covered by unit prices contained in the Contract Documents and agreement to a lump sum is not reached under Paragraph 12.01.B.2, on the basis of the Cost of the Work (determined as provided in Paragraph 11.01) plus a Contractor's fee for overhead and profit (determined as provided in Paragraph 12.01.C).

C. Contractor's Fee: The Contractor's fee for overhead and profit shall be determined as follows:

1. a mutually acceptable fixed fee; or

2. if a fixed fee is not agreed upon, then a fee based on the following percentages of the various portions of the Cost of the Work:

a. for costs incurred under Paragraphs 11.01.A.1 and 11.01.A.2, the Contractor's fee shall be 15 percent;

b. for costs incurred under Paragraph 11.01.A.3, the Contractor's fee shall be five percent;

c. where one or more tiers of subcontracts are on the basis of Cost of the Work plus a fee and no fixed fee is agreed upon, the intent of Paragraph 12.01.C.2.a is that the Subcontractor who actually performs the Work, at whatever tier, will be paid a fee of 15 percent of the costs incurred by such Subcontractor under Paragraphs 11.01.A.1 and 11.01.A.2 and that any higher tier Subcontractor and Contractor will each be paid a fee of five percent of the amount paid to the next lower tier Subcontractor;

d. no fee shall be payable on the basis of costs itemized under Paragraphs 11.01.A.4, 11.01.A.5, and 11.01.B;

e. the amount of credit to be allowed by Contractor to Owner for any change which results in a net decrease in cost will be the amount of the actual net decrease in cost plus a deduction in Contractor's fee by an amount equal to five percent of such net decrease; and

f. when both additions and credits are involved in any one change, the adjustment in Contractor's fee shall be computed on the basis of the net change in accordance with Paragraphs 12.01.C.2.a through 12.01.C.2.e, inclusive.

g. Equipment: For any machinery or special equipment (other than small tools), including fuel and lubricant, the Contractor will receive 100% of the "Rental Rate Blue Book" for the actual time that such equipment is in operation on the work, and 50% of the "Rental Rate Blue Book" for the time the equipment is directed to standby and remain on the project site. The equipment rates will be based on the latest edition (version current at the time of bid) of the "Rental Rate Blue Book for Construction Equipment" or the "Rental Rate Blue Book for Older Construction Equipment," whichever is applicable, as published by Machinery Information Division of PRIMEDIA Information, Inc.(version current at the time of bid), using all instructions and adjustments contained therein and as modified below. On all projects, the Engineer will adjust the rates using regional adjustments and Rate Adjustment Tables according to the instructions in the "Blue Book".

h. The Monthly Rate is the Basic Machine Rate Plus Any Attachments. Standby rates will apply when equipment is not in operation and is directed by the Engineer to standby at the project site when needed again to complete work and the cost of moving the equipment will exceed the accumulated standby cost. Standby rates will not apply on any day the equipment operates eight or more hours. Standby payment will be limited to only that number of hours which, when added to the operating time of that day equals eight hours. Standby payment will not be made on days that are not normally considered workdays on the project.

i. The Owner will allow for the cost of transporting the equipment to and from the location at which it will be used. If the equipment requires assembly or disassembly for transport, the Owner will pay for the time to perform this work at the rate of standby equipment

12.02 *Change of Contract Times*

A. The Contract Times may only be changed by a Change Order. Any Claim for an adjustment in the Contract Times shall be based on written notice submitted by the party making the Claim to the Engineer and the other party to the Contract in accordance with the provisions of Paragraph 10.05.

B. Any adjustment of the Contract Times covered by a Change Order or any Claim for an adjustment in the Contract Times will be determined in accordance with the provisions of this Article 12.

12.03 *Delays*

A. Where Contractor is prevented from completing any part of the Work within the Contract Times due to delay beyond the control of Contractor, the Contract Times will be extended in an amount equal to the time lost due to such delay if a Claim is made therefor as provided in Paragraph 12.02.A. Delays beyond the control of Contractor shall include, but not be limited to, acts or neglect by Owner, acts or neglect of utility owners or other contractors performing other work as contemplated by Article 7, fires, floods, epidemics, abnormal weather conditions, or acts of God.

B. If Owner, Engineer, or other contractors or utility owners performing other work for Owner as contemplated by Article 7, or anyone for whom Owner is responsible, delays, disrupts, or interferes with the performance or progress of the Work, then Contractor shall be entitled to an equitable adjustment in the Contract Price or the Contract Times, or both. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.

C. If Contractor is delayed in the performance or progress of the Work by fire, flood, epidemic, abnormal weather conditions, acts of God, acts or failures to act of utility owners not under the control of Owner, or other causes not the fault of and beyond control of Owner and Contractor, then Contractor shall be entitled to an equitable adjustment in Contract Times, if such adjustment is essential to Contractor's ability to complete the Work within the Contract Times. Such an adjustment shall be Contractor's sole and exclusive remedy for the delays described in this Paragraph 12.03.B.

1. delays caused by or within the control of Contractor; or

D. Owner, Engineer and the Related Entities of each of them shall not be liable to Contractor for any claims, costs, losses, or damages (including but not limited to all fees and charges of Engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Contractor on or in connection with any other project or anticipated project.

E. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for delays within the control of Contractor. Delays attributable to and within the control of a Subcontractor or Supplier shall be deemed to be delays within the control of Contractor.

ARTICLE 13 – TESTS AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK

13.01 *Notice of Defects*

A. Prompt notice of all defective Work of which Owner or Engineer has actual knowledge will be given to Contractor. All defective Work may be rejected, corrected, or accepted as provided in this Article 13.

13.02 *Access to Work*

A. Owner, Engineer, their consultants and other representatives and personnel of Owner, independent testing laboratories, and governmental agencies with jurisdictional interests will have access to the Site and the Work at reasonable times for their observation, inspecting, and testing. Contractor shall provide them proper and safe conditions for such access and advise them of Contractor's Site safety procedures and programs so that they may comply therewith as applicable.

13.03 *Tests and Inspections*

A. Contractor shall give Engineer timely notice of readiness of the Work for all required inspections, tests, or approvals and shall cooperate with inspection and testing personnel to facilitate required inspections or tests.

B. Owner shall employ and pay for the services of an independent testing laboratory to perform all inspections, tests, or approvals required by the Contract Documents except:

1. for inspections, tests, or approvals covered by Paragraphs 13.03.C and 13.03.D below;

2. that costs incurred in connection with tests or inspections conducted pursuant to Paragraph 13.04.B shall be paid as provided in said Paragraph 13.04.C; and

3. as otherwise specifically provided in the Contract Documents.

C. If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) specifically to be inspected, tested, or approved by an employee or other representative of such public body, Contractor shall assume full responsibility for arranging and obtaining such inspections, tests, or approvals, pay all costs in connection therewith, and furnish Engineer the required certificates of inspection or approval. Inspections required by the Contract Documents for pre-engineered, prefabricated or precast structural components shall be performed at the place of manufacture upon each stage of manufacture, by a registered professional engineer licensed in the State of Florida (other than the Manufacturer's Specialty Engineer) or a person under his direct supervision. Two (2) copies of a written report of such inspection shall be provided to the Engineer prior to delivery to the site and shall be prepared by the inspector and each copy shall bear the seal and signature of the respective registered professional engineer. The costs for these inspections and reports shall be paid for by the Contractor.

D. Contractor shall be responsible for arranging and obtaining and shall pay all costs in connection with any inspections, tests, or approvals required for Owner's and Engineer's acceptance of materials or equipment to be incorporated in the Work; or acceptance of materials, mix designs, or equipment submitted for approval prior to Contractor's purchase thereof for incorporation in the Work. Such inspections, tests, or approvals shall be performed by organizations acceptable to Owner and Engineer.

E. If any Work (or the work of others) that is to be inspected, tested, or approved is covered by Contractor without written concurrence of Engineer, it must, if requested by Engineer, be uncovered for observation.

F. Uncovering Work as provided in Paragraph 13.03.E shall be at Contractor's expense unless Contractor has given Engineer timely notice of Contractor's intention to cover the same and Engineer has not acted with reasonable promptness in response to such notice.

13.04 *Uncovering Work*

A. If any Work is covered contrary to the written request of Engineer, it must, if requested by Engineer, be uncovered for Engineer's observation and replaced at Contractor's expense.

B. If Engineer considers it necessary or advisable that covered Work be observed by Engineer or inspected or tested by others, Contractor, at Engineer's request, shall uncover, expose, or otherwise make available for observation, inspection, or testing as Engineer may require, that portion of the Work in question, furnishing all necessary labor, material, and equipment. Contractor shall have no claim for delay or disruption based upon the Engineer's reasonable actions under this paragraph.

C. If it is found that the uncovered Work is defective, Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such uncovering, exposure, observation, inspection, and testing, and of satisfactory replacement or reconstruction (including but not limited to all costs of repair or replacement of work of others); and Owner shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount thereof, Owner may make a Claim therefor as provided in Paragraph 10.05.

D. If, the uncovered Work is not found to be defective, Contractor shall be allowed an increase in the Contract Price or an extension of the Contract Times, or both, directly attributable to such uncovering, exposure, observation, inspection, testing, replacement, and reconstruction. If the parties are unable to agree as to the amount or extent thereof, Contractor may make a Claim therefor as provided in Paragraph 10.05.

13.05 *Owner May Stop the Work*

A. If the Work is defective, or Contractor fails to supply sufficient skilled workers or suitable materials or equipment, or fails to perform the Work in such a way that the completed Work will conform to the Contract Documents, Owner may order Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of Owner to stop the Work shall not give rise to any duty on the part of Owner to exercise this right for the benefit of Contractor, any Subcontractor, any Supplier, any other individual or entity, or any surety for, or employee or agent of any of them.

13.06 *Correction or Removal of Defective Work*

A. Promptly after receipt of notice, Contractor shall correct all defective Work, whether or not fabricated, installed, or completed, or, if the Work has been rejected by Engineer, remove it from the Project and replace it with Work that is not defective. Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or removal (including but not limited to all costs of repair or replacement of work of others). Contractor shall have no claim for delay or disruption based upon the Engineer's reasonable actions under this paragraph.

B. When correcting defective Work under the terms of this Paragraph 13.06 or Paragraph 13.07, Contractor shall take no action that would void or otherwise impair Owner's special warranty and guarantee, if any, on said Work.

13.07 *Correction Period*

A. If within one year after the date of Substantial Completion (or such longer period of time as may be prescribed by the terms of any applicable special guarantee required by the Contract Documents) or by any specific provision of the Contract Documents, any Work is found to be defective, or if the repair of any damages to the land or areas made available for Contractor's use by Owner or permitted by Laws and Regulations as contemplated in Paragraph 6.11.A is found to be defective, Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions:

1. repair such defective land or areas; or

2. correct such defective Work; or

3. if the defective Work has been rejected by Owner, remove it from the Project and replace it with Work that is not defective, and

4. satisfactorily correct or repair or remove and replace any damage to other Work, to the work of others or other land or areas resulting therefrom.

B. If Contractor does not promptly comply with the terms of Owner's written instructions, or in an emergency where delay would cause serious risk of loss or damage, Owner may have the defective Work corrected or repaired or may have the rejected Work removed and replaced. All claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or repair or such removal and replacement (including but not limited to all costs of repair or replacement of work of others) will be paid by Contractor.

C. In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications.

D. Where defective Work (and damage to other Work resulting therefrom) has been corrected or removed and replaced under this Paragraph 13.07, the correction period hereunder with respect to such Work will be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed.

E. Contractor's obligations under this Paragraph 13.07 are in addition to any other obligation or warranty. The provisions of this Paragraph 13.07 shall not be construed as a substitute for or a waiver of the provisions of any applicable statute of limitation or repose.

13.08 *Acceptance of Defective Work*

A. If, instead of requiring correction or removal and replacement of defective Work, Owner (and, prior to Engineer's recommendation of final payment, Engineer) prefers to accept it, Owner may do so. Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) attributable to Owner's evaluation of and determination to accept such defective Work (such costs to be approved by Engineer as to reasonableness) and the diminished value of the Work to the extent not otherwise paid by Contractor pursuant to this sentence. If any such acceptance occurs prior to Engineer's recommendation of final payment, a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work, and Owner shall be entitled to an appropriate decrease in the Contract Price, reflecting the diminished value of Work so accepted. If the parties are unable to agree as to the amount thereof, Owner may make a Claim therefor as provided in Paragraph 10.05. If the acceptance occurs after such recommendation, an appropriate amount will be paid by Contractor to Owner.

13.09 *Owner May Correct Defective Work*

A. If Contractor fails within a reasonable time after written notice from Engineer to correct defective Work or to remove and replace rejected Work as required by Engineer in accordance with Paragraph 13.06.A, or if Contractor fails to perform the Work in accordance with the Contract Documents, or if Contractor fails to comply with any other provision of the Contract Documents, Owner may, after seven days written notice to Contractor, correct or remedy any such deficiency.

B. In exercising the rights and remedies under this Paragraph 13.09, Owner shall proceed expeditiously. In connection with such corrective or remedial action, Owner may exclude Contractor from all or part of the Site, take possession

of all or part of the Work and suspend Contractor's services related thereto, take possession of Contractor's tools, appliances, construction equipment and machinery at the Site, and incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere. Contractor shall allow Owner, Owner's representatives, agents and employees, Owner's other contractors, and Engineer and Engineer's consultants access to the Site to enable Owner to exercise the rights and remedies under this Paragraph.

C. All claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) incurred or sustained by Owner in exercising the rights and remedies under this Paragraph 13.09 will be charged against Contractor, and a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work; and Owner shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount of the adjustment, Owner may make a Claim therefor as provided in Paragraph 10.05. Such claims, costs, losses and damages will include but not be limited to all costs of repair, or replacement of work of others destroyed or damaged by correction, removal, or replacement of Contractor's defective Work.

D. Contractor shall not be allowed an extension of the Contract Times because of any delay in the performance of the Work attributable to the exercise by Owner of Owner's rights and remedies under this Paragraph 13.09.

ARTICLE 14 – PAYMENTS TO CONTRACTOR AND COMPLETION

14.01 *Schedule of Values*

A. The Schedule of Values established as provided in Paragraph 2.07.A will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to Engineer. Progress payments on account of Unit Price Work will be based on the number of units completed.

14.02 *Progress Payments*

A. *Applications for Payments*

1. Not later than ten (10) days before the date established in the Agreement for each progress payment (but not more often than once a month), Contractor shall submit to Engineer for review an Application for Payment filled out and signed by Contractor covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the Site or at another location agreed to in writing, the Application for Payment shall also be accompanied by a bill of sale, invoice, or other documentation indicating that the Contractor has either paid for such materials or equipment or warranting that Owner has received the materials and equipment free and clear of all Liens and evidence that the materials and equipment are covered by appropriate property insurance or other arrangements to protect Owner's interest therein, all of which must be satisfactory to Owner. The Contractor shall furnish evidence that payment received on the basis of materials and equipment not incorporated but delivered and suitably stored, has in fact been paid to the respective supplier(s) on submission of the next application for payment submitted by the Contractor. Failure to provide such evidence of payment shall result in the withdrawal of previous approval(s) and removal of the related equipment from the next submitted Application for Payment."

2. Beginning with the second Application for Payment, each Application shall include an affidavit of Contractor stating that all previous progress payments received on account of the Work have been applied on account to discharge Contractor's legitimate obligations associated with prior Applications for Payment.

3. The amount of retainage with respect to progress payments will be as stipulated in the Agreement.

B. *Review of Applications*

1. Engineer will, within 10 days after receipt of each Application for Payment, either indicate in writing a recommendation of payment and present the Application to Owner or return the Application to Contractor indicating in writing Engineer's reasons for refusing to recommend payment. In the latter case, Contractor may make the necessary corrections and resubmit the Application.

2. Engineer's recommendation of any payment requested in an Application for Payment will constitute a representation by Engineer to Owner, based on Engineer's observations on the Site of the executed Work as an experienced and qualified design professional and on Engineer's review of the Application for Payment and the accompanying data and schedules, that to the best of Engineer's knowledge, information and belief:

    a. the Work has progressed to the point indicated;

    b. the quality of the Work is generally in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, to the results of any subsequent tests called for in the Contract Documents, to a final determination of quantities and classifications for Unit Price Work under Paragraph 9.07, and to any other qualifications stated in the recommendation); and

    c. the conditions precedent to Contractor's being entitled to such payment appear to have been fulfilled in so far as it is Engineer's responsibility to observe the Work.

3. By recommending any such payment Engineer will not thereby be deemed to have represented that:

    a. inspections made to check the quality or the quantity of the Work as it has been performed have been exhaustive, extended to every aspect of the Work in progress, or involved detailed inspections of the Work beyond the responsibilities specifically assigned to Engineer in the Contract Documents; or

    b. that there may not be other matters or issues between the parties that might entitle Contractor to be paid additionally by Owner or entitle Owner to withhold payment to Contractor.

4. Neither Engineer's review of Contractor's Work for the purposes of recommending payments nor Engineer's recommendation of any payment, including final payment, will impose responsibility on Engineer:

    a. to supervise, direct, or control the Work, or

    b. for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or

    c. for Contractor's failure to comply with Laws and Regulations applicable to Contractor's performance of the Work, or

    d. to make any examination to ascertain how or for what purposes Contractor has used the moneys paid on account of the Contract Price, or

    e. to determine that title to any of the Work, materials, or equipment has passed to Owner free and clear of any Liens.

5. Engineer may refuse to recommend the whole or any part of any payment if, in Engineer's opinion, it would be incorrect to make the representations to Owner stated in Paragraph 14.02.B.2. Engineer may also refuse to recommend any such payment or, because of subsequently discovered evidence or the results of subsequent inspections or tests, revise or revoke any such payment recommendation previously made, to such extent as may be necessary in Engineer's opinion to protect Owner from loss because:

    a. the Work is defective, or completed Work has been damaged, requiring correction or replacement;

b. the Contract Price has been reduced by Change Orders;

c. Owner has been required to correct defective Work or complete Work in accordance with Paragraph 13.09; or

d. Engineer has actual knowledge of the occurrence of any of the events enumerated in Paragraph 15.02.A.

C. *Payment Becomes Due*

1. Not later than Twenty-five (25) days after the Application for Payment to the Owner is stamped as received by the City, the amount recommended by the Engineer, will (subject to the provisions of Paragraph 14.02.D) become due, and when due will be paid by Owner to Contractor.

2. If the Contractor and its Surety shall fail to pay any undisputed claims, made in writing to Owner within thirty (30) days after completion of the Work, but continuing unsatisfied for a period of ninety (90) days, Owner, at its sole discretion and option, may pay such undisputed claim and deduct the amount thereof from the balance due Contractor; if Owner deems such action to be in its best interests. Owner may also, with the written consent of Contractor and its Surety, use any monies retained, due, or to become due under this Contract for the purpose of paying for both labor and materials for the Work, for disputed claims or claims that have not been filed.

3. All monies paid by Owner in settlement of claims as set forth above, with the costs and expenses incurred by Owner in connection therewith, shall be charged to Contractor, shall bear interest at the then existing legal rate of interest under the laws of the State of Florida; and shall be deducted from the next payment due Contractor under the terms of this Contract.

D. *Reduction in Payment*

1. Owner may refuse to make payment of the full amount recommended by Engineer because:

a. claims have been made against Owner on account of Contractor's performance or furnishing of the Work;

b. Liens have been filed in connection with the Work, except where Contractor has delivered a specific bond satisfactory to Owner to secure the satisfaction and discharge of such Liens;

c. the Contractor's performance or furnishing of the Work is inconsistent with funding Agency requirements;

d. there are other items entitling Owner to a set-off against the amount recommended including but not limited to, the aggregation of liquidated damages; or

e. Owner has actual knowledge of the occurrence of any of the events enumerated in Paragraphs 14.02.B.5.a through 14.02.B.5.c or Paragraph 15.02.A.

2. If Owner refuses to make payment of the full amount recommended by Engineer, Owner will give Contractor immediate written notice (with a copy to Engineer) stating the reasons for such action and promptly pay Contractor any amount remaining after deduction of the amount so withheld. Owner shall promptly pay Contractor the amount so withheld, or any adjustment thereto agreed to by Owner and Contractor, when Contractor corrects to Owner's satisfaction the reasons for such action.

3. If it is subsequently determined that Owner's refusal of payment was not justified, the amount wrongfully withheld shall be treated as an amount due as determined by Paragraph 14.02.C.1.

14.03 *Contractor's Warranty of Title*

A. Contractor warrants and guarantees that title to all Work, materials, supplies and equipment covered by any Application for Payment, whether incorporated in the Project or not, will pass to Owner no later than the time of payment free and clear of all Liens. No materials or supplies for the Work shall be purchased subject to any security interest, or under a conditional sales contract or other agreement by which an interest is retained by the seller.

14.04 *Substantial Completion*

A. When Contractor considers the entire Work ready for its intended use Contractor shall notify Owner and Engineer in writing that the entire Work is substantially complete (except for items specifically listed by Contractor as incomplete) and request that Engineer issue a certificate of Substantial Completion.

B. Promptly after Contractor's notification, Owner, Agency, Contractor, and Engineer shall make a prefinal inspection of the Work to determine the status of completion. If Engineer does not consider the Work substantially complete, Engineer will notify Contractor in writing giving the reasons therefor.

C. If Engineer considers the Work substantially complete, Engineer will deliver to Owner a tentative certificate of Substantial Completion which shall fix the date of Substantial Completion. There shall be attached to the certificate a tentative list of items to be completed or corrected before final payment. In accordance with Florida Statutes Section §218.735, within 30 calendar days, or 45 days if over $10 million construction cost, of reaching substantial completion of the construction services, the Owner and Contractor shall work together to develop the single list of items and the estimated cost to complete each item on the list required to render complete, satisfactory, and acceptable the construction services purchased by the Owner. See also General Conditions Section 710 of the bid package, and Section 5 of the Contract, Payment ProceduresOwner shall have seven days after receipt of the tentative certificate during which to make written objection to Engineer as to any provisions of the certificate or attached list. If, after considering such objections, Engineer concludes that the Work is not substantially complete, Engineer will within 14 days after submission of the tentative certificate to Owner notify Contractor in writing, stating the reasons therefor. If, after consideration of Owner's objections, Engineer considers the Work substantially complete, Engineer will within said 14 days execute and deliver to Owner and Contractor a definitive certificate of Substantial Completion (with a revised tentative list of items to be completed or corrected) reflecting such changes from the tentative certificate as Engineer believes justified after consideration of any objections from Owner.

D. At the time of delivery of the tentative certificate of Substantial Completion, Engineer will deliver to Owner and Contractor a written recommendation as to division of responsibilities pending final payment between Owner and Contractor with respect to security, operation, safety, and protection of the Work, maintenance, heat, utilities, insurance, and warranties and guarantees. Unless Owner and Contractor agree otherwise in writing and so inform Engineer in writing prior to Engineer's issuing the definitive certificate of Substantial Completion, Engineer's aforesaid recommendation will be binding on Owner and Contractor until final payment.

E. Owner shall have the right to exclude Contractor from the Site after the date of Substantial Completion subject to allowing Contractor reasonable access to complete or correct items on the tentative list.

14.05 *Partial Utilization*

A. Prior to Substantial Completion of all the Work, Owner may use or occupy any substantially completed part of the Work which has specifically been identified in the Contract Documents, or which Owner, Engineer, and Contractor agree constitutes a separately functioning and usable part of the Work that can be used by Owner for its intended purpose without significant interference with Contractor's performance of the remainder of the Work, subject to the following conditions.

1. Owner at any time may request Contractor in writing to permit Owner to use or occupy any such part of the Work which Owner believes to be ready for its intended use and substantially complete. If and when Contractor agrees that such part of the Work is substantially complete, Contractor will certify to Owner and

Engineer that such part of the Work is substantially complete and request Engineer to issue a certificate of Substantial Completion for that part of the Work.

2. Contractor at any time may notify Owner and Engineer in writing that Contractor considers any such part of the Work ready for its intended use and substantially complete and request Engineer to issue a certificate of Substantial Completion for that part of the Work.

3. Within a reasonable time after either such request, Owner, Contractor, and Engineer shall make an inspection of that part of the Work to determine its status of completion. If Engineer does not consider that part of the Work to be substantially complete, Engineer will notify Owner and Contractor in writing giving the reasons therefor. If Engineer considers that part of the Work to be substantially complete, the provisions of Paragraph 14.04 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.

4. No use or occupancy or separate operation of part of the Work may occur prior to compliance with the requirements of Paragraph 5.10 regarding property insurance.

14.06 *Final Inspection*

A. Upon written notice from Contractor that the entire Work or an agreed portion thereof is complete, Engineer will promptly make a final inspection with Owner, Agency, and Contractor and will notify Contractor in writing of all particulars in which this inspection reveals that the Work is incomplete or defective. Contractor shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies.

14.07 *Final Payment*

A. *Application for Payment*

1. After Contractor has, in the opinion of Engineer, satisfactorily completed all corrections identified during the final inspection and has delivered, in accordance with the Contract Documents, all maintenance and operating instructions, schedules, guarantees, bonds, certificates or other evidence of insurance certificates of inspection, marked-up record documents (as provided in Paragraph 6.12), and other documents, Contractor may make application for final payment following the procedure for progress payments.

2. The final Application for Payment shall be accompanied (except as previously delivered) by:

   a. all documentation called for in the Contract Documents, including but not limited to the evidence of insurance required by Paragraph 5.04.B.7;

   b. consent of the surety, if any, to final payment;

   c. a list of all Claims against Owner that Contractor believes are unsettled; and

   d. complete and legally effective releases or waivers (satisfactory to Owner) of all Lien rights arising out of or Liens filed in connection with the Work.

3. In lieu of the releases or waivers of Liens specified in Paragraph 14.07.A.2 and as approved by Owner, Contractor may furnish receipts or releases in full and an affidavit of Contractor that: (i) the releases and receipts include all labor, services, material, and equipment for which a Lien could be filed; and (ii) all payrolls, material and equipment bills, and other indebtedness connected with the Work for which Owner or Owner's property might in any way be responsible have been paid or otherwise satisfied. If any Subcontractor or Supplier fails to furnish such a release or receipt in full, Contractor may furnish a bond or other collateral satisfactory to Owner to indemnify Owner against any Lien.

4. Notwithstanding any other provision of these Contract Documents to the contrary, Owner and Engineer are under no duty or obligation whatsoever to any Subcontractor, laborer or other party to ensure that payments due and owing to any of them are or will be made. Such parties shall rely only on the Contractor's payment and performance bonds and the obligations of the Surety as remedy of nonpayment.

B. *Engineer's Review of Application and Acceptance*

1. If, on the basis of Engineer's observation of the Work during construction and final inspection, and Engineer's review of the final Application for Payment and accompanying documentation as required by the Contract Documents, Engineer is satisfied that the Work has been completed and Contractor's other obligations under the Contract Documents have been fulfilled, Engineer will, within ten days after receipt of the final Application for Payment, indicate in writing Engineer's recommendation of payment and present the Application for Payment to Owner for payment. At the same time Engineer will also give written notice to Owner and Contractor that the Work is acceptable subject to the provisions of Paragraph 14.09. Otherwise, Engineer will return the Application for Payment to Contractor, indicating in writing the reasons for refusing to recommend final payment, in which case Contractor shall make the necessary corrections and resubmit the Application for Payment.

C. *Payment Becomes Due*

1. Thirty days after the presentation to Owner of the Application for Payment and accompanying documentation, the amount recommended by Engineer, less any sum Owner is entitled to set off against Engineer's recommendation, including but not limited to liquidated damages, will become due and will be paid by Owner to Contractor.

14.08 *Final Completion Delayed*

A. If, through no fault of Contractor, final completion of the Work is significantly delayed, and if Engineer so confirms, Owner shall, upon receipt of Contractor's final Application for Payment (for Work fully completed and accepted) and recommendation of Engineer, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance to be held by Owner for Work not fully completed or corrected is less than the retainage stipulated in the Agreement, and if bonds have been furnished as required in Paragraph 5.01, the written consent of the surety to the payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by Contractor to Engineer with the Application for such payment. Such payment shall be made under the terms and conditions governing final payment, except that it shall not constitute a waiver of Claims. The remaining balance of any sum included in the final Application for Payment but held by OWNER for Work not fully completed and accepted will become due when the Work is fully completed and accepted.

14.09 *Waiver of Claims*

A. The making and acceptance of final payment will constitute:

1. a waiver of all Claims by Owner against Contractor, except Claims arising from unsettled Liens, from defective Work appearing after final inspection pursuant to Paragraph 14.06, from failure to comply with the Contract Documents or the terms of any special guarantees specified therein, or from Contractor's continuing obligations under the Contract Documents; and

2. a waiver of all Claims by Contractor against Owner other than those previously made in accordance with the requirements herein and expressly acknowledged by Owner in writing as still unsettled.

ARTICLE 15 – SUSPENSION OF WORK AND TERMINATION

15.01 *Owner May Suspend Work*

A. At any time and without cause, Owner may suspend the Work or any portion thereof for a period of not more than 90 consecutive days by notice in writing to Contractor and Engineer which will fix the date on which Work will be resumed. Contractor shall resume the Work on the date so fixed. Contractor shall be granted an adjustment in the Contract Price or an extension of the Contract Times, or both, directly attributable to any such suspension if Contractor makes a Claim therefor as provided in Paragraph 10.05; however, if the Owner stops Work under Article 13.05 or suspends services under Article, or suspends the Work or any portion thereof because of the Contractor is endangering persons and property, the Contractor shall be entitled to no extension of Contract Time or increase in Contract Price."

15.02 *Owner May Terminate for Cause*

A. The occurrence of any one or more of the following events will justify termination for cause:

1. Contractor's persistent failure to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment or failure to adhere to the Progress Schedule established under Paragraph 2.07 as adjusted from time to time pursuant to Paragraph 6.04);or

2. If the Contractor assigns or delegates its duties under this Contract or any substantial part thereof without the previous written consent of Owner, or if the Contract or any claim thereunder shall be assigned by Contractor otherwise than as herein specified; or

3. Contractor's disregard of Laws or Regulations of any public body having jurisdiction; or

4. Contractor's material disregard of the authority and directives of the Engineer; or

5. Contractor's violation or material breach of any provisions of the Contract Documents; or

6. Contractor's abandonment of the Work to be done under this Contract.

B. If one or more of the events identified in Paragraph 15.02.A occur, Owner may, after giving Contractor (and surety) seven days written notice of its intent to terminate the services of Contractor:

1. exclude Contractor from the Site, and take possession of the Work and of all Contractor's tools, appliances, construction equipment, and machinery at the Site, and use the same to the full extent they could be used by Contractor (without liability to Contractor for trespass or conversion),

2. incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere, and

3. complete the Work as Owner may deem expedient.

C. If Owner proceeds as provided in Paragraph 15.02.B, Contractor shall not be entitled to receive any further payment until the Work is completed. If the unpaid balance of the Contract Price exceeds all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Owner arising out of or relating to completing the Work, such excess will be paid to Contractor. If such claims, costs, losses, and damages exceed such unpaid balance, Contractor shall pay the difference to Owner. Such claims, costs, losses, and damages incurred by Owner will be reviewed by Engineer as to their reasonableness and, when so approved by Engineer, incorporated in a Change Order. When exercising any rights or remedies under this Paragraph Owner shall not be required to obtain the lowest price for the Work performed.

D. Notwithstanding Paragraphs 15.02.B and 15.02.C, Contractor's services will not be terminated if Contractor begins within seven days of receipt of notice of intent to terminate to correct its failure to perform and proceeds diligently to cure such failure within no more than 30 days of receipt of said notice.

E. Where Contractor's services have been so terminated by Owner, the termination will not affect any rights or remedies of Owner against Contractor then existing or which may thereafter accrue. Any retention or payment of moneys due Contractor by Owner will not release Contractor from liability.

F. If and to the extent that Contractor has provided a performance bond under the provisions of Paragraph 5.01.A, the termination procedures of that bond shall supersede the provisions of Paragraphs 15.02.B, and 15.02.C.

15.03 *Owner May Terminate For Convenience*

A. Upon seven days written notice to Contractor and Engineer, Owner may, without cause and without prejudice to any other right or remedy of Owner, terminate the Contract. In such case, Contractor shall be paid for (without duplication of any items):

1. completed and acceptable Work executed in accordance with the Contract Documents prior to the effective date of termination, including fair and reasonable sums for overhead and profit on such Work;

2. expenses sustained prior to the effective date of termination in performing services and furnishing labor, materials, or equipment as required by the Contract Documents in connection with uncompleted Work, plus fair and reasonable sums for overhead and profit on such expenses;

3. all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) incurred in settlement of terminated contracts with Subcontractors, Suppliers, and others; and

4. reasonable expenses directly attributable to termination.

B. Contractor shall not be paid on account of loss of anticipated profits or revenue or other economic loss arising out of or resulting from such termination.

15.04 *Contractor May Stop Work or Terminate*

A. If, through no act or fault of Contractor, (i) the Work is suspended for more than 90 consecutive days by Owner or under an order of court or other public authority, or (ii) Engineer fails to act on any Application for Payment within 30 days after it is submitted, or (iii) Owner fails for 30 days to pay Contractor any sum finally determined to be due, then Contractor may, upon seven days written notice to Owner and Engineer, and provided Owner or Engineer do not remedy such suspension or failure within that time, terminate the Contract and recover from Owner payment on the same terms as provided in Paragraph 15.03.

B. In lieu of terminating the Contract and without prejudice to any other right or remedy, if Engineer has failed to act on an Application for Payment within 30 days after it is submitted, or Owner has failed for 30 days to pay Contractor any sum finally determined to be due, Contractor may, seven days after written notice to Owner and Engineer, stop the Work until payment is made of all such amounts due Contractor, including interest thereon. The provisions of this Paragraph 15.04 are not intended to preclude Contractor from making a Claim under Paragraph 10.05 for an adjustment in Contract Price or Contract Times or otherwise for expenses or damage directly attributable to Contractor's stopping the Work as permitted by this Paragraph.

ARTICLE 16 – DISPUTE RESOLUTION AND WAIVER OF TRIAL BY JURY

16.01 A. As a condition precedent to the filing of any suit or other legal proceeding, the parties shall endeavor to resolve claims, disputes or other matters in question by Mediation. Mediation shall be initiated by any party by serving a written request for same on the other party. The parties shall by mutual agreement select a Mediator within fifteen

(15) days of the date of the request for Mediation. If the parties cannot agree on the selection of a Mediator, then the owner shall select the Mediator, who, if selected solely by the Owner, shall be a Mediator certified by the Supreme Court of Florida. No suit or other legal proceeding shall be filed until the mediator declares an impasse, which declaration, in any event, shall be deemed as issued by the Mediator not later than sixty (60) days after the initial Mediation Conference. The CONTRACTOR will carry on the Work and maintain the progress schedule during any dispute. Venue for any litigation, at law or equity, shall lie exclusively in The Circuit Court of the Ninth Judicial Circuit Court in and for Orange County, Florida.

16.02 This Contract, or any provision hereof, shall be construed and interpreted, and any litigation arising therefrom, shall be governed by the laws of the State of Florida.

16.03 **The CONTRACTOR and OWNER waive trial by jury in any action, proceeding or claim which may be brought by either of the parties hereto against the other on any matters concerning or arising out of this Contract.**

ARTICLE 17 – MISCELLANEOUS

17.01 *Giving Notice*

A. Whenever any provision of the Contract Documents requires the giving of written notice, it will be deemed to have been validly given if:

1. delivered in person to the individual or to a member of the firm or to an officer of the corporation for whom it is intended, or

2. delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to the giver of the notice.

3. Both the address given in the Bid Form upon which this Agreement is founded, and Contractor's office at or near the site of the Work are hereby designated as places to either of which notices, letters, and other communications to Contractor shall be certified, mailed, or delivered. The delivering at the above named place, or depositing in a postpaid wrapper directed to the first-named place, in any post office box regularly maintained by the U.S. Postal Department, of any notice, letter or other communication to Contractor shall be deemed sufficient service thereof upon Contractor; and the date of said service shall be the date of such delivery or mailing. The first-named address may be changed at any time by an instrument in writing, executed and acknowledged by Contractor, and delivered to Owner and Engineer. Nothing herein contained shall be deemed to preclude or render inoperative the service of any notice, letter, or other communication upon Contractor personally.

17.02 *Computation of Times*

A. When any period of time is referred to in the Contract Documents by days, it will be computed to exclude the first and include the last day of such period. If the last day of any such period falls on a Saturday or Sunday or on a day made a legal holiday by the law of the applicable jurisdiction, such day will be omitted from the computation.

17.03 *Cumulative Remedies*

A. The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by Laws or Regulations, by special warranty or guarantee, or by other provisions of the Contract Documents. The provisions of this Paragraph will be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right, and remedy to which they apply.

17.04 *Survival of Obligations*

A. All representations, indemnifications, warranties, and guarantees made in, required by, or given in accordance with the Contract Documents, as well as all continuing obligations indicated in the Contract Documents, will survive final payment, completion, and acceptance of the Work or termination or completion of the Contract or termination of the services of Contractor.

17.05 *Headings*

A. Article and paragraph headings are inserted for convenience only and do not constitute parts of these General Conditions.

17.06 The form of all submittals, notices, change orders, and other documents permitted or required to be used or transmitted under the Contract Documents shall be determined by the Engineer. During the pre-construction meeting, the Engineer shall provide to the Contractor one set of such project administration forms to be utilized during the construction of this project. These forms are referenced as:

<u>Forms Used by the Engineer and/or Owner's Representative</u>

00844 Non-compliance Notice
00845 Field Order
00847 Request for Proposed Change
00848 Daily Construction Report
00849 Weekly Construction Progress Report

<u>Forms Used by the Contractor</u>

00861 Periodic Estimate for Partial Payment
00862 Certificate of Engineer
00863 Certificate of Final Completion
00864 Shop Drawing Submittal
00865 Certificate of Final Inspection
00868 Contractor Request for Information
00878 Contractor Proposed Change
00879 Waiver and Release of Lien upon Final Payment
00881 Waiver and Release of Lien upon Progress Payment
00883 Contractor's Final Affidavit
00885 Contractor's Interim Affidavit

<u>Forms Used by All Parties during Construction</u>

00850 Construction Accident Report

17.07 The Contractor shall comply with Florida's Archives and Historical Act (Florida Statutes Chapter 267) and the regulations of the local historic preservation board as applicable and protect against the potential loss or destruction of significant, historical or archaeological data, sites, and properties in connection with the project.

17.08 If apprentices are required or utilized on this project, then the provisions of Chapter 446, Florida Statutes, shall govern.

17.09 If the price of this Agreement/Contract equals or exceeds $50,000 and if the Contractor has 50 or more employees, the Contractor shall file with the Owner, within 30 calendar days after the award of this Agreement/Contract, a report on Standard Form 100 (EEO-1), which has been promulgated jointly by the Office of Federal Contract Compliance Programs, the Equal Employment Opportunity Commission, and Plans for Progress, unless the Contractor has submitted such a report within 12 months preceding the date of award of this Agreement/Contract. In addition, the

Contractor shall ensure that each construction subcontractor having 50 or more employees and a lower-tier construction subcontract with a price equaling or exceeding $50,000 also files with the Owner, within 30 calendar days after the award to it of the lower-tier construction subcontract, a report on Standard Form 100 (EEO-1) unless the construction subcontractor has submitted such a report within 12 months preceding the date of award of the lower-tier construction subcontract. (Subsequent reports are to be submitted annually in accordance with 41 CFR 60-1.7(a) or at such other intervals as the Director of the Office of Federal Contract Compliance Programs may require.)

ARTICLE 18 – FEDERAL REQUIREMENTS

18.01 *Financing Agency Not a Party*

A. This Contract may be funded in part with funds provided by a State or Federal Agency. Neither State or Federal Agency, nor any of its departments, entities, or employees is a party to this Contract. All procurements by Federal Grant recipients and sub-recipients shall comply with the provisions of 2 C.F.R. Section 200.317 – 327.

18.02 *Contract Approval*

A. Owner and Contractor will furnish Owner's attorney such evidence as required so that Owner's attorney can complete and execute the following "Certificate of Owner's Attorney" (Exhibit GC-A) before Owner submits the executed Contract Documents to Agency for approval.

B. Concurrence by Agency in the award of the Contract is required before the Contract is effective.

18.03 *Conflict of Interest*

A. Contractor may not knowingly contract with a supplier or manufacturer if the individual or entity who prepared the plans and specifications has a corporate or financial affiliation with the supplier or manufacturer.

B. Owner's officers, employees, or agents shall not engage in the award or administration of this Contract if a conflict of interest, real or apparent, would be involved. Such a conflict would arise when: (i) the employee, officer or agent; (ii) any member of their immediate family; (iii) their partner or (iv) an organization that employs, or is about to employ, any of the above, has a financial interest in Contractor. Owner's officers, employees, or agents shall neither solicit nor accept gratuities, favors or anything of monetary value from Contractor or subcontractors.

18.04 *Gratuities*

A. If Owner finds after a notice and hearing that Contractor, or any of Contractor's agents or representatives, offered or gave gratuities (in the form of entertainment, gifts, or otherwise) to any official, employee, or agent of Owner or Agency in an attempt to secure this Contract or favorable treatment in awarding, amending, or making any determinations related to the performance of this Contract, Owner may, by written notice to Contractor, terminate this Contract. Owner may also pursue other rights and remedies that the law or this Contract provides. However, the existence of the facts on which Owner bases such findings shall be an issue and may be reviewed in proceedings under the dispute resolution provisions of this Contract.

B. In the event this Contract is terminated as provided in paragraph 18.04.A, Owner may pursue the same remedies against Contractor as it could pursue in the event of a breach of this Contract by Contractor. As a penalty, in addition to any other damages to which it may be entitled by law, Owner may pursue exemplary damages in an amount (as determined by Owner) which shall not be less than three nor more than ten times the costs Contractor incurs in providing any such gratuities to any such officer or employee.

18.05 *Audit and Access to Records*

A. For all negotiated contracts and negotiated modifications (except those of $10,000 or less), Owner, Agency, the Comptroller General, or any of their duly authorized representatives, shall have access to any books, documents,

papers, and records of the Contractor, which are pertinent to the Contract, for the purpose of making audits, examinations, excerpts and transcriptions. Contractor shall maintain all required records for three years after final payment is made and all other pending matters are closed.

18.06 *Small, Minority and Women's Businesses*

A. If Contractor intends to let any subcontracts for a portion of the work, Contractor shall take affirmative steps to assure that small, minority and women's businesses are used when possible as sources of supplies, equipment, construction, and services. Affirmative steps shall consist of: (1) including qualified small, minority and women's businesses on solicitation lists; (2) assuring that small, minority and women's businesses are solicited whenever they are potential sources; (3) dividing total requirements when economically feasible, into small tasks or quantities to permit maximum participation of small, minority, and women's businesses; (4) establishing delivery schedules, where the requirements of the work permit, which will encourage participation by small, minority and women's businesses; (5) using the services and assistance of the Small Business Administration and the Minority Business Development Agency of the U.S. Department of Commerce; (6) requiring each party to a subcontract to take the affirmative steps of this section; and (7) Contractor is encouraged to procure goods and services from labor surplus area firms.

18.07 *Anti-Kickback*

A. Contractor shall comply with the Copeland Anti-Kickback Act (18 USC 874 and 40 USC 276c) as supplemented by Department of Labor regulations (29 CFR Part 3, "Contractors and Subcontractors on Public Buildings or Public Works Financed in Whole or in Part by Loans or Grants of the United States"). The Act provides that Contractor or subcontractor shall be prohibited from inducing, by any means, any person employed in the construction, completion, or repair of public facilities, to give up any part of the compensation to which they are otherwise entitled. Owner shall report all suspected or reported violations to Agency.

18.08 *Clean Air and Pollution Control Acts*

A. If this Contract exceeds $100,000, Contractor shall comply with all applicable standards, orders or regulations issued pursuant to the Clean Air Act (42 USC 7401 *et seq.*) and the Federal Water Pollution Control Act as amended (33 USC 1251 *et seq*.). Contractor will report violations to the Agency and the Regional Office of the EPA.

18.09 *State Energy Policy*

A. Contractor shall comply with the Energy Policy and Conservation Act (P.L. 94-163). Mandatory standards and policies relating to energy efficiency, contained in any applicable State Energy Conservation Plan, shall be utilized.

18.10 *Equal Opportunity Requirements*

A. If this Contract exceeds $10,000, Contractor shall comply with Executive Order 11246, "Equal Employment Opportunity," as amended by Executive Order 11375, "Amending Executive Order 11246 Relating to Equal Employment Opportunity," and as supplemented by regulations at 41 CFR part 60, "Office of Federal Contract Compliance Programs, Equal Employment Opportunity, Department of Labor."

B. Contractor's compliance with Executive Order 11246 shall be based on its implementation of the Equal Opportunity Clause, specific affirmative active obligations required by the Standard Federal Equal Employment Opportunity Construction Contract Specifications, as set forth in 41 CFR Part 60-4 and its efforts to meet the goals established for the geographical area where the Contract is to be performed. The hours of minority and female employment and training must be substantially uniform throughout the length of the Contract, and in each trade, and Contractor shall make a good faith effort to employ minorities and women evenly on each of its projects. The transfer of minority or female employees or trainees from Contractor to Contractor or from project to project for the sole purpose of meeting Contractor's goals shall be a violation of the Contract, the Executive Order, and the

regulations in 41 CFR Part 60-4. Compliance with the goals will be measured against the total work hours performed.

C. Contractor shall provide written notification to the Director of the Office of Federal Contract Compliance Programs within 10 working days of award of any construction subcontract in excess of $10,000 at any tier for construction work under the Contract resulting from this solicitation. The notification shall list the name, address, and telephone number of the subcontractor; employer identification number; estimated dollar amount of subcontract; estimated starting and completion dates of the subcontract; and the geographical area in which the Contract is to be performed.

18.11 *Restrictions on Lobbying*

A. Contractor and each subcontractor shall comply with Restrictions on Lobbying (Public Law 101-121, Section 319) as supplemented by applicable Agency regulations. This Law applies to the recipients of contracts and subcontracts that exceed $100,000 at any tier under a Federal loan that exceeds $150,000 or a Federal grant that exceeds $100,000. If applicable, Contractor must complete a certification form on lobbying activities related to a specific Federal loan or grant that is a funding source for this Contract. Each tier certifies to the tier above that it will not and has not used Federal appropriated funds to pay any person or organization for influencing or attempting to influence an officer or employee of any agency, a member of Congress, or an employee of a member of Congress in connection with obtaining any Federal contract, grant, or any other award covered by 31 USC 1352. Each tier shall disclose any lobbying with non-Federal funds that takes place in connection with obtaining any Federal award. Certifications and disclosures are forwarded from tier to tier up to the Owner. Necessary certification and disclosure forms shall be provided by Owner.

18.12 *Environmental Requirements*

A. When constructing a project involving trenching and/or other related earth excavations, Contractor shall comply with the following environmental constraints:

1. Wetlands – When disposing of excess, spoil, or other construction materials on public or private property, Contractor shall not fill in or otherwise convert wetlands.

2. Floodplains – When disposing of excess, spoil, or other construction materials on public or private property, Contractor shall not fill in or otherwise convert 100 year floodplain areas delineated on the latest Federal Emergency Management Agency Floodplain Maps, or other appropriate maps, i.e., alluvial soils on NRCS Soil Survey Maps.

3. Historic Preservation – Any excavation by Contractor that uncovers an historical or archaeological artifact shall be immediately reported to Owner and a representative of Agency. Construction shall be temporarily halted pending the notification process and further directions issued by Agency after consultation with the State Historic Preservation Officer (SHPO).

4. Endangered Species – Contractor shall comply with the Endangered Species Act, which provides for the protection of endangered and/or threatened species and critical habitat. Should any evidence of the presence of endangered and/or threatened species or their critical habitat be brought to the attention of Contractor, Contractor will immediately report this evidence to Owner and a representative of Agency. Construction shall be temporarily halted pending the notification process and further directions issued by Agency after consultation with the U.S. Fish and Wildlife Service.

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GENERAL WORK REQUIREMENTS

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SECTION 01001

GENERAL WORK REQUIREMENTS

PART 1 - GENERAL

1.01 Notices

A. All notices or other papers required to be delivered by the Contractor to the Owner shall be delivered to the office of the City of Ocoee, Utilities Department, 1800 A. D. Mims Rd, Ocoee, FL 34761

1.02 Work to be Done

A. The Contractor shall furnish all labor, materials, equipment, tools, services, and incidentals to complete all work required by these specifications and as shown on the Drawings, at a rate of progress which will ensure completion of the Work within the Contract Time stipulated.

B. The Contractor shall perform the Work complete, in place, and ready for continuous service, and shall include repairs, testing, permits, clean up, replacements, and restoration required as a result of damages caused during this construction.

C. The Contractor shall comply with all City, County, State, Federal, and other codes, which are applicable to the proposed Work.

D. All newly constructed Work shall be carefully protected from injury in any way. No wheeling, walking, or placing of heavy loads on it shall be allowed and all portions damaged shall be reconstructed by the Contractor at his own expense.

E. Scope of Work: See Section 01100 "Summary of Work" and the Bid Schedule for details.

1.03 Drawings and Project Manual

A. The Work shall be performed in accordance with the Drawings and Specifications prepared by the Owner/Engineer. All work and materials shall conform to these Specifications or Drawings.

B. The Contractor shall verify all dimensions, quantities and details shown on the Drawings, Supplementary Drawings, Schedules, Specifications or other data received from the Owner/Engineer, and shall notify same, in writing, of all errors, omissions, conflicts and discrepancies found therein. Failure to discover or correct errors, conflicts or discrepancies shall not relieve the Contractor of full responsibility for unsatisfactory Work, faulty construction or improper operation resulting there from, nor from rectifying such conditions at his own expense.

C. All schedules are given for the convenience of the Owner and the Contractor and are not guaranteed to be complete. The Contractor shall assume all responsibility for the making of estimates of the size, kind, and quantity of materials and equipment included in the Work to be done under this Contract.

D. Intent:
   1. All Work called for in the Specifications applicable to this Contract, but not shown on the Drawings in their present form, or vice versa, shall be of like effect as if shown or mentioned in both. Work not specified either in the Drawings or in the Specifications, but involved in carrying out their intent or in the complete and proper execution of the Work, is required and shall be performed by the Contractor as though it were specifically delineated or described.
   2. Items of material, equipment, machinery, and the like may be specified on the Drawings and not in the Specifications. Such items shall be provided by the Contractor in accordance with the detail required by the specifications or the Drawings.
   3. The apparent silence of the Specifications as to any detail, or the apparent omission from them of a detailed description concerning any Work to be done and materials to be furnished, shall be regarded as meaning that only the best general practice is to prevail and that only material and workmanship of the best quality is to be used, and interpretation of these Specifications shall be made upon that basis.

1.04 Protection and Restoration

A. The Contractor shall be responsible for the preservation of all public and private property, and shall use every means of protection necessary to prevent damage thereto. If any direct or indirect damage is done to public or private property by or on account of any act, omission, neglect, or misconduct in the execution of the Work on the part of the Contractor, such property shall be restored by the Contractor, at his expense, to a condition similar or equal to that existing before the damage was done, or the Contractor shall make good the damage in other manner acceptable to the Owner/Engineer.

B. Protection of Trees and Shrubs
   1. Protect with boxes or other barricades.
   2. Do not place excavated material so as to injure trees or shrubs.
   3. Install pipelines in short tunnels between and under root systems.
   4. Support trees to prevent root disturbance during nearby excavation.

C. Tree and Limb Removal
   1. Tree limbs, which interfere with equipment operation and are approved for pruning, shall be neatly trimmed and the tree cut coated with tree paint.
   2. The Owner may order the Contractor, for the convenience of the Owner, to remove trees along the line or trench excavation. The Contractor shall obtain any permits required for removal of trees.

D. Trees or shrubs destroyed by negligence of the Contractor or his employees shall be replaced by the Contractor with new stock of similar size and age, at the proper season and at the sole expense of the Contractor.

E. Lawn Areas: All lawn areas disturbed by construction shall be replaced with like kind to a condition similar or equal to that existing before construction. Where sod is to be removed, it shall be carefully removed, and the same re-sodded, or the area where sod has been removed shall be restored with new sod in the manner described in the applicable section.

F. Where fencing, walls, shrubbery, grass strips or area must be removed or damaged incident to the construction operation, the Contractor shall, after completion of the work, replace or restore to the original condition.

G. The cost of all labor, materials, equipment, and work for restoration shall be deemed included in the appropriate Contract Item or items, or if no specific item is provided therefore, as part of the overhead cost of the Work, and no additional payment will be made therefore.

1.05 Public Nuisance

A. The Contractor shall not create a public nuisance including, but not limited to, encroachment on adjacent lands, flooding of adjacent lands, or excessive noise.

B. Sound levels measured by the Owner/Engineer shall not exceed 45 dBA from 8 p.m. to 8 a.m. or 55 dBA 8 a.m. to 8 p.m. This sound level shall be measured at the exterior of the nearest exterior wall of the nearest residence. Levels at the equipment shall not exceed 85 dBA at any time. Sound levels in excess of these values are sufficient cause to have the Work halted until equipment can be quieted to these levels. Work stoppage by the Owner/Engineer for excessive noise shall not relieve the Contractor of the other portions of this specification including, but not limited to, completion dates and bid amounts.

C. No extra charge may be made for time lost due to work stoppage resulting from the creation of a public nuisance.

1.06 Payment to Owner for Overtime Work

A. Owner Inspector Work Hours: Normal work hours for the Owner's inspector(s) are defined as any 8-hour period between the hours of 7:00 a.m. and 7:00 p.m. on the weekdays of Monday through Friday. Any Owner Inspector(s) work beyond the aforementioned normal work hours shall be requested in writing 48-hours in advance. All overtime, any Owner holidays or weekend work compensation for the Owner's Inspector(s) to work beyond the normal working hours are considered overtime compensation and shall be paid for by the Contractor. The Contractor agrees that the Owner shall deduct charges for work outside normal work hours and for overtime pay from payments due the Contractor.

1.07 Maintenance of Service

A. Unless noted otherwise on the plans, the operation of the existing water, reclaimed water or wastewater facility at each of the respective locations shall remain in service until the transfer of service has been completed. The Contractor shall, prior to interrupting any utility service (water, sewer, etc.) for the purpose of making cut-ins to the existing lines or for any other purposes, contact the Owner and make arrangements for the interruption which will be satisfactory to the Owner.

B. Utility lines that are damaged during construction shall be repaired by the Contractor and service restored within 4-hours of the breakage. The Owner retains the option of repairing any damage to utility pipes in order to expedite service to the customers. The Contractor will remain responsible for all costs associated with the repair.

1.08 Transfer of Service

A. When the Owner has accepted a proposed facility and placed it into operation, the transfer of service is complete. The Contractor may begin the work of removing the existing or temporary facilities.

1.09 Labor

A. Supervision: The Contractor shall supervise and direct the Work efficiently and with his best skills and attention. The Contractor shall have a competent, English speaking superintendent or representative, who shall be on the site of the Project at all working hours, and who shall have full authority by the Contractor to direct the performance of the Work and make arrangements for all necessary materials, equipment, and labor without delay.

B. Jurisdictional Disputes: It shall be the responsibility of the Contractor to pay all costs that may be required to perform any of the Work shown on the Drawings or specified herein to avoid any work stoppages due to jurisdictional disputes.

1.10 Materials and Equipment

A. Manufacturer
   1. All transactions with the manufacturers or Subcontractors shall be through the Contractor. Any such transactions shall not in any way release the Contractor from his full responsibility under this Contract.
   2. All workmanship and materials shall be of the highest quality. The equipment shall be the product of manufacturers who are experienced and skilled in the field with an established record of research and development. No equipment will be considered unless the manufacturer has designed and manufactured equipment of comparable type and size and have demonstrated sufficient experience in such design and manufacture.
   3. No material shall be delivered to the Site without prior approval of the Owner/Engineer.

4. All apparatus, mechanisms, equipment, machinery, and manufactured articles for incorporation into the Project shall be the new (most current production at time of bid) and unused standard products of recognized reputable manufacturers.
5. Manufactured and fabricated products:
   a. Design, fabricate and assemble in accord with the best engineering and shop practices.
   b. Manufacture like parts of duplicate units to standard sizes and gauges, to be interchangeable.
   c. Any two or more pieces of material or equipment of the same kind, type or classification, and being used for identical types of service, shall be made by the same manufacturer.
   d. Products shall be suitable for service conditions as specified and as stated by manufacturer.
   e. Equipment capacities, sizes and dimensions shown or specified shall be adhered to unless variations are specifically approved in writing.
   f. Do not use material or equipment for any purpose other than that for which it is designed or is specified.

1.11 Manufacturer's Service

A. Where service by the manufacturer is specified to be furnished as part of the cost of the item of equipment, the Work shall be at the Contractor's expense.

B. The services provided shall be by a qualified manufacturer's service representative to check and verify the completed installation, place the equipment in operation, and instruct the Owner's operators in the operation and maintenance procedures. Such services are to be for period of time and for the number of trips specified. A working day is defined as a normal 8-hour working day on the job and does not include travel time.

C. The services shall further demonstrate to the Owner/Engineer's complete satisfaction that the equipment will satisfactorily perform the functions for which it has been installed.

1.12 Inspection and Testing

A. General
   1. All materials and equipment furnished by the Contractor shall be subject to the inspection, review and acceptance of the Owner and meet the requirements of the specifications and drawings. If in the testing of any material or equipment it is ascertained by the Owner/Engineer that the material or equipment does not comply with the Contract, the Contractor shall be notified thereof, and the Contractor will be directed to refrain from delivering said material or equipment, or to remove it promptly from the Site or from the Work and not accepted by the Owner shall be replaced with acceptable material, without cost to the Owner.
   2. Tests of electrical and mechanical equipment and appliances shall be conducted in accordance with recognized test codes of the ANSI, ASME, or the IEE, except as may otherwise be stated herein.

3. The Contractor shall give notice in writing to the Owner sufficiently in advance of his intention to commence the manufacture or preparation of materials especially manufactured or prepared for use in or as part of the permanent construction. Such notice shall contain a request for inspection, the date of commencement and the expected date of completion of the manufacture or preparation of materials. Upon receipt of such notice, the Owner shall arrange to have a representative present at such times during the manufacture as may be necessary to inspect the materials; or the Owner will notify the Contractor that the inspection will be made at a point other than the point of manufacture; or the Owner will notify the Contractor that inspection will be waived.
4. When inspection is waived or when the Owner/Engineer so requires, the Contractor shall furnish to the Owner authoritative evidence in the form of Certificates of Manufacture that the materials to be used in the Work have been manufactured and tested in conformity with the Contract Documents. These certificates shall be notarized and shall include five (5) copies of the results of physical tests and chemical analysis, where necessary, that have been made directly on the product or on similar products of the manufacturer.
5. The Contractor must comply with these provisions before shipping any material. Such inspections by the Owner shall not release the Contractor from the responsibility for furnishing materials meeting the requirements of the Contract Documents.

B. Cost
1. Owner shall employ and pay for the services of an independent testing laboratory to perform testing indicated on the Contract Documents, or at the Owner's discretion to ensure conformity with the Contract Documents (SEE SECTION 01450).
2. The cost of field leakage and pressure tests and shop tests of materials and equipment specifically called for in the Contract Documents shall be borne by the Contractor. Such costs shall be deemed to be included in the Contract price.
3. The Contractor shall notify the Owner laboratory a minimum of 48-hours in advance of operations for scheduling of tests. When tests or inspections cannot be performed after such notice, the Contractor shall reimburse Owner for expenses incurred.
4. The Contractor shall pay for all work required to uncover, remove, replace, retest, etc., any work not tested due to the Contractor's failure to provide the 48-hours advance notice or due to failed tests. The Contractor shall also provide compensation for the Owner/Engineer's personnel for required re-testing due to failed or rescheduled testing.

C. Shop Testing
1. Each piece of equipment for which pressure, duty, capacity, rating, efficiency, performance, function or special requirements are specified shall be tested in the shop of the manufacturer in a manner which shall conclusively prove that its characteristics comply fully with the requirements of the Contract Documents. No such equipment shall be shipped to the worksite until the Owner/Engineer notifies the Contractor, in writing, that the results of such tests are acceptable.

2. The manufacturing company shall provide five (5) copies of the manufacturer's actual shop test data and interpreted results signed by a responsible official of the manufacturing company and notarized, showing conformity with the Contract Documents as a prerequisite for the acceptance of any equipment. The cost of shop tests (excluding cost of Owner's representative) and of furnishing manufacturer's preliminary and shop test data of operating equipment shall be borne by the Contractor and shall be included in the Contract price.

D. Field Testing:
   1. The Owner shall employ and pay for services of an independent testing laboratory to perform testing specifically indicated in the Contract Documents. Employment of the laboratory shall in no way relieve Contractor's obligations to perform the Work of the Contract. The Contractor shall provide compensation for retesting of all failed tests.
   2. The Owner may at any time during the progress of the Work, request additional testing beyond that which is specified in the Contract. This testing will be at the Owner's expense. Contractor shall:
      a. Cooperate with laboratory personnel, provide access to the Project.
      b. Secure and deliver to the laboratory adequate quantities of representative samples of materials proposed to be used and which require testing.
      c. Provide to the laboratory the preliminary design mix proposed to be used for concrete, and other material mixes, which require control by the testing laboratory.

E. Demonstration Tests: Upon completion of the Work and prior to final payment, all equipment and piping installed under this Contract shall be subjected to acceptance or demonstration tests as specified or required to provide compliance with the Contract Documents. The Contractor shall furnish all labor, fuel, energy, water and all other equipment necessary for the demonstration tests at no additional cost to the Owner.

F. Final Inspection: Prior to preparation of the final payment application, a final inspection will be performed by the Owner to determine if the Work is properly and satisfactorily constructed in accordance with the requirements of the Contract Documents. See also Section 01770 "Contract Closeout."

G. Inspection by existing utility owners: The Contractor shall pay for all inspections during the progress of the work required and provided by the owner of all existing public utilities paralleling or crossing the Work, as shown on the Drawings. All such inspection fees shall be deemed included in the appropriate Contract Item or items, or if no specific item is provided therefore, as part of the overhead cost of the Work, and no additional payment will be made therefore.

H. Inspection by Other Agencies: The Florida Department of Transportation, the Florida Department of Environmental Protection, and other authorized governmental agencies, where applicable, shall have free access to the site for inspecting materials and work, and the Contractor shall afford them all necessary facilities and assistance for doing so. Any instructions to the Contractor resulting from these inspections shall be given through the Owner. These rights of inspections shall not be construed to create any contractual relationship between the Contractor and these agencies.

1.13 Project Site and Access

A. Right-of-Way and Easements
   1. The use of public streets and alleys shall be such as to provide a minimum of inconvenience to the public and to other traffic. Any earth or other excavated material shall be removed by the Contractor and the streets cleaned to the satisfaction of the Owner.
   2. The Contractor shall not enter or occupy private land outside of easements, except by written permission of the property owner.
   3. At the time of the Pre-Construction meetings, the Contractor shall become fully acquainted with the status of all easements. Should easements not be acquired by the Owner in specific areas of the Work, the Contractor shall sequence and schedule his work therein so as not to interfere with the progress of work in other areas of the Project. Any rescheduling of work due to easement acquisitions shall be performed by the Contractor at no additional cost to the Owner. The Owner agrees that it will make every effort to acquire all remaining easements with all speed and diligence possible so as to allow the completion of the Work within the Contract time.

B. Access
   1. Neither the material excavated nor the materials or equipment used in the construction of the Work shall be so placed as to prohibit free access to all fire hydrants, valves or manholes.
   2. Access to businesses located adjacent to the project site must be maintained at all times. Contractor may prearrange the closing of business access with the business Owner. Such prearranged access closing shall not exceed two (2) hours. Property drainage and grading shall be restored and all construction debris removed within 48-hours of backfilling trench.
   3. Contractor agrees that representatives of the Owner and any governmental agents will have access to the Work wherever it is in preparation or progress and that the Contractor shall provide facilities for such access and inspection.

1.14 Utilities

A. Utility Construction
   1. Public utility installations and structures shall be understood to include all poles, tracks, pipes, wires, conduits, house service connections, vaults, manholes and all other appurtenances and facilities pertaining thereto, whether owned or controlled by governmental bodies or privately owned by individuals, firms or corporations, used to serve the public with transportation, traffic control, gas, electricity, telephone, sewerage, drainage or water. Other public or private property, which may be affected by the Work, shall be deemed included hereunder.
   2. All open excavations shall be adequately safeguarded by providing temporary barricades, caution signs, lights and other means. The Contractor shall, at his own expense, provide suitable and safe bridges and other crossings for accommodating travel by pedestrians and workmen. Bridges provided for access to private property during construction shall be removed when no longer required.

3. The length of open trench will be controlled by the particular surrounding conditions, but shall always be confined to the limits described by the Owner. If any excavation becomes a hazard, or if it excessively restricts traffic at any point, the Owner may require special construction procedures. As a minimum, the Contractor shall conform to the following restoration procedures:
   a. Interim Restoration: All excavations shall be backfilled and compacted as specified by the end of each working day. For excavations within existing paved areas; limerock base or soil cement base (match existing) shall be spread and compacted to provide a relatively smooth surface free of loose aggregate material. At the end of each workweek, the S-I asphaltic surface course shall be completed and opened to traffic. Contractor shall coordinate his construction activity including density tests and inspections to allow sufficient time to achieve this requirement. All driveway cuts shall be backfilled, compacted, and limerock base spread and compacted immediately after installation. Contractor shall coordinate with the individual property owners prior to removing the driveway section. Any utility crossing an existing roadway, parking lot or other paved area shall be patched by the end of the working day.
   b. All pipe and fittings shall be neatly stored in a location, which will cause the least disturbance to the public. All debris shall be removed and properly disposed of by the end of each working day.
   c. Final Restoration Overlay: After completing all installations, and after testing of the pipe (but no sooner than 30-days after applying the S-I asphaltic surface), final restoration shall be performed. In no event shall final restoration begin after substantial completion. Final restoration shall provide an S-III asphaltic overlay as specified in an uninterrupted continuous operation until completion. Any additional restoration required after testing shall be repaired in a timely manner at no additional cost to the Owner.
   d. Maintenance of all restored facilities shall be the Contractor's responsibility. This maintenance shall be performed on an on-going basis during the course of construction. The Contractor's Progress Schedule shall reflect the above restoration requirements.
   e. Additional Restoration for Work in Business or Commercial Districts: The Contractor shall restore all private property, damaged by construction, to its original condition. Access to businesses located adjacent to the project site must be maintained at all times. Contractor may prearrange the closing of business accesses with the business owner. Such prearranged access closing shall not exceed two (2) hours. Property drainage and grading shall be restored within 24-hours of backfilling trench.

B. Existing Utilities
   1. The locations of all existing underground piping, structures and other facilities are shown based on information received from the respective owner. The locations are shown without express or implied representation, assurance, or guarantee that they are complete or correct or that they represent a true picture of underground piping, conduit and cables to be encountered. It is the Contractor's responsibility to verify all existing underground piping, structures and other facilities.

2. The Contractor shall, at all times, employ acceptable methods and exercise reasonable care and skill so as to avoid unnecessary delay, injury, damage or destruction of existing utility installations and structures; and shall, at all times in the performance of the Work, avoid unnecessary interference with, or interruption of, utility services; and shall cooperate fully with the owners thereof to that end.
3. When existing facilities are found to be in conflict with the Work, the Owner reserves the right to modify alignments to avoid interference with existing facilities.
4. All utilities, which do not interfere with the work, shall be carefully protected against damage. Any existing utilities damaged in any way by the Contractor shall be restored or replaced by the Contractor at his expense as directed by the Owner. Any existing facilities, which require operation to facilitate repairs, shall be operated only by the owner of the respective utility.
5. It is the responsibility of the Contractor to ensure that all utility and/or poles, the stability of which may be endangered by the proximity of excavation, be temporarily stayed and/or shored in position while work proceeds in the vicinity of the pole and that the utility or other companies concerned be given reasonable advance notice of any such excavation.

C. Notices
1. All governmental utility departments and other owners of public utilities, which may be affected by the Work, will be informed in writing by the Contractor two (2) weeks after the execution of the Contract or Contracts covering the Work. Such notice will be sent out in general, and directed to the attention of the governmental utility departments and other owners of public utilities for such installations and structures as may be affected by the Work.
2. The Contractor shall comply with Florida Statute 553.851 regarding protection of underground gas pipelines. Evidence of notification to the gas pipeline owner shall be furnished to the Owner within two (2) weeks after the execution of the Contract.
3. It shall be the Contractor's responsibility to contact utility companies at least two (2) full business days in advance of breaking ground in any area, in accordance with Florida Statute 556, or on any unit of the work so maintenance personnel can locate and protect facilities, if required by the utility company.
4. The Contractor shall give a minimum five (5) working day notice to utility personnel prior to interrupting a utility service (water, sewer, etc.).

D. Exploratory Excavations
1. Exploratory excavations shall be conducted by the Contractor for the purpose of locating underground pipelines or structures in advance of the construction. Test pits shall be excavated in areas of potential conflicts between existing and proposed facilities and at piping connections to existing facilities a minimum of 48-hours or 1,000-feet in advance of work. If there is a potential conflict, the Contractor shall notify the Owner/Engineer immediately. Information on the obstruction to be furnished by the Contractor shall include: Location, Elevation, Utility Type, Material and Size. Test pits shall be backfilled immediately after their purpose has been satisfied and the surface restored and maintained in a manner satisfactory to the Owner.

E. Utility Crossings
   1. It is intended that wherever existing utilities must be crossed, deflection of the pipe within specified limits and cover shall be used to satisfactorily clear the obstruction unless otherwise indicated on the Drawings. However, when in the opinion of the Owner this procedure is not feasible, the Owner may direct the use of fittings for a utility crossing or conflict transition as detailed on the Drawings.

F. Relocations
   1. Relocations shown on the Drawings: Public utility installations or structures, including but not limited to poles, signs, fences, piping, conduits and drains that interfere with the positioning of the work which are shown on the Drawings to be removed, relocated, replaced or rebuilt by the Contractor shall be considered as part of the general cost of doing the Work and shall be included in the prices bid for the various contract items. No separate payment shall be made therefore.
   2. Relocations not shown on the Drawings
      a. Where public utility installations or structures are encountered during the course of the work, and are not indicated on the Drawings or in the Specifications, and when, in the opinion of the Owner, removal, relocation, replacement or rebuilding is necessary to complete the Work, such work shall be accomplished by the utility having jurisdiction, or such work may be ordered, in writing by the Owner, for the Contractor to accomplish.
      b. If such work is accomplished by the utility having jurisdiction, it will be carried out expeditiously and the Contractor shall give full cooperation to permit the utility to complete the removal, relocation, replacement or rebuilding as required.
      c. If such work is accomplished by the Contractor, it will be paid for as a Change Order.
   3. All existing castings, including valve boxes, junction boxes, manholes, hand holes, pull boxes, inlets and similar structures in the areas of construction that are to remain in service and in areas of trench restoration and pavement replacement, shall be adjusted by the Contractor to bring them flush with the surface of the finished work.
   4. All existing utility systems which conflict with the construction of the work herein, which can be temporarily removed and replaced, shall be accomplished at the expense of the Contractor. Work shall be done by the utility unless the utility approves in writing that the Work may be done by the Contractor.

1.15 Related Construction Requirements

A. Traffic Maintenance
   1. Contractor shall provide a traffic control plan. Include proposed signs, markings, barricades, detour routes, sequencing, and phasing for vehicular and pedestrian traffic routes during construction.
   2. Prior to closing of any streets, the CONTRACTOR shall notify and obtain the approval of the CITY. Detours around construction will be subject to the approval of the CITY.

B. Barrier and Lights
   1. The Contractor shall exercise extreme care in the conduct of the Work to protect health and safety of the workmen and the public. The Contractor shall provide all protective measures and devices necessary, in conformance with applicable local, state and federal regulations. Protective measures shall include but are not limited to barricades, warning lights/flashers and safety ropes.
   2. All equipment and vehicles operating within 10-feet of the roadway shall have flashing strobe lights attached.

C. Dewatering and Flotation
   1. The Contractor, with his own equipment, shall do all pumping necessary to dewater any part of the work area during construction operations to insure dry working conditions. The Contractor shall take the necessary steps to protect on-site and off-site structures. Damage to any structures due to dewatering shall be repaired or the structures replaced at the Contractor's expense.
   2. The Contractor shall be completely responsible for any tanks, wetwells or similar structures that may become buoyant during the construction and modification operations due to the ground water or floods and before the structure is put into operation. The proposed final structures have been designed to account for buoyancy; however, the Contractor may employ methods, means and techniques during construction which may affect the buoyancy of structures. The Contractor shall take the necessary steps to protect structures. Damage to any structures due to floating or flooding shall be repaired or the structures replaced at the Contractor's expense.
   3. Contractor shall be responsible for any required permits for the discharge of ground water.

D. Dust and Erosion Control
   1. The Contractor shall prevent dust nuisance from his operations or from traffic.
   2. Contractor is responsible for providing effective temporary erosion and sediment control measures during construction or until final controls become effective.
   3. Temporary erosion controls include, but are not limited to, grassing, mulching, netting, watering and reseeding on-site surfaces and soil and borrow area surfaces and providing interceptor ditches at ends of berms and at those locations which will ensure that erosion during construction will be either eliminated or maintained within acceptable limits as established by the Owner, FDEP and any other agency having jurisdiction.
   4. Temporary sedimentation controls include, but are not limited to; silt dams, traps, barriers, and appurtenances at the foot of sloped surfaces which will ensure that sedimentation pollution will be either eliminated or maintained within acceptable limits as established by the Owner, FDEP and any other agency having jurisdiction.
   5. The construction of temporary erosion and sedimentation control facilities shall be in accordance with the technical provision of section 104 “Prevention, Control, and Abatement of Erosion and Water Pollution” of the FDOT Standard Specifications for Road and Bridge Construction, latest edition.

E. Lines and Grades
   1. All Work under this Contract shall be constructed in accordance with the lines and grades shown on the Drawings, or as given by the Owner/Engineer.

2. When the location of the Work is dimensioned on the Drawings, it shall be installed in that location; when the location of the Work is shown on a scaled drawing, without dimensions, the Work shall be installed in the scaled location unless the Owner approves an alternate location for the piping. Where fittings are noted on the Drawings, such notation is for the Contractor's convenience and does not relieve the Contractor from laying and jointing different or additional items where required. The Owner/Engineer may require detailed pipe laying drawings and schedules for project control.

3. The Contractor shall, at his own expense, establish all working or construction lines and grades as required from the project control points set by the Owner, and shall be solely responsible for the accuracy thereof.

F. Temporary Construction
   1. Temporary fences: If, during the course of the Work, it is necessary to remove or disturb any fencing, the Contractor shall at his own expense, provide a suitable temporary fence which shall be maintained until the permanent fence is replaced.
   2. Responsibility for Temporary Structures: In accepting the Contract, the Contractor assumes full responsibility for the sufficiency and safety of all temporary structures or work and for any damage which may result from their failure or their improper construction, maintenance or operation.

G. Daily Reports
   1. The Contractor shall submit to the Owner's Representative daily reports of construction activities including non-work days. The reports shall be complete in detail and shall include the following information:
      a. Days from Notice to Proceed; Days remaining to substantial and final completion.
      b. Weather information
      c. Work activities with reference to the Critical Path Method (CPM) schedule activity numbers (including manpower, equipment and daily production quantities for each individual activity).
      d. Major deliveries
      e. Visitors to site
      f. Test records
      g. New problems, and
      h. Other pertinent information
   2. A similar report shall be submitted for/by each Subcontractor.
   3. The report(s) shall be submitted to the Owner Representative within 2 days of the respective report date. Each report shall be signed by the Contractor's Superintendent or Project Manager. Pay request will not be processed unless daily reports are current.
   4. If a report is incomplete, in error, or contains misinformation, a copy of the report shall be returned by the Owner Representative to the Contractor's Superintendent or Project Manager with corrections noted. When chronic errors or omissions occur, the Contractor shall correct the procedures by which the reports are produced.

H. Cleaning
   1. During Construction
      a. During construction of the Work, the Contractor shall, at all times, keep the Site free from material, debris and rubbish as practicable and shall remove the same from any portion of the Site if, in the opinion of the Owner, such material, debris, or rubbish constitutes a nuisance or is objectionable.
      b. Provide on-site containers for the collection of waste materials, debris and rubbish and remove such from the Site periodically by disposal at a legal disposal area away from the Site.
      c. Clean interior spaces prior to the start of finish painting and continue cleaning on an as-needed basis until painting is finished. Use cleaning materials which will not create hazards to health or property and which will not damage surfaces. Use only those cleaning materials and methods recommended by the manufacturer of the surface material. Schedule operations so that dust and other contaminants resulting from cleaning process will not fall on wet or newly coated surfaces.
      d. The Contractor shall remove from the site all surplus materials and temporary structures when no longer necessary to the Work at the direction of the Owner.
   2. Final Cleaning
      a. At the conclusion of the Work, all equipment, tools, temporary structures and materials belonging to the Contractor shall be promptly taken away, and the Contractor shall remove and promptly dispose of all water, dirt, rubbish or any other foreign substances. Employ skilled workmen for final cleaning. Thoroughly clean all installed equipment and materials to a bright, clean, polished and new appearing condition. Remove grease, mastic, adhesives, dust, dirt, stains, fingerprints, labels, and other foreign materials from sight-exposed interior and exterior surfaces. Broom clean exterior paved surfaces; rake clean other surfaces of the grounds.
      b. The Work shall be left in a condition as shown on the Drawings and the remainder of the site shall be restored to a condition equal or better than what existed before the Work.
      c. Prior to final completion, or Owner occupancy, Contractor shall conduct an inspection of interior and exterior surfaces, and all work areas to verify that the entire Work is clean. The Owner will determine if the final cleaning is acceptable.

1.16 Construction Not Permitted

A. Use of Explosives
   1. No blasting shall be done except as approved by the Owner and the governmental agency having jurisdiction.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

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SECTION 01070

ABBREVIATIONS AND SYMBOLS

PART 1 - GENERAL

1.01 Referenced Standards

Any reference to published specifications or standards of any organization or association shall comply with the requirements of the specification or standard which is current on the date of Advertisement for Bids. In case of conflict between the referenced specifications or standards, the one having the more stringent requirements shall govern.

In case of conflict between the referenced specifications or standards and the Contract Documents, the Contract Documents shall govern.

1.02 Abbreviations

AA	-	Aluminum Association
AADF	-	Annual Average Daily Flow
AASHTO or AASHO	-	American Association of State Highway and Transportation Officials
ABPA	-	Acoustical and Board Products Association
ACI	-	American Concrete Institute
AGA	-	American Gas Association
AGMA	-	American Gear Manufacturers Association
AI	-	The Asphalt Institute
AIA	-	American Institute of Architects
AIEE	-	American Institute of Electrical Engineers
AIMA	-	Acoustical and Insulating Materials Association
AISC	-	American Institute of Steel Construction
AISI	-	American Iron and Steel Institute
ANSI	-	American National Standards Institute
API	-	American Petroleum Institute
APWA	-	American Public Works Association
AREA	-	American Railway Engineering Association
ASA	-	American Standards Association (ANSI)
ASCE	-	American Society of Civil Engineers
ASME	-	American Society of Mechanical Engineers
ASSCBC	-	American Standard Safety Code for Building Construction
ASTM	-	American Society for Testing and Materials
AWA	-	American Welding Association
AWPA	-	American Wood Preservers Association
AWPB	-	American Wood Preservers Bureau
AWS	-	American Welding Society
AWWA	-	American Water Works Association
CCC	-	Chlorine Contact Chamber
CL	-	Centerline
CSI	-	Concrete Reinforcing Steel Institute

CS	-	Commercial Standard
DIP	-	Ductile Iron Pipe
DIA	-	Diameter
DOT Spec	-	Standard Specification for Road and Bridge Construction, Florida Dept. of Transportation, latest revision
DR	-	Draw
E/A	-	Engineer or Architect
EL	-	Elevation
FE	-	Filtered Effluent
FDEP	-	Florida Department of Environmental Protection
FS	-	Federal Standard
GPM	-	Gallons per Minute
GST	-	Ground Storage Tank
HP	-	Horsepower
HWL	-	High Water Level
ID	-	Inside Diameter
IEEE	-	Institute of Electrical and Electronic Engineers
IEX	-	Ion-Exchange
IPCEA	-	Insulated Power Cable Engineers Association
MG	-	Million Gallons
MDF	-	Maximum Daily Flow
MH	-	Manhole
NBFU	-	National Board of Fire Underwriters
NBS	-	National Bureau of Standards
NEC	-	National Electrical Code
NECA	-	National Electrical Contractors' Association
NEMA	-	National Electrical Manufacturers' Association
NFPA	-	National Fire Protection Association
NPT	-	National Pipe Threads
NSF	-	National Sanitation Foundation
NWL	-	Normal Water Level
OD	-	Outside Diameter
OSHA	-	U.S. Dept. of Labor, Occupational Safety and Health Association
PCA	-	Portland Cement Association
PCI	-	Prestressed Concrete Association
PS	-	United States Product Standard
PHF	-	Peak Hourly Flow
PSIG	-	Pounds per Square Inch Gauge
PVC	-	Poly Vinyl Chloride
RPM	-	Revolutions per Minute
SAE	-	Society of Automotive Engineers
SDI	-	Steel Decks Institute
SE	-	Secondary Effluent
SJI	-	Steel Joists Institute
SMACNA	-	Sheet Metal and Air Conditioning Contractors' National Association
SSPC	-	Structural Steel Painting Council
STA	-	Station (100')
TDH	-	Total Dynamic Head
UL	-	Underwriters' Laboratories, Inc.

USASI or	-	United States of America Standards
USAS	-	Institute (now ANSI)
WTP	-	Water Treatment Plant
WWTF	-	Wastewater Treatment Facility

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

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SECTION 01110

SUMMARY OF WORK

PART 1 - GENERAL

1.01 Section Includes

Summary of work, other contracts, work sequence, operation of existing facilities, use of premises, Owner furnished products, coordination, cutting and patching

1.02 Summary of Work

A. The project will consist of, but is not limited to, the following:
   i. Construct one (1) Electrical Building and furnish and install new electrical equipment
   ii. Install new 1000 KW generator with weatherproof sound-attenuating walk-in type enclosure and belly tank (generator, automatic transfer switches, and fuel monitoring system to be provided by the City)
   iii. Construct blower pad and install new blowers (blowers to be provided by the City)
   iv. Demolish existing generator, diesel fuel tank, transformer, sidewalk and aboveground blower piping
   v. Furnish and install electrical conduit and electrical pullboxes.
   vi. Construct generator pad, grade site and install new concrete sidewalk.
   vii. Construct transformer pad per Duke Energy Specifications
   viii. Remove existing asphalt pavement and replace with concrete pavement

B. Furnish all materials, equipment, tools, and labor which is reasonably and properly inferable and necessary for the proper completion of the Work, whether specifically indicated in the Contract Documents or not.

C. All permits, licenses and fees, other than those permits included in the appendicies shall be secured and paid for by the CONTRACTOR.

D. Repair, replace, or otherwise settle with the Owner, if damage to property or existing facilities occurs, including damage to pavements, utilities, lawns, structures, etc.

E. Construct the Project under a single lump sum contract.

1.03 Work Under Other Contracts –N/A

1.04 Work Sequence

Contractor's sequence of work may be of his choosing in order to complete the work in the allowed time frame while accommodating other contractors on site.

1.05 Operation of Existing Facilities

Owner shall be able to operate existing facilities 24 hours per day, 7 days per week.

1.06 Contractor Use of Premises

Confine operations at the site to areas permitted by applicable laws, ordinances, permits, and by the Contract Documents. Do not unreasonably encumber the site with materials or equipment. Do not load structures with weight that will endanger the structure. Contractor shall assume full responsibility for protection and safekeeping of products stored on the job site.

1.07 Owner Furnished Products

A. One (1) New 1000 KW Generator with Automatic Transfer Switches and Fuel Monitoring System

A. Two (2) New Blowers

1.08 Coordination

A. Contractor shall be fully responsible for the coordination of his work and the work of his employees, subcontractors, and suppliers and to assure compliance with schedules.

B. Coordination requirements of this Section are in addition to the requirements of Section 00700, General Conditions, and 00800, Supplementary Conditions.

C. Contractor is responsible for coordinating with all the utilities regarding locates, testing, or relocations.

1.09 Cutting and Patching

A. Contractor shall, at no additional expense to the Owner, perform cutting and patching necessary to the completion of the Project. Perform cutting and patching in a manner to prevent damage to the structure or previously completed work.

B. Refinish surfaces as necessary to provide an even finish.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01200

PROJECT MEETINGS

PART 1 - GENERAL

1.01 Description

Work Specified Herein and Elsewhere

A. Work under this Section includes:

1. Preconstruction meeting
2. Coordination meetings

B. Related work specified elsewhere:

1. Submittals - Section 01300

1.02 Requirements Included

A. The ENGINEER shall schedule and administer preconstruction meeting, periodic progress meetings, and specially called meetings throughout the progress of the work.

1. Prepare agenda for meetings.
2. Coordinate physical arrangements for meetings.
3. Preside at meetings.
4. Prepare minutes of meetings.

B. Representatives of contractors, subcontractors and suppliers attending meetings shall be qualified and authorized to act on behalf of the entity each represents.

C. The CONTRACTOR shall attend meeting to ascertain that work is expedited consistent with Contract Documents and construction schedules.

1.03 Preconstruction Meeting

A. The OWNER OR AUTHORIZED REPRESENTATIVE will schedule a preconstruction meeting prior to beginning the work. This meeting shall be attended by the Engineer, the CONTRACTOR, and the OWNER. The purpose of the meeting shall be to review shop drawing procedures, construction methods, and to establish a construction schedule.

B. Location: A central site, convenient for all parties designated by the OWNER OR AUTHORIZED REPRESENTATIVE.

C. Attendance:
   1. OWNER's Representative
   2. ENGINEER and his professional consultants
   3. Resident Project Representative
   4. CONTRACTOR's Superintendent.
   5. Major Subcontractors.
   6. Major Suppliers.
   7. Utilities.
   8. Others as appropriate.

D. Suggested Agenda:

   1. Distribution and discussion of:
      a. List of major subcontractors and suppliers.
      b. Projected construction schedules.
   2. Critical work sequencing.
   3. Major equipment deliveries and priorities including list of long lead time items and anticipated delivery dates.
   4. Project Coordination.
   5. Designation of responsible personnel.
   6. Procedures and processing of:
      a. Field decisions.
      b. Proposal requests.
      c. Submittals.
      d. Change Orders.
      e. Applications for payment.
   7. Adequacy of distribution of Contract Documents.
   8. Procedures for maintaining record documents.
   9. Use of Premises:
      a. Office, work and storage areas.
      b. OWNER's requirements.
   10. Construction facilities, controls and construction aids.
   11. Construction Sequencing to minimize plant down time.
   12. Housekeeping procedures.
   13. Check of required Bond and Insurance certifications.
   14. Liquidated Damages.
   15. Request for a weekly job meeting for all involved.
   16. Equal Opportunity Requirements.
   17. Laboratory testing of material requirements.
   18. Inventory of material stored on-site provisions.

1.04 Progress Meetings

A. Schedule regular periodic meetings. The progress meetings will be held every 30 days or less with the first meeting 30 days after the preconstruction meeting or 30 days or less after the date of Notice to Proceed.

B. Hold called meetings as required by progress of the work.

C. Location of the meetings: Project field office of CONTRACTOR or ENGINEER or as designated by the OWNER.

D. Attendance:

1. ENGINEER, and his professional consultants as needed.
2. Subcontractors as appropriate to agenda.
3. Suppliers as appropriate to the agenda.
4. Others as appropriate.

E. Suggested Agenda:

1. Review, approval of minutes of previous meeting.
2. Review of work progress since previous meeting.
3. Field observations, problems, conflicts.
4. Problems which impede construction schedule.
5. Review of off-site fabrication, delivery schedules.
6. Corrective measures and procedures to regain projected schedule.
7. Revisions to construction schedule.
8. Progress, schedule during succeeding work period.
9. Coordination of schedules.
10. Review submittal schedules; expedite as required.
11. Maintenance of quality standards.
12. Pending changes and substitutions.
13. Review proposed changes for:
    a. Effect on construction schedule and on completion date.
    b. Effect on other contracts of the Project.
14. Other business.
15. Construction schedule.
16. Critical/long lead times.

F. The CONTRACTOR is to attend progress meetings and is to study previous meeting minutes and current agenda items, in order to be prepared to discuss pertinent topics such as deliveries of materials and equipment, progress of the work, etc.

G. The CONTRACTOR is to provide a current submittal log at each progress meeting in accordance with Section 01300.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

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SECTION 01270

MEASUREMENT AND PAYMENT

PART 1 GENERAL

1.01 Section Includes

Measurement and payment provisions, schedule of values

1.02 General Measurement and Payment Provisions

A. Payment for all work done in compliance with the Contract Documents, inclusive of furnishing all manpower, equipment, materials, and performance of all operations relative to construction of this project, will be made as a lump sum which will be complete payment for all work called for or reasonably inferable from the Contract Documents and other work will be considered incidental to the Contract and no additional compensation will be allowed.

B. The Owner reserves the right to alter the Drawings, modify incidental work as may be necessary, and increase or decrease the work to be performed to accord with such changes, including deductions or additions to the scope of work outlined in the Contract Documents. Changes in the work shall not be considered as a waiver of any conditions of the Contract nor invalidate any provisions thereof. Changes resulting in changes in the scope or quantities of Work or time or other conditions of work will be basis for consideration of a Change Order which is to be negotiated and executed before proceeding with the work. A supplemental agreement between the Contractor and the Owner will be required when such changes meet the conditions described in the Supplementary Conditions. Work which has not been authorized by a written Change Order will not be subsequently considered for additional payment.

C. The Contractor shall take no advantage of any apparent error or omission in the Drawings or Specifications, and the Engineer shall be permitted to make corrections and interpretations as may be deemed necessary for fulfillment of the intent of the Contract Documents.

D. If the Contractor makes a claim for an extra or additional cost and requests a Change Order be issued prior to performing the work, and the ENGINEER and/or OWNER renders a decision denying such request, the CONTRACTOR must notify the Engineer in writing within 3 days of the time that the CONTRACTOR is informed of the Engineer's decision. Otherwise the Owner will not consider any such difference as a claim for a Change Order or additional payment or time. Any such written notice received by the Engineer from the Contractor within the 3 day period shall be just reason for the Engineer to re-evaluate his previous decision.

E. Failure on the part of the Contractor to construct any item to plan or authorized dimensions within the specification tolerances shall result in: reconstruction to acceptable tolerances at no additional cost to the Owner; acceptance at no pay; or, acceptance at reduced price, all at the discretion of the Engineer.

F. Work shall not be considered complete until all testing has been satisfactorily completed and the item of work has demonstrated compliance with plans and specifications.

G. A preliminary monthly application for payment shall be submitted to the Owner/Engineer for review five (5) days prior to the submittal for approval of the Contractor's monthly payment request.

1.03 Schedule of Values

A. Submit Schedule of Values for approval prior to commencing construction. As a minimum, include those values reported on the Bid Form. The Schedule of Values shall be the basis for making payment applications and establishing prices for Change Orders.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION - Not Used

END OF SECTION

SECTION 01300

SUBMITTALS

PART 1 - GENERAL

1.01 Description

Work Specified Herein and Elsewhere

This Section includes but is not limited to requirements for the following:

1. Construction Schedules.
2. Shop Drawings, Product Data, and Samples.
3. Record Documents.
4. Operation and Maintenance Manuals.

PART 2 - SCHEDULES AND REPORTS

2.01 Schedule of Operations

Submit a schedule of operations to the Engineer for approval prior to any construction operations. The construction operations shall be sequenced to provide a minimum of interruption to operation of the existing facilities. Inform the Engineer of any changes in the schedule and allow ample time for the OWNER to alter operations as required by the construction of the various components of the work. Approval of traffic control and schedules shall be obtained from the governmental entity having jurisdiction over the area of work.

PART 3 - SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES

3.01 Shop Drawings

A. Shop Drawings are original drawings, prepared by the CONTRACTOR, a subcontractor, or distributor, which illustrate some portion of the work; showing fabrication, layout setting, or erection details.

B. Shop drawings shall be prepared by a qualified detailer and shall be identified by reference to sheet and detail numbers on the Contract Documents. Reproductions for submittal shall be full size opaque diazo prints or other print acceptable to the Engineer. Reduced size prints will not be reviewed or approved.

3.02 Product Data

A. Product data are manufacturer's standard schematic drawings and manufacturer's catalog sheets, brochures, diagrams, schedules, performance charts, illustrations, and other standard descriptive data.

B. Standard drawings shall be modified to delete information which is not applicable to the project and supplemented to provide additional information applicable to the project.

C. Catalog sheets, brochures, etc., shall be clearly marked to identify pertinent materials, products, or models.

3.03 Samples

Samples are physical examples to illustrate materials, equipment, or workmanship and to establish standards by which work is to be evaluated.

3.04 CONTRACTOR's Responsibilities

A. Prior to submission, the CONTRACTOR shall thoroughly check shop drawings, product data, and samples for completeness and for compliance with the Contract Documents and shall verify all dimensions and field conditions and shall coordinate the shop drawings with the requirements for other related work.

B. CONTRACTOR is responsibility for errors and omissions in submittals is not relieved by the Engineer's review of submittals.

C. CONTRACTOR shall notify the Engineer, in writing, at the time of submission, of deviations in submittals from the requirements of the Contract Documents and is not relieved by the Engineer's review of submittals, unless the Engineer gives written acceptance of specific deviations.

D. Begin no work which requires submittals until return of submittals with Engineer stamp and initials or signature indicating the submittal has been reviewed.

3.05 Submission Requirements and Engineer Review

A. Submit one (1) electronic copy or six (6) copies of product data. Submit the number of samples indicated in the individual Specifications Section.

B. Shop drawings, product data, samples and certifications shall be submitted by the CONTRACTOR to the Engineer. Submittals should be properly identified with the name of the project, dated, and each lot submitted shall be accompanied by a letter of transmittal referring to the name of the project and to the specification page number and/or Drawing number for identification of each item. Submittals for each type of work shall be numbered consecutively, and the numbering system shall be retained throughout all revisions.

C. Submittals shall bear the CONTRACTOR's stamp of approval certifying that they have been checked. Submittals without the CONTRACTOR's initialed or signed certification stamp and submittals which, in the Engineer's opinion, are incomplete, contain numerous errors or have not been properly checked, will be returned unchecked by the Engineer for resubmission. The CONTRACTOR shall mark his corrections in Green ink and the ENGINEER's comments shall be noted in Red.

D. ENGINEER will review submittals with reasonable promptness. The Engineer's review of submittals shall not be construed as a complete check and shall not relieve the CONTRACTOR from responsibility for complete compliance with the Contract requirements. No corrections, changes or deviations indicated on submittals reviewed by the ENGINEER shall be considered as a change order.

E. If submittal is acceptable, the ENGINEER will retain one (1) electronic copy or three (3) sets of prints and return the remaining prints to the CONTRACTOR. If the submittal is not satisfactory, one set of prints will be retained by the ENGINEER and the remaining prints returned to the CONTRACTOR for appropriate action.

F. In the event a third submittal of shop drawings is required, due to previous submittals of incomplete or incorrect shop drawings not in accordance with the Drawings and Specifications, the CONTRACTOR will be charged one-half the cost incurred by the ENGINEER for the review of the third submittal. The CONTRACTOR shall bear the total cost incurred by the ENGINEER for all subsequent reviews. The ENGINEER costs charged to the CONTRACTOR will be at the cost plus rate generally charged by the ENGINEER and will be deducted by the OWNER from payments due the CONTRACTOR.

G. Distribution of copies of acceptable submittals will be as mutually determined by the CONTRACTOR, OWNER and ENGINEER on an individual item basis during or following the preconstruction conference.

PART 4 - RECORD DOCUMENTS

4.01 General

A. As the work progresses, the CONTRACTOR shall mark on a set of Contract Documents all changes from the Contract Documents.

B. Mark on the Contract Documents all changes in direction and location of structures, piping, equipment, electrical, and mechanical work.

C. Mark on the Specifications the manufacturer, trade name, catalog, and supplier of each product actually installed, and mark changes made by change order or field order.

D. Following installation of the water system improvements and prior to system testing, the CONTRACTOR shall provide to the OWNER, Preliminary As-Built Drawings showing any deviations to the improvements from the approved and permitted plans. This set of drawings will be utilized for preparation of the drawings to be used for clearance of the system improvements through PCDOH/FDEP. The Final As-Built Drawing as outlined below will also be required to be submitted.

E. At the completion of the Work, the CONTRACTOR shall submit As-Built Drawings signed and sealed by a licensed surveyor registered in the State of Florida. The as-built drawings shall include locations of all located items to a minimum of two permanent references and information is to include, but not be limited to, the following:

1. Location of all valves, fittings, connection points, etc.
2. All utility and storm structure top and invert elevations.
3. Distance along pipelines between structures.
4. Stormwater conveyance systems including dimensions, elevations, contours, and cross sections.
5. Pavement centerline and edge of pavement elevations every 200 feet plus at all curb inlet locations.
6. Utility pipeline tied horizontally to edge of pavement and right-of-way lines, located every 200-ft plus all changes in horizontal offset.
7. Horizontal and vertical data for any construction that deviates from the approved engineering drawings.

PART 5 - OPERATION AND MAINTENANCE MANUALS

5.01 Submittal Requirements

A. The CONTRACTOR shall be responsible for obtaining installation, operation, and maintenance manuals from the manufacturers and suppliers. Submit one (1) electronic pdf copy and four (4) hard copies of manuals (plus additional copies to be returned to the Contractor) to the ENGINEER within 30 days after approval of shop drawings, product data, and samples, and not later than the date of shipment of each item of equipment to the project site. All operation and maintenance manuals shall be submitted prior to the completion of 35% of the construction.

B. Manuals shall be provided for each piece of equipment including individual components and subsystems of complete assemblies. The section of the manual on operation shall describe the function of each component and its relationship to the system of which it is a part. Where several models, options, or styles are described, the manual shall identify the items actually provided.

C. The manual shall contain the following:

1. Table of contents/index
2. Specific description of each system and components

3. Manufacturer's identification, including order number, model, and serial number

4. Name, address, telephone number(s) and e-mail address(es) of vendor(s) and local service representative(s)

5. Specific on-site operating instructions (including starting and stopping procedures)

6. Safety considerations

7. Project specific operational procedures

8. Project specific maintenance procedures

9. MANUFACTURER's operating and maintenance instructions – specific to the project

10. Copy of each wiring diagram

11. Copy of CONTRACTOR's approved shop drawings

12. List of spare parts and recommended quantities

13. Product Data: Mark each sheet to clearly identify specific products and component parts and data applicable to installation. Delete inapplicable information.

14. Drawings: Supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams

15. Provide logical sequence of instructions for each procedure, incorporating MANUFACTURER's instructions specified.

16. Equipment attributes sheet for submittal of name plate data.

17. Warranties and Bonds.

D. Each manual shall be bound in a binder and labeled to identify the contents, specification section, and project to which it applies.

E. Operation and maintenance manuals specified herein are in addition to any operation, maintenance, or installation instructions by the CONTRACTOR to install, test, and start up equipment.

F. Manuals for Equipment and Systems - In addition to the requirements listed above, for each System, provide the following:

1. Overview of system and description of unit or system and component parts. Identify function, normal operating characteristics and limiting conditions. Include performance curves, with engineering data and tests and complete nomenclature and commercial number of replaceable parts.

2. Panelboard circuit directories including electrical service characteristics, controls and communications and color coded wiring diagrams as installed.

3. Operating procedures: include start-up, break-in and routine normal operating instructions and sequences; regulation, control, stopping, shut-down and emergency instructions; and summer, winter and any special operating instructions.
4. Maintenance Requirements:
   a. Procedures and guides for trouble-shooting; disassembly, repair, and reassembly instructions
   b. Alignment, adjusting, balancing and checking instructions
   c. Servicing and lubrication schedule and list of recommended lubricants
   d. MANUFACTURER's printed operation and maintenance instructions
   e. Sequence of operation by instrumentation and controls manufacturer
   f. Original MANUFACTURER's parts list, illustrations, assembly drawings and diagrams required for maintenance
5. Control diagrams by controls manufacturer as installed (as-built)
6. CONTRACTOR's coordination drawings, with color coded piping diagrams, as installed (as- built)
7. Charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams. Include equipment and instrument tag numbers on diagrams.
8. List of original MANUFACTURER's spare parts and recommended quantities to be maintained in storage
9. Test and balancing reports, as required
10. Additional Requirements as specified in individual product specification
11. Design data for systems engineered by the CONTRACTOR or its Suppliers
12. Equipment attribute Information

    Equipment Attribute Worksheet shall be provided for all equipment meeting the asset definition as follows:

    Asset Definition

    - Maintenance is recommended
    - Assets have a value greater than $1,000
    - Assets are complete and usable, and perform a distinct function independently (i.e., they pump waste, remove solids, etc.)

a. This asset definition is intended to give a general indication of which equipment must be included in the Equipment Attribute Worksheets. The ENGINEER will provide the specific list of equipment that the CONTRACTOR must provide information for.

b. The data requirements include nameplate data, manufacturer and supplier information, information specific to the type of equipment, and recommended preventative maintenance activities.

c. An electronic copy of the Equipment Attribute Worksheets must be delivered in Excel format and submitted to the ENGINEER on CD-ROM and submitted with the O&M manuals. It is not necessary to submit printed copies of the Equipment Attribute Worksheets.

G. Manual for Materials and Finishes – In addition to the requirements listed above, for each material or finish, provide the following:

1. Building Products, Applied Materials and Finishes: Include product data, with catalog number, size, composition and color and texture designations. Provide information for re-ordering custom manufactured products.

2. Instructions for Care and Maintenance: Include MANUFACTURER's recommendations for cleaning agents and methods, precautions against detrimental agents and methods and recommended schedule for cleaning and maintenance.

3. Moisture Protection and Weather Exposed Products: Include product data listing, applicable reference standards, chemical composition, and details of installation. Provide recommendations for inspections, maintenance and repair.

H. Quick Reference Sheets for Equipment

1. For each item of equipment provide the following:

a. A minimum of one 8 ½ x 11-inch laminated quick reference sheet. Sheets shall be three hole punched and may be double sided.

b. Each quick reference sheet shall include the following minimum information:

1) Safety Procedures:

a. Brief descriptions of each piece of equipment and components

b. Starting and stopping procedures

c. Special operating instruction

d. Routine maintenance procedures

e. Calibration procedures

f. Pump curves

g. Trouble shooting procedures

h. Name, address, and telephone numbers of local service representative

c. Provide three copies of quick reference sheets for review by the ENGINEER.

d. After quick reference sheets have been approved, provide four copies of laminated quick reference sheets to the ENGINEER in one commercial coiled three-ring binder with durable and cleanable plastic cover.

END OF SECTION

SECTION 01301

PRODUCT SUBSTITUTIONS

PART 1 - GENERAL

1.01 Summary

A. General
   1. Base all bids on materials and equipment shown on the drawings and listed in the specifications.
   2. Certain types of equipment and kinds of material are described in specifications by means of references to names of manufacturers and vendors, trade names, or catalog numbers.
      a. When this method of specifying is used, it is not intended to exclude from consideration other products bearing other manufacturer's or vendor's names, trade names, or catalog numbers, provided said products are "or-equals," as determined by Owner/Engineer.
   3. Other types of equipment and kinds of material may be acceptable substitutions under the following conditions:
      a. Or-equals are unavailable due to strike, discontinued production of products meeting specified requirements, or other factors beyond control of Contractor; or,
      b. Contractor proposes a cost and/or time reduction incentive to the Owner.

1.02 Quality Assurance

A. In making request for substitution or in using an approved product, Contractor:
   1. Has investigated proposed product, and has determined that it is adequate or superior in all respects to that specified, and that it will perform the function for which it is intended.
   2. Will provide same guarantee for substitute item as for product specified.
   3. Waives all claims for additional costs related to substitution which subsequently arise.

1.03 Definitions

A. Product: Manufactured material or equipment.

1.04 Procedure for Requesting Substitution

A. Substitution shall be considered only:
   1. After award of Contract
   2. Under the conditions stated herein

B. Written request through Contractor only.

C. Transmittal Mechanics
   1. Follow the transmittal mechanics prescribed for Shop Drawings in Specification Section 01300 "Submittals."
      a. Product substitution will include in the transmittal letter, either directly or as a clearly marked attachment, the items listed in Paragraph D below.

D. Transmittal Contents
   1. Product identification:
      a. Manufacturer's name
      b. Telephone number and representative contact name
      c. Specification Section or Drawing reference of originally specified product, including discrete name or tag number assigned to original product in the Contract Documents.
   2. Manufacturer's literature clearly marked to show compliance of proposed product with Contract Documents.
   3. Itemized comparison of original and proposed product addressing product characteristics including but not necessarily limited to:
      a. Size
      b. Composition or materials of construction
      c. Weight
      d. Electrical or mechanical requirements
   4. Product experience
      a. Location of past projects utilizing product.
      b. Name and telephone number of persons associated with referenced projects knowledgeable concerning proposed product.
      c. Available field data and reports associated with proposed product.
   5. Data relating to changes in construction schedule.
   6. Data relating to changes in cost.
   7. Samples
      a. At request of Owner/Engineer.
      b. Full size if requested by Owner/Engineer.
      c. Held until substantial completion.
      d. Owner/Engineer is not responsible for loss or damage to samples.

1.05 Approval or Rejection

A. Written approval or rejection of substitution to be given by the Engineer.

B. Engineer reserves the right to require proposed product to comply with color and pattern of specified product if necessary to secure design intent.

C. In the event the substitution is approved, the resulting cost and/or time reduction will be documented by Change Order in accordance with the General Conditions.

D. Substitution will be rejected if:
   1. Submittal is not through the Contractor with his stamp of approval.
   2. Request is not made in accordance with this Specification Section.
   3. In the Owner/Engineer's opinion, acceptance will require substantial revision of the original design.

4. In the Owner/Engineer's opinion, substitution will not perform adequately the function consistent with the design intent.

E. Contractor shall reimburse the Owner for the cost of the evaluation whether or not substitution is approved.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

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SECTION 01310

ADMINISTRATIVE REQUIREMENTS

PART 1 - GENERAL

1.01 Section Includes

Meetings, construction progress documentation, submittals.

1.02 Related Sections

A. Section 01320 – Project Completion Schedule

B. Section 01780 - Record Drawings

1.03 Preconstruction Meeting

The Owner will schedule a preconstruction meeting prior to beginning the Work to review shop drawing procedures, submittal requirements, and construction administration requirements (project coordination and communication). The Contractor shall bring to the preconstruction meeting the proposed construction schedule, which will be reviewed with the Owner during the meeting.

1.04 Definitions

A. Shop Drawings - Shop drawings are original drawings, prepared by the Contractor, a subcontractor, supplier, or distributor, which illustrate some portion of the Work; showing fabrication, layout, setting, or erection details. Shop drawings shall be prepared by a qualified detailer and shall be identified by reference to sheet and detail numbers on the Contract Drawings

B. Product Data - Product data are manufacturer's standard schematic drawings and manufacturer's catalog sheets, brochures, diagrams, schedules, performance charts, illustrations, and other standard descriptive data. Catalog sheets, brochures, etc., shall be clearly marked to identify pertinent materials, products, or models.

C. Samples - Samples are physical examples to illustrate materials, equipment, or workmanship and to establish standards by which work is to be evaluated.

1.05 Submittal Requirements

A. Prior to submission, thoroughly check shop drawings, product data, and samples for completeness and for compliance with the Contract Documents. Verify all field measurements, quantities, dimensions, specified performance criteria, fabrication, shipping, handling, storage, assembly, installation, and safety requirements.

B. Coordinate the submittals with the requirements for other related work.

C. Notify the Engineer, in writing at the time of submission, of deviations in submittals from the requirements of the Contract Documents. The Contractor's responsibility for deviations in submittals from the requirements of the Contract Documents is not relieved by the Engineer's review of submittals, unless the Engineer gives written acceptance of specific deviations.

D. Submit electronic copies (PDF format) of each shop drawing and product data.

E. Where a specific product manufacturer and model number is listed in individual specification sections and is proposed by the Contractor to be used, full submittal of product data is not required. In this case, submit in letter format the name of the product, manufacturer, model number, specification section, and name of project. Certify the identified product is proposed to be used in the project.

F. Shop drawings, product data, and samples shall be accompanied by a letter of transmittal referring to the name of the project and to the specification page number and/or Drawing number for identification of each item. Submittals for each type of work shall be numbered consecutively, and the numbering system shall be retained throughout all revisions.

G. Submittals shall bear the Contractor's stamp of approval certifying that they have been checked and indicate appropriate specification section and/or drawing location. Submittals without the Contractor's initialed or signed certification stamp and submittals which, in the Engineer's opinion, are incomplete, contain numerous errors or have not been properly checked, will be returned unchecked by the Engineer for resubmission.

H. Begin no work which requires submittals until return of submittals with Engineer stamp and printed name or signature indicating the submittal has been approved.

1.06 Engineer Review of Submittals

A. Engineer’s review and approval of submittals will not extend to means, methods, techniques, sequences, procedures of construction or to safety precautions.

B. The review and approval of a separate item will not indicate approval of the assembly in which the item functions. Engineer’s review and approval of submittals shall not relieve Contractor from responsibility for any variation from the requirements of the Contract Documents.

C. The Engineer will review submittals with reasonable promptness. The Engineer's review of submittals shall not be construed as a complete check and shall not relieve the Contractor from responsibility for complete compliance with the Contract requirements.

D. No corrections, changes, or deviations indicated on submittals reviewed by the Engineer shall be considered as a change order.

E. Where review of submittals is required by the Owner or other agencies, the Engineer will forward the appropriate submittal(s) to these parties after Engineer review. Once review of all parties is complete, the submittal(s) will be returned to the Contractor reflecting the review of all parties

F. If the submittal is not satisfactory, one copy of the submitted item will be retained by the Engineer and all other copies returned to the Contractor for appropriate action.

G. In the event a third submittal is required, due to previous submittals of incomplete or incorrect data or not in compliance with the Contract Documents, the Contractor will be charged one-half of the cost incurred by the Engineer for the review of the third submittal. The Contractor shall bear the total cost incurred by the Engineer for all subsequent reviews. The Engineer costs charged to the Contractor will be at the cost plus rate generally charged by the Engineer and will be deducted by the Owner from payments due to the Contractor.

H. Distribution of copies of acceptable submittals will be as mutually determined by the Contractor, Owner, and Engineer during or following the preconstruction conference.

1.07 Progress Meetings

A. The frequency of progress meetings shall be determined during the preconstruction meeting. As a minimum, progress meetings shall be held once per month during construction.

B. The Contractor and Owner shall attend the progress meetings.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

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SECTION 01315

PRECONSTRUCTION VIDEO

PART 1 - GENERAL

1.01 Description

A. Provide continuous color audio and video recording along the entire length of all proposed work areas prior to construction to serve as a record of pre-construction conditions.

B. Supplement audio and video recording with digital color photographs for areas which require details not ascertainable on the recorded video.

1.02 Related Requirements

A. Section 01310 – Administrative Requirements.

1.03 Definitions

Construction Area = All areas used for construction of the proposed improvements, temporary construction, stockpile areas, staging and storage areas, and entry and exit points used by equipment, delivery vehicles, service vehicles, and other vehicles used for transport of labor, equipment, and materials to the job site.

1.04 Qualifications

The preconstruction audio-video recording shall be of professional quality that will clearly log an accurate visual description of existing conditions. Any portion of the digital recording that is determined by the Owner or Engineer to be not acceptable in the documentation of the existing condition shall be re-filmed at no additional cost to the Owner.

PART 2 - PRODUCTS

2.01 General

A. The total video recording system and the procedures employed in its use shall be such as to produce a finished product that will fulfill the technical requirements of the project.

B. The digital recording equipment shall capture existing conditions as an individual movie file (.MP4, .MPG, .WMV, .MOV or approved equal). The files shall be saved in digital format on a portable USB hard/flash drive or approved equal. The files shall be able to be played back on any Windows compatible computer.

C. The video shall be recorded in real time and the date and time of the recording shall be displayed on the video.

D. The video file names shall be referenced in the recording report generated in PDF format. The report shall identify locations of where the video was recorded and the time location on the video at each recording location.

E. The digital portion of the recording shall produce bright, sharp, clear pictures with accurate colors and shall be free from distortion, tearing, rolls or any other form of picture imperfection.

F. The audio portion of the recording shall produce the commentary of the camera operator with proper volume, clarity, and be free from distortion.

2.02 Audio-Video Recording

A. Each audio-video recording shall be saved on appropriate USB "Thumb Drive" media viewable through a standard USB port on a computer.

B. Each USB "Thumb Drive" shall contain the following information and arrangement at the beginning as a title screen:

City of Ocoee, Florida	
PROJECT NAME	
PROJECT NUMBER	
CONTRACTOR:	(Name of Contractor)
DATE:	(When photo was taken)
VIDEO BY:	(Firm Name of Videographer)
LOCATION:	(Description of Location(s) and View(s))

C. Each USB "Thumb Drive" recording section shall begin with an audio description of the Owner's name, Contract name and number, Contractor's name, date and location information such as street name, direction of travel, viewing side, etc.

D. Information appearing on the video recording must be continuous and run simultaneously by computer generated transparent digital information. No editing or overlaying of information at a later date will be acceptable.

E. Digital information to appear in the upper left corner shall be as follows:
   1. Name of Contractor
   2. Day, date and time
   3. Name of Project & Specification Number

F. Time must be accurate and continuously displayed on the video record

G. Written documentation must coincide with the information on the USB "Thumb Drive" so as to make easy retrieval of locations at a later date.

H. The video system shall have the capability to transfer individual frames of video electronically into hard copy prints or photographic negatives.

I. Audio shall be recorded at the same time as the video recording and shall have the same information as on the viewing screen. Special commentary shall be given for unusual conditions of buildings, sidewalks and curbing, foundations, trees and shrubbery, structures, equipment, pavement, etc.

J. All USB “Thumb Drive” and boxes shall bear labels with the following information:
   1. USB “Thumb Drive” Number
   2. Owner's Name
   3. Date of Recording
   4. Project Name and Number
   5. Location and Standing Limit of Video

PART 3 - EXECUTION

3.01 General

A. The recordings shall contain coverage of all surface features located within the construction area and extend outward a minimum of 30-ft outside the construction area plus all off road access routes used to reach the construction area. The recording shall include all surface conditions supported by appropriate audio description.

B. The surface features documented in the recordings shall include, but not be limited to, all driveways, sidewalk, curb, gutter, buildings, walls, storage sheds, swales, culverts, headwalls, landscaping, trees, shrubbery, pull boxes, valve boxes, concrete pads, power poles, guy wires, mailboxes, and fences.

C. The recordings shall also document the existence or nonexistence of any faults, fractures, or defects, and existing man made material such as debris, construction stockpiles, trash, and fuel containers.

D. Each video recording shall be a simultaneous recorded audio recording. This audio recording, exclusively containing the commentary of the camera operator, shall assist in viewer orientation and in any needed identification, differentiation, clarification, or objective description of the feature being shown in the video portion of the recording. The audio recording also shall be free from any conversations between the camera operator and any other production technicians.

E. Each video shall have a log of that video’s contents. The log shall describe the various segments of coverage contained on that video in terms of the names of streets or easements, coverage beginning and end, directions of coverage, and video unit counter numbers.

3.02 Recording Schedule

A. The recording shall be performed prior to the placement of any construction materials or equipment on the proposed construction site. Coordinate the scheduling of the preconstruction video recording with the Owner.

B. The Contractor shall coordinate the video recording with the construction schedule so that those portions of the construction that will be completed first will be recorded first.

C. Off road access routes to and from the construction area shall be recorded prior to mobilizing to work areas.

D. The Contractor shall deliver the video recordings to the Owner upon their completion.

3.03 Visibility

All recordings shall be performed during times of good visibility. No recording shall be done during periods of significant precipitation, mist, or fog. The recording shall only be done when sufficient sunlight is present to properly illuminate the subject, and to produce bright, sharp video recordings of those subjects. No recording shall be performed when more than 10% of the area to be recorded contains debris or obstructions unless otherwise authorized by the Engineer.

3.04 Continuity of Coverage

A. In order to increase the continuity of the coverage, the coverage shall consist of a single, continuous, unedited recording which begins at one end of a particular construction area. However, where coverage is required in areas not accessible by conventional wheeled vehicles and smooth transport of the recording system is not possible, such coverage shall consist of an organized, interrelated sequence of recordings at various positions along that proposed construction area.

B. The average rate of travel during a particular segment of coverage (e.g., coverage of one side of the street) shall be directly proportional to the number, size, and value of the surface features within that construction area's zone of influence.

3.05 Camera Height and Stability

When conventional wheeled vehicles are used as conveyances for the recording system, the distance between the camera lens and the ground shall not be more than 10 feet. The camera shall be firmly mounted, such that transport of the camera during the recording process will not cause any unsteady picture.

3.06 Camera Control

Camera pan, tilt, zoom-in, and zoom-out rates shall be sufficiently controlled such that recorded objects will be clearly viewed during video playback. In addition, all other camera and recording system controls, such as lens, focus, and aperture, video level, pedestal, chroma, white balance, and electrical focus, shall be properly controlled or adjusted to maximize recorded picture quality.

3.07 Viewer Orientation Techniques

The audio and video portions of the recording shall maintain viewer orientation. To this end, overall establishing views and visual displays of all visible house and building addresses shall be utilized. In easements where the proposed construction location will not be readily apparent in the recorded video, highly visible yellow flags shall be placed in such a fashion as to clearly indicate the proposed centerline of construction.

3.08 Areas to be Video Recorded

A. When video recording on private property, the Contractor shall give the Owner sufficient prior notice of such entry so that property owners may be advised of, and their permission obtained for, the Work.

B. All video recording shall be done during regular business hours, unless otherwise specified by the property owner or the Owner. The Contractor shall enter and leave property in a professional and orderly, workmanlike manner.

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SECTION 01320

PROJECT COMPLETION SCHEDULE

PART 1 - GENERAL

1.01 Section Includes

Project completion scheduling

1.02 Submittals

A. Prior to construction, prepare a schedule showing all major activities needed to complete project. Include major material and equipment order and delivery times. Submit to Owner no later than the date of the preconstruction conference.

B. Schedule to utilize Critical Path Method formatted by establishing a precedence diagram which is time scaled. Include on schedule activity start dates, stop dates, and duration; critical path; float; delivery schedules. Include submittal dates and durations for components with extended lead times in schedule.

C. Include on the schedule a minimum float of 1 day every 3 weeks during construction.

D. Project substantial and final completion dates shown on schedule shall be same as or earlier than the contractual dates.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 Monitoring and Updating of Schedule

A. Float shown on the schedule belongs to the project.

B. Progress data shall be accumulated to update the schedule on a monthly basis, prior to submittal of the application for payment. Progress data shall include:

1. Activities started
2. Activities completed.
3. Predicted activity starts
4. Predicted activity completions
5. Changes in original duration for specific activities
6. Changes in activity sequences
7. Percent complete on activities

C. Update of schedule to include effect of the progress projected for the next two (2) reporting periods.

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SECTION 01450

QUALITY CONTROL

PART 1 - GENERAL

1.01 Section Includes

Quality control, quality assurance

1.02 Quality Control

A. It is the Contractor's responsibility to perform all work in conformance with the Plans and Specifications. In order to fulfill this responsibility, the Contractor is required to have an approved Quality Control Program, including testing, as part of his Contract work in accordance with the Contract Documents and to submit details of his Program to the Engineer for review and approval prior to commencing any construction operations. The submittal shall include detailed information on locations and number of all tests, etc., that will be necessary for the Contractor to make his own determination that the work is being performed in compliance with the Project requirements.

B. As part of the Contractor's Quality Control Program included as part of his work, the Contractor shall employ and pay for an independent, approved soils testing laboratory to perform testing services outlined in these Contract Documents.

C. The Contractor's Quality Control Program shall include, but not be limited to, the following in addition to the type and frequency of tests as required by the technical specifications:

1. Piping and structural excavation, bedding and backfill materials and density quality control testing

2. Determination of compactive effort needed for compliance with the density requirements.

3. Portland cement concrete and asphalt paving quality control testing including design mix review, materials, field slump and air content, and field and lab cured strength samples and testing.

D. In addition to Quality Control Testing, the Contractor shall be responsible for required testing or approvals for any work (or any part thereof) if laws or regulations of any public body having jurisdiction specifically require testing, inspections or approval. The Contractor shall pay all costs in connection therewith and shall furnish the Engineer the required certificates of inspection, testing or approval. The Contractor shall also be responsible for and shall pay all costs in connection with any inspection or testing required in connection with Owner or Engineer acceptance of a supplier of materials or equipment proposed to be incorporated into the work.

E. Any design or testing laboratory utilized by the Contractor shall be an independent laboratory acceptable to the Owner and the Engineer, approved in writing, and complying with the latest edition of the "Recommended Requirements for Independent Laboratory Qualification", published by the American Council of Independent Laboratories.

F. Testing laboratories, whether provided by the Contractor, shall promptly notify the Engineer and the Contractor of irregularities or deficiencies of work that are observed during performance of services. Laboratories shall submit two (2) copies of all reports directly to the Engineer and two (2) copies to the Contractor.

1.03 Quality Assurance

A. In addition to the services provided by the laboratory paid for by the Contractor as a part of his work, the Owner, at his sole discretion, may employ an additional independent soils laboratory as part of Owner's Quality Assurance Program to verify that the work meets the requirements of the Contract Documents. The Owner furnished Quality Assurance testing may include the type and frequency of tests as required by the technical specifications. The Owner reserves the right to have additional tests made beyond those specified in the Contract Documents. The Contractor shall cooperate with the Owner and make the work and samples available for Owner testing at no additional cost in case the Owner chooses to have additional Owner furnished testing performed. It is the sole responsibility of the Contractor to see that his work meets all provisions of the Contract Documents.

B. The Contractor shall cooperate with the soils laboratory personnel and provide access to the work to be tested. The Contractor shall notify the Engineer and Owner's testing laboratory sufficiently in advance of operations to allow scheduling of tests. The Contractor shall furnish casual labor and facilities to obtain and handle samples at the site and to store and cure test samples as required.

1.04 Testing of Materials

A. Unless otherwise specified, all materials shall be sampled and tested in accordance with the latest published standard methods of ASTM in effect at the time bids are received.

B. Test of materials shall be made by a representative of the Contractor, unless otherwise provided. Testing of equipment shall be the responsibility of the Contractor or an authorized manufacturer's representative. All test results shall be furnished to the Engineer in writing. The Contractor shall provide facilities required to collect and forward samples. The Contractor shall furnish the required samples without charge.

C. The Contractor shall not make use of or incorporate in the work, the materials represented by the sample until tests have been made and the material found to be in accordance with the requirements of the Specifications.

D. Materials to be tested and the applicable test procedure shall be as outlined in the individual sections of these Specifications.

1.05 Source and Quality of Materials and Equipment

A. The source of materials to be used shall be in accordance with the Contract Documents and as approved by the Engineer before delivery. The approval of the source of any material shall continue as long as the material conforms to the Specifications.

B. All material not conforming to the requirements of the Specifications shall be considered as defective and shall be removed from the work. If in place, faulty materials shall be removed by the Contractor at his expense and replaced with acceptable material unless permitted otherwise by the Owner. No defective materials that have been subsequently corrected shall be reused until approval has been given.

C. Upon failure of the Contractor to comply immediately with any order of the Engineer to remove and replace defective material, the Owner shall have authority to remove and replace defective materials, and to deduct the cost of removal and replacement from any monies due or to become due to the Contractor. Failure to reject any defective materials or work at the time of installation shall in no way prevent later rejection when such defects are discovered, nor obligate the Owner to final acceptance.

1.06 Additional Testing

In addition to soils laboratory and materials testing, the Contractor shall perform other testing called for in the Contract Documents including but not limited to piping, pressure, leakage, infiltration and exfiltration, as required.

PART 2 – PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

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SECTION 01520

TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.01 Section Includes

Construction facilities, controls, temporary utilities, project identification signs, field office and storage sheds, storage of materials and equipment.

1.02 Submittals

A. Prior to installation of construction facilities and temporary controls, submit the following items for review and approval:
   1. Site Utilization Plan
   2. Project identification sign. Provide proposed text, layout, and sizing of all required signs.

1.03 Construction Facilities and Temporary Controls

All construction facilities and temporary controls remain the property of the Contractor establishing them and shall be maintained in a safe and useful condition until removed from the construction site.

1.04 Removal of Temporary Construction

Remove the various temporary facilities, services, and controls and legally dispose of them as soon as the Owner deems permissible. Portions of the site and areas used for temporary facilities shall be restored to existing or better condition, including but not limited to fill replacement, regrading, compaction, and sodding.

1.05 Transportation and Handling

A. Manufactured materials and products shall be delivered to the project site as needed for installation, undamaged, in original packages, containers, or bundles, as packaged by the manufacturer with manufacturer's name, brand, seals, and labels intact.

B. Materials other than those designated within the Specifications or approved by the Owner shall not be delivered to the project site.

1.06 Storage and Protection

A. The Contractor shall be responsible for protection and preservation of all materials until final acceptance of the Project. Any damage to work prior to acceptance shall be remedied by the Contractor at no additional cost to the Owner.

B. Provide temporary weather-tight enclosures to protect work from damage by the elements, and protect finished surfaces to prevent any damage resulting from the work of any trade.

1.07 Security

A. Contractor shall, at all times, be responsible for the security required in all project areas and shall provide all reasonable protection to prevent damage, injury or loss to employees on the Work and all other persons who may be affected thereby; all the work materials and equipment to be incorporated therein, whether in storage on or off the project site, under the care, custody or control of the Contractor or any subcontractors; and any other property under the care, custody or control of the Contractor or any subcontractors. Contractor shall be responsible for such security and safety until final acceptance of the Work.

B. Full time watchmen will not be specifically required as a part of the Contract, but the Contractor shall provide inspection of work area daily and shall take whatever measures are necessary to protect the safety of the public, workmen, and materials, and provide for the security of the site, both day and night.

PART 2 - PRODUCTS

2.01 Temporary Electric Service

A. Furnish and maintain temporary lighting and power required to perform the Work. Include in the Bid all costs for providing temporary electrical service.

B. Temporary service shall include protective enclosures, branch wiring, outlets, lamps, and grounding as required by NEC and Local Electrical Codes.

2.02 Temporary Heating

The Contractor shall furnish fuel or power and provide and operate all temporary heating units. Heat shall be provided as necessary to perform the Work. Temporary heating units shall be adequately vented and approved devices which will not damage finished areas. The Contractor shall also furnish all tarpaulins and temporary enclosures necessary to provide this protection.

2.03 Temporary Ventilation

The Contractor shall provide, operate, and furnish power for temporary ventilation required for the proper installation and curing of materials and safety of workmen.

2.04 Temporary Water

A. Provide a temporary water distribution system for all construction purposes and pay for all water used. Obtain temporary meters from the local water utility as required and pay all associated fees.

B. Furnish potable drinking water in suitable dispensers and with cups for use of all employees at the job.

C. Provide all temporary piping, hoses, etc., required to transport water to the point of usage by all trades.

2.05 Temporary Sanitary Facilities

Provide temporary toilet facilities as required. Maintain these during the entire period of construction under this Contract for the use of all construction personnel on the job. Enough chemical toilets shall be provided to conveniently serve the needs of all personnel. Chemical toilets and their maintenance shall meet the requirements of State and local health regulations and ordinances.

2.06 Temporary Pumping and Site Drainage

Keep the site free from water at all times to permit continuous access and to prevent damage to the work.

2.07 Material Hoists and Cranes

A. Provide material hoists required for normal use by all trades and employ skilled hoist operators. Provide all necessary guards, signals, safety devices, etc., required for safe hoist operation. The construction and operation of material hoists shall be in accordance with the applicable ANSI Standards, the "Manual Code of Accident Prevention in Construction" of the Associated General Contractors of America, OSHA, and of other Federal, State, and municipal codes or ordinances. The Contractor shall prohibit the use of hoists for transporting personnel. Hoists shall be located to avoid risk of damage to completed work.

B. Special rigging and hoisting facilities shall be provided by each trade requiring their use.

2.08 Temporary Runways, Scaffolding, and Ladders

A. Provide temporary ladders, ramps, and runways as required for performance and inspection of the work. The above facilities shall be constructed and maintained in accordance with the applicable Federal, State, and Municipal regulations and codes.

B. Furnish, erect, and maintain all scaffolding required for this work. Scaffolding shall be constructed and maintained in accordance with applicable State and Federal laws and local ordinances. Scaffolding shall be promptly removed after serving its purpose.

C. The structural strength and safety of scaffolding, runways, covers, railings, ladders, stairs, etc., and compliance with law shall be the sole responsibility of the Contractor.

2.09 Temporary Chutes

No materials shall be dropped from structures except through enclosed wooden or metal chutes which shall be provided and maintained as required for the performance of the work by the various trades.

2.10 Project Identification Sign

A. As soon as practicable after award of contract, but no later than twenty (20) days after the Notice to Proceed is issued, furnish and erect one sign for the project, placed at a location determined by Owner. The sign shall be erected when the work is started and shall be suitably supported, braced, and maintained, and shall be removed upon completion of the project or when directed by the Owner.

B. The sign shall comply with the latest SRF signage requirements. The sign shall contain text including the following:

(Name of Owner) City of Ocoee
(Name of Project) WWTF Electrical Upgrade and Expansion

Engineer: CPH, LLC
Contractor: _____

C. Submit to the Owner for approval the proposed sign lettering (fonts, size) and text prior to fabricating the signs.

D. No other signs will be permitted.

2.11 Contractor's Field Office and Storage Sheds

The Contractor shall provide field office and storage sheds that it determines are required for the performance of the Work and protection of materials and equipment.

2.12 Owner / Engineer Field Office – N/A

A. The Contractor shall provide for the Owner/Engineer a separate construction trailer, for the Owner's or Engineer's use during the construction contract. This trailer will serve as a field office and shall contain:

1. 2 desks with high back chair on coasters
2. 2 30" x 60" tables
3. 8 folding chairs
4. 1 ABC fire extinguisher (minimum 10 lb. rated capacity)
5. 2 wastebaskets - office type
6. 1 telephone line (including monthly fee)
7. 1 bottle type water cooler (including monthly service)
8. Keys to the trailer

B. The Contractor shall not only provide and pay for the trailer(s), but shall also provide and pay for the telephone lines and their monthly bills, lavatory supplies, monthly electric bill, weekly service of the septic tank, water hook up, connection fees, once per week cleaning of the trailers, plus all associated bills and fees for the trailer and its contents. The mobile office trailer and exterior stairs shall meet all Federal, State, and local laws and shall comply with Health Department regulations. In lieu of the septic tank, the trailer can be hooked up to existing sewer lines, if available; however, Contractor is responsible for all hook ups and service payments as applicable.

PART 3 - EXECUTION

3.01 Access Roads and Parking Areas

A. Construct temporary roadways and parking areas within the site as required to provide proper access to the site for delivery of material and equipment of all trades. It is up the Contractor to determine whether it needs to construct any temporary roads or parking areas to accommodate its construction (including delivery of materials, equipment, and manpower to the site).

B. At completion of the work or when directed by the Owner, surfacing and sub-base material used for the temporary road and parking areas shall be removed, unless otherwise approved by the Owner.

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SECTION 01610

DELIVERY, STORAGE, AND HANDLING

PART 1 - GENERAL

1.01 Description

A. This Section specifies the general requirements for the delivery, handling, storage and protection for all items required in the construction of the Work.

B. Deliver, handle and store products in accordance with manufacturer's recommendations and by methods and means that will prevent damage, deterioration, and loss including theft and protect against damage from climatic conditions. Control delivery schedules to minimize long-term storage of products at the site and overcrowding of construction spaces. In particular, provide delivery/installation coordination to ensure minimum holding or storage times for products recognized to be flammable, hazardous, easily damaged, or sensitive to deterioration, theft and other sources of loss. Damaged or defective items, in the opinion of the Owner, will be replaced at no cost to the Owner.

1.02 Requirements

A. The Contractor is responsible for all material, equipment and supplies purchased and delivered to the Owner under this Contract until final inspection of the Work and acceptance thereof by the Owner.

B. All materials and equipment to be incorporated in the Work will be handled and stored by the Contractor before, during and after shipment in a manner to prevent warping, twisting, bending, breaking, chipping, rusting, and any injury, theft or damage of any kind whatsoever to the material or equipment.

C. All materials and equipment, which in the opinion of the Owner, have become so damaged as to be unfit for the use intended or specified, will be promptly removed from the site of the Work, and the Contractor will receive no compensation for the damaged materials or equipment or for its removal.

D. In the event any such material, equipment and supplies are lost, stolen, damaged or destroyed prior to final inspection and acceptance, the Contractor will replace same without additional cost to the Owner.

1.03 Delivery

A. Transport and handle items in accordance with manufacturer's instructions.

B. The Owner and the Contractor's project superintendent must be on-site to accept all deliveries shipped directly to the job site. If the project superintendent is not present for a delivery, that delivery may be rejected by the Owner. If any delivery is rejected due to

non-availability of the Contractor's project superintendent, delivery shall be rescheduled at no additional cost to the Owner.

C. Schedule delivery to reduce long-term on-site storage prior to installation and/or operation. Under no circumstances will materials or equipment be delivered to the site more than 1-month prior to installation without written authorization from the Owner.

D. Coordinate deliveries in order to avoid delay in, or impediment of, the progress of the Work.

E. Schedule deliveries to the site not more than 1-month prior to scheduled installation without written authorization from the Owner.

F. Coordinate delivery with installation to ensure minimum holding time for items that are hazardous, flammable, easily damaged or sensitive to deterioration.

G. All items delivered to the site will be unloaded and placed in a manner that will not hamper the Contractor's normal construction operation or those of Subcontractors and other Contractors and will not interfere with the flow of necessary traffic.

H. Deliver products in undamaged condition, in manufacturer’s original containers or packaging, with identifying labels intact and legible. Maintain packaged materials with seals unbroken and labels intact until time of use.

I. Immediately on delivery, inspect shipments with the Owner to ensure compliance with requirements of Contract Documents and accepted submittals, and that products are properly protected and undamaged. If the Contractor does not notify the Owner regarding the delivery and the Owner rejects any part of the delivery, there will be no additional cost to the Owner for the material to be returned. For items furnished by others (i.e. Owner), perform inspection in the presence of the Owner. Provide written notification to the Owner of any problems.

J. Promptly remove damaged material and unsuitable items from the job site, and promptly replace with material meeting the specified requirements, at no additional cost to the Owner.

1.04 Storage and Handling

A. Provide equipment and personnel to handle products by methods recommended by the manufacturer to prevent soiling or damage to products or packaging, with seals and labels intact and legible.

B. The Contractor is responsible for securing a location for on-site storage of all material and equipment necessary for completion of the Work. The location and storage layout will be submitted to the Owner at the Pre-Construction conference.

C. Manufacturer's storage instructions will be carefully studied by the Contractor and reviewed with the Owner. These instructions will be carefully followed and a written record of this kept by the Contractor.

D. All material delivered to the job site will be protected from dirt, dust, dampness, water, and any other condition detrimental to the life of the material from the date of delivery to the time of installation of the material and acceptance by the Owner.

E. When required or recommended by the manufacturer, the Contractor will furnish a covered, weather protected storage structure providing a clean, dry, non-corrosive environment for all mechanical equipment valves, architectural items, electrical and instrumentation equipment, and special equipment to be incorporated into this Project.

F. Arrange storage in a manner to provide easy access for inspection. Make periodic inspections of stored products to assure that products are maintained under specified conditions and free from damage or deterioration.

G. Should the Contractor fail to take proper action on storage and handling of equipment supplied under this Contract within 7-days after written notice to do so has been given, the Owner retains the right to correct all deficiencies noted in previously transmitted written notice and deduct the cost associated with these corrections from the Contract Amount. These costs may be comprised of expenditures for labor, equipment usage, administrative, clerical, engineering, and any other costs associated with making the necessary corrections.

1.05 Specific Storage and Handling

(Additional specific storage and handling requirements may be found in the specification sections addressing the material requirements.)

A. All mechanical and electrical equipment and instruments subject to corrosive damage by the atmosphere if stored outdoors (even though covered by canvas) will be stored in a weather tight building to prevent damage. The building may be a temporary structure on the site or elsewhere, but it must be satisfactory to the Owner. The building will be provided with adequate ventilation to prevent condensation. Maintain temperature and humidity within range required by manufacturer.
   1. All equipment will be stored fully lubricated with oil, grease and other lubricants unless otherwise instructed by the manufacturer. Mechanical equipment to be used in the Work, if stored for longer than 90-days, will have the bearings cleaned, flushed and lubricated prior to testing and startup, at no extra cost to the Owner.
   2. Moving parts will be rotated a minimum of once weekly to ensure proper lubrication and to avoid metal-to-metal "welding." Upon installation of the equipment, the Contractor will start the equipment, at least half load, once weekly for an adequate period of time to ensure that the equipment does not deteriorate from lack of use.
   3. Lubricants will be changed upon completion of installation and as frequently as required thereafter during the period between installation and acceptance. New lubricants will be put into the equipment at the time of acceptance. Prior to acceptance of the equipment, the Contractor will have the manufacturer inspect the equipment and certify that its condition has not been detrimentally affected by the long storage period. Such certifications by the manufacturer will be deemed to mean that the equipment is judged by the manufacturer to be in a condition equal to that of equipment that has been shipped, installed, tested and accepted in a minimum time period. As such, the manufacturer will guaranty the equipment equally in both instances. If such a certification is not given, the equipment will be judged to be

defective. It will be removed and replaced at the Contractor's expense.

4. Electric motors provided with heaters will be temporarily wired for continuous heating during storage. Upon installation of the equipment, the Contractor will start the equipment, at least half load, and once weekly for an adequate period of time to ensure that the equipment does not deteriorate from lack of use.

B. Store loose granular materials on solid flat surfaces in a well-drained area. Prevent mixing with foreign matter.

C. Cement and lime will be stored under a roof and off the ground and will be kept completely dry at all times.

D. Brick, block and similar masonry products will be handled and stored in a manner to minimize breakage, chipping, cracking and spilling to a minimum.

E. Precast Concrete will be handled and stored in a manner to prevent accumulations of dirt, standing water, staining, chipping or cracking.

F. All structural and miscellaneous steel and reinforcing steel will be stored off the ground or otherwise to prevent accumulations of dirt or grease, and in a position to prevent accumulations of standing water and to minimize rusting. Beams will be stored with the webs vertical.

G. Metals will be stored dry, all under cover and vented to prevent build-up of humidity, all off ground to provide air circulation.

H. Lumber will be stacked to provide air circulation. Store materials for which maximum moisture content is specified in an area where moisture content can be maintained.

I. Gypsum wallboard systems will be stored to protect all metal studs, furring, insulation boards, batts, accessories and gypsum board to prevent any type of damage to these materials. Rusted material components, damp or wet insulation or gypsum boards will not be accepted.

J. Acoustical materials will be delivered to the job site in unbroken containers labeled and clearly marked. Materials will not be removed from containers until ready to install, but will be stored in dry area with cartons neatly stacked. Before installation, acoustical board will be stored for not less than 24-hours in the Work area at the same temperature and relative humidity.

K. Linear items will be stored in dry area with spacers to provide ventilation. Stack linear items to prevent warping, complying with manufacturer’s instructions.

L. Paints and other volatile materials will be stored within approved safety containers. No glass jugs will be permitted. Storage areas will be equipped with not less than 2 fire extinguishers (C02 type) sufficient to discharge a distance of 25-feet when fully charged and have current tags. No other building materials will be stored in this area. Used rags will be removed daily. Clean rags will be stored in metal closed containers.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

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SECTION 01730

OPERATION AND MAINTENANCE MANUAL

PART 1 - GENERAL

1.01 Requirements Included

A. Section includes the submittal process for the operation and maintenance manual and the manual shall contain the technical information required for proper installation, operation and maintenance of process, electrical and mechanical equipment and systems.

B. The requirements of this Section are separate, distinct and in addition to product submittal requirements that may be established by other Sections of the Specifications. Owner's manuals, manufacturer's printed instructions, parts lists, test data and other submittals required by other Sections of the Specifications may be included in the Operating and Maintenance Manuals provided that they are approved and are formatted in a manner consistent with the requirements of this Section.

1.02 Submittal Schedule

A. Operation and Maintenance Manual Schedule

B. The Contractor will submit the proposed format, content and tab structure for all Operating and Maintenance Manuals for the Owner’s review and approval. The tab structure for Operating and Maintenance Manuals will follow specification division format as accepted by the Construction Specification Institute.

C. Initial submittal within 60-days after date Shop Drawings are approved.

1.03 Preparation of Submittals

A. General:
Operating and Maintenance Manual documents must include, but are not limited to, table of contents, approved submittals, manufacturer’s operating and maintenance instructions, brochures, Shop Drawings, performance curves and data sheets annotated to indicate equipment actually furnished (e.g. identifying impeller size, model, horsepower, etc.), procedures, wiring and control diagrams, records of factory and field tests and device/controller settings and calibration, program lists or data compact discs, maintenance and warranty terms and contact information, spare parts listings, inspection procedures, emergency instructions, and other Operating and Maintenance documentation that may be useful to the Owner. The material and equipment data required by this Section must include all data necessary for the proper installation, removal, normal operation, emergency operation, startup, shutdown, maintenance, cleaning, adjustment, calibration, lubrication, assembly, disassembly, repair, inspection, trouble-shooting, and warranty service of the equipment or materials.

The Contractor must bind the Operating and Maintenance Manual documents in heavy-duty, 3-ring vinyl-covered binders including pocket folders for folded sheet information. Mark binder identification on both the front and spine of each binder. Binder information must list the project title, identify separate structures or locations as applicable, identify the general subject matter covered in the manual and must include the words "OPERATING AND MAINTENANCE INSTRUCTIONS".

The Contractor must submit the Operating and Maintenance documents on three-hole punched, 8-1/2-inch x 11-inch sheets or on three-hole punched sheets that are foldable in multiples of 8-1/2-inch x 11-inch. The three-hole punched edge will be the left 11-inch edge.

1. Materials are provided for Owner's use, reproduction and distribution as training and reference materials within Owner's organization.
2. Applicable to hard copy or electronic media.
3. Applicable to materials containing copyright notice as well as those with no copyright notice.
4. Notify manufacturer of this intended use of materials provided under the Contract.
5. Number each Operation and Maintenance Manual transmittal with the original root number of the associated Shop Drawing.
6. Identify resubmittals with the original number plus a suffix letter starting with "A."
7. Submittal format:
   a. Interim submittals: Submit two (2) paper copies until manual is approved.
   b. Final submittals:
      (1) Within 30-days of receipt of approval, submit one (1) additional paper copy and two (2) electronic copies on USB in searchable Portable Document Format (PDF).
8. Compact discs to be secured in jewel cases.
9. Electronic copies will be reviewed for conformance with the approved paper copy and the electronic copy (PDF) requirements of this Specification.
10. Non-conforming USBs will be returned with comments.
11. Provide final USBs within 30-days of receipt of comments.
12. Paper copy submittals:
    a. Submit Operation and Maintenance Manuals printed on 8-1/2-inch x 11-inch size heavy first quality paper with standard three-hole punching and bound in appropriately sized three-ring (or post) vinyl view binders with clear overlays front, spine and back.
    b. Provide binders with titles inserted under clear overlay on front and on spine of each binder.
    c. As space allows, binder titles shall include, but not necessarily be limited to:
       (1) Project Name
       (2) Related Specification Number
       (3) Equipment Name(s) and
       (4) Project Equipment Tag Numbers
    d. Provide a Cover Page for each manual with the following information:
       (1) Manufacturer(s)
       (2) Date
       (3) Project Owner and Project Name
       (4) Specification Section
       (5) Project Equipment Tag Numbers

(6) Model Numbers
(7) Engineer
(8) Contractor

e. Provide a Table of Contents or Index for each manual.
f. Use plastic-coated dividers to tab each section of each manual per the manual's Table of Contents/Index for easy reference.
g. Provide plastic sheet lifters prior to first page and following last page.
h. Reduce Drawings or diagrams bound in manuals to an 8-1/2-inch x 11-inch or 11-inch x 17-inch size.
i. Where reduction is not practical to ensure readability, fold larger Drawings separately and place in vinyl envelopes which are bound into the binder.
j. Identify vinyl envelopes with Drawing numbers.
k. Mark each sheet to clearly identify specific products and component parts and data applicable to the installation for the Project.
l. Delete or cross out information that does not specifically apply to the Project.

B. Electronic copy submittals:
1. Electronic copies of the approved paper copy Operation and Maintenance Manuals are to be produced in Adobe Acrobat's Portable Document Format (PDF) Version {5.0} or higher.
2. Do *not* password protect and/or lock the PDF document.
3. Drawings or other graphics must be converted to PDF format and made part of the PDF document.
4. Scanning to be used only where actual file conversion is not possible.
5. Rotate pages that must be viewed in landscape to the appropriate position for easy reading.
6. Images only shall be scanned at a resolution of 300 dpi or greater.
7. Perform Optical Character Recognition (OCR) capture on all images.
8. Achieve OCR with the "original image with hidden text" option.
9. Word searches of the PDF document must operate successfully to demonstrate OCR compliance.
10. Create bookmarks in the navigation frame, for each entry in the Table of Contents/Index.
11. Normally three levels deep (i.e., "Chapter," "Section," "Sub-section").
12. Thumbnails must be generated for each PDF file.
13. Set the opening view for PDF files as follows:
    a. Initial view: Bookmarks and Page.
    b. Magnification: Fit in Window.
    c. Page layout: Single page.
    d. Set the file to open to the cover page of the manual with bookmarks to the left, and the first bookmark linked to the cover page.
    e. All PDF documents shall be set with the option "Fast Web View" to open the first pages of the document for the viewer while the rest of the document continues to load.
14. File naming conventions
    a. File names shall use a "ten dot three" convention (XXXXX-YY-Z.PDF) where XXXXX is the Specification Section number, YY is the Shop Drawing Root number and Z is an ID number used to designate the associated volume.

Example 1:
Two (2) pumps submitted as separate Shop Drawings under the same Specification Section:
Pump 1 = 11061-01-1.pdf.
Pump 2 = 11061-02-1.pdf.

Example 2:
Control system submitted as one (1) Shop Drawing but separated into two (2) O&M volumes:
Volume 1 = 13440-01-1.pdf.
Volume 2 = 13440-01-2.pdf.

15. As a minimum, include the following labeling on all USBs:
    a. Project Name
    b. Equipment Name and Project Tag Number
    c. Project Specification Section
    d. Manufacturer Name
    e. Vendor Name

1.04 Equipment and Systems

A. Operation and Maintenance documentation is required for each piece of mechanical, electrical, communications, instrumentation and controls, pneumatic, hydraulic, conveyance, and special construction. If required by the technical specifications, provide Operation and Maintenance documentation for any other product not listed in the foregoing.

B. Submission of Operation and Maintenance Manuals for equipment and systems is applicable but not necessarily limited to:
    1. Major equipment
    2. Equipment powered by electrical, pneumatic or hydraulic systems
    3. Specialized equipment and systems including instrumentation and control systems and system components for HVAC process system control
    4. Valves and water control gates
    5. Equipment function, normal operating characteristics, limiting operations
    6. Assembly, disassembly, installation, alignment, adjustment, and checking instructions
    7. Operating instructions for start-up, normal operation, control, shutdown, and emergency conditions
    8. Lubrication and maintenance instructions
    9. Troubleshooting guide
    10. Parts lists
        a. Comprehensive parts and parts price lists.
        b. List of spare parts provided as specified in the associated Specification Section.
    11. Outline, cross-section, and assembly Drawings; engineering data; and electrical diagrams, including elementary diagrams, wiring diagrams, connection diagrams, word description of wiring diagrams and interconnection diagrams.
    12. Test data and performance curves.
    13. As-constructed fabrication or layout Drawings and wiring diagrams.

14. Instrumentation or tag numbers assigned to the equipment by the Contract Documents are to be used to identify equipment and system components.
15. Additional information as specified in the associated equipment or system Specification Section.

1.05 Owner/Engineer's Review Action

A. Owner/Engineer will review and indicate one of the following review actions:
   1. ACCEPTABLE
   2. REVISE AND RESUBMIT

B. Acceptable paper copy submittals will be retained with the transmittal form returned with a request for one (1) additional paper copy and two (2) electronic copies on USB.

C. Deficient submittals (paper copy and/or electronic copy) will be returned along with the transmittal form which will be marked to indicate deficient areas.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

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SECTION 01740

WARRANTIES AND BONDS

PART 1 - GENERAL

1.01 Scope of Work

A. This Section specifies general administrative and procedural requirements for warranties and bonds required by the Contract Documents, including manufacturer's standard warranties on products and special warranties.

1.02 Related Work

A. Refer to Conditions of Contract for the general requirements relating to warranties and bonds.

B. General closeout requirements are included in Section 01770 "Contract Closeout."

C. Specific requirements for warranties for the Work and products and installations that are specified to be warranted are included in the individual Sections of Division 2 through 16.

1.03 Definitions

A. Standard Product Warranties are preprinted written warranties published by individual manufacturers for particular products and are specifically endorsed by the manufacturer to the Owner.

B. Special Warranties are written warranties required by or incorporated in the Contract Documents, either to extend time limits provided by standard warranties or to provide greater rights for the Owner.

1.04 Submittals

A. Submit written warranties to the Owner prior to requesting a Substantial Completion Inspection as outlined in Section 01770 "Contract Closeout." If the Certificate of Substantial Completion designates a commencement date for warranties other than the date of Substantial Completion for the Work, or a designated portion of the Work, submit written warranties upon request of the Owner.

B. When a designated portion of the Work is completed and occupied or used by the Owner, by separate agreement with the Contractor during the construction period, submit properly executed warranties to the Owner within 15-days of completion of that designated portion of the Work.

C. When a special warranty is required to be executed by the Contractor, or the Contractor and a Subcontractor, supplier or manufacturer, prepare a written document that contains appropriate terms and identification, ready for execution by the required parties. Submit a draft to the Owner for approval prior to final execution.

D. Refer to individual Sections of Divisions 2 through 16 for specific content requirements, and particular requirements for submittal of special warranties.

E. Prior to Substantial Completion Inspection, submit to the Owner two (2) copies of each required warranty and bond properly executed by the Contractor, or by the Contractor, Subcontractor, supplier, or manufacturer. Organize the warranty documents into an orderly sequence based on the table of contents of the Project Manual.
   1. Bind warranties and bonds in heavy-duty, commercial quality, durable 3-ring vinyl covered loose-leaf binders, thickness as necessary to accommodate contents and sized to receive 8-1/2-inch by 11-inch three-hole punched paper.
   2. Table of Contents will be neatly typed, in the sequence of the Table of Contents of the Project Manual, with each item identified with the number and title of the specification Section in which specified and the name of the product or work item.
   3. Provide heavy paper dividers with celluloid covered tabs for each separate warranty. Mark the tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address and telephone number of the installer, supplier and manufacturer.
   4. Identify each binder on the front and the spine with the typed or printed title "WARRANTIES AND BONDS", the project title or name and the name, address and telephone number of the Contractor.
   5. When operating and maintenance manuals are required for warranted construction, provide additional copies of each required warranty, as necessary, for inclusion in each required manual.

1.05 Warranty Requirement

A. The Contractor will warrant all equipment in the Contractor's one-year warranty period even though certificates of warranty may not be required. For all major pieces of equipment, the Contractor shall submit a warranty from the equipment manufacturer. "Major" equipment is defined as a device having a 5 HP or larger motor or which lists for more than $1,000.00.

B. In the event that an equipment manufacturer or supplier is unwilling to provide a one-year warranty commencing at Substantial Completion, the Contractor will obtain from the manufacturer a warranty of sufficient length commencing at the time of equipment delivery to the job site, such that the warranty will extend to at least 1-year past substantial completion.

C. If an individual specification section requires a particular warranty more stringent than that required by this Section or the General Conditions, the more stringent requirements will govern for the applicable portion of the Work.

D. Related Damages and Losses: When correcting warranted Work that has failed, remove and replace other Work that has been damaged as a result of such failure or that must be removed and replaced to provide access for correction of warranted Work.

E. Reinstatement of Warranty: When Work covered by a warranty has failed and been corrected by replacement or rebuilding, reinstate the warranty by written endorsement. The reinstated warranty will be equal to the original warranty with an equitable adjustment for depreciation.

F. Replacement Cost: Upon determination that Work covered by a warranty has failed, replace or rebuild the Work to an acceptable condition complying with requirements of Contract Documents. The Contractor is responsible for the cost of replacing or rebuilding defective Work regardless of whether the Owner has benefited from use of the Work through a portion of its anticipated useful service life.

G. Owner's Recourse: Written warranties made to the Owner are in addition to implied warranties, and will not limit the duties, obligations, rights and remedies otherwise available under the law, nor will warranty periods be interpreted as limitations on time in which the Owner can enforce such other duties, obligations, rights, or remedies.

H. Rejection of Warranties: The Owner reserves the right to reject warranties and to limit selections to products with warranties not in conflict with requirements of the Contract Documents.

I. The Owner reserves the right to refuse to accept Work for the project where a special warranty, certification, or similar commitment is required on such work or part of the Work, until evidence is presented that entities required to counter-sign such commitments are willing to do so.

J. Disclaimers and Limitations: Manufacturer's disclaimers and limitations on product warranties do not relieve the Contractor of the warranty on the Work that incorporates the products, nor does it relieve suppliers, manufacturers, and Subcontractors required to countersign special warranties with the Contractor.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 Deliverables

A. Assemble warranties, bonds and service and maintenance contracts, executed by each of the respective manufacturers, suppliers, and Subcontractors, and bind into a commercial quality standard 3-ring binder; submit 5 copies of the warranties and bonds to the Owner for review.
   1. The warranties and bonds shall include:
      a. Equipment or product description
      b. Manufacturer's name, principal, address and telephone number
      c. Contractor, name of responsible principal, address and telephone number
      d. Local supplier's or representatives name and address
      e. Scope of warranty or bond
      f. Proper procedure in case of failure
      g. Instances which might affect the validity of warranty or bond
      h. Date of beginning of warranty, bond or service and maintenance contract

i. Duration of warranty, bond or service maintenance contract

B. Warranties

1. Furnish warranty for all pumps, electrical controls, and other mechanical equipment as specified elsewhere in these specifications and in addition to the Contractors required one-year warranty upon substantial completion issuance.

END OF SECTION

SECTION 01770

CONTRACT CLOSEOUT

PART 1 - GENERAL

1.01 Section Includes

Substantial completion requirements, clean-up, final completion requirements, closeout submittals

1.02 Clean-Up Operations

A. The entire Project site shall be thoroughly cleaned at the completion of the Work.

B. Clean all installed pipelines, structures, sidewalks, paved areas, accumulated silt in ponds, plus all adjacent areas affected by construction, as directed by the Owner or jurisdictional agency. Equipment to clean these surfaces shall be subject to approval by the Owner.

C. Restore to original condition or better all property not designated for alteration by the Contract Documents, including all areas used for staging and storage. Restoration includes but is not limited to fill replacement, regrading, compaction, and sodding. Conduct inspections of the completed restoration with the Owner, and conduct additional restoration as directed.

1.03 Substantial Completion Requirements

A. Complete the following before requesting the inspection for certification of substantial completion.

1. Submit record drawings in accordance with section 01780.
2. Complete required cleaning and testing of the completed construction in accordance with the specifications and the Owner's operating and maintenance personnel.

B. Work is not substantially complete until the following has occurred:

1. The Owner has received clearance to place the completed construction into service from the regulatory agencies, all systems have been tested and signed off by the City.

1.04 Final Completion Requirements

A. Complete the following before requesting the inspection for certification of final completion.

1. All punchlist items identified during the substantial completion inspection.
2. Deliver tools, spare parts, extra stocks of material and similar physical items to the Owner.

3. Discontinue or change over and remove temporary facilities and services from the project site, along with construction tools and facilities, mock-ups, and similar elements.
4. Clean all marred surfaces including touch up painting, pressure washing, or other measures as needed as directed by the Owner.
5. Broom clean paved driveways and parking areas.
6. Hose clean sidewalks, loading areas, and others contiguous with principal structures.
7. Fully restore all property not designated for construction including all areas used for staging and storage.
8. Provide Final Record Drawings in accordance with Section 01300.

1.05 Closeout Submittals

A. Upon completion of the project, or portions thereof, the Contractor shall transfer to the Owner all applicable items accumulated throughout construction. These include but are not limited to the following items:

1. Service manuals, installation instructions, maintenance and operating instructions, special tools, and specialties
2. Spare parts ordered as part of this Contract
3. Delivery of any salvaged or borrowed materials or equipment to the Owner
4. All keys to all doors, gates, and equipment
5. Checklist indicating satisfactory completion of all unfinished items from the final inspection
6. Certificate of Substantial Completion
7. Certificate of Final Completion
8. Submittal of the Material and Workmanship Bond
9. Submittal of manufacturers' guarantees, warranties, bonds, and letters of coverage extending beyond the time limitations of the Contractor's guarantee.
10. Contractor’s Final Release of Lien
11. Final Waivers of lien from all Subcontractors and Suppliers
12. Consent of Surety to Final Payment
13. Final record documents of completed facilities
14. Certificate of Final Inspection – N/A

B. Closeout Submittals provided by others include:

1. Certificate of Engineer/Architect – N/A

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01780

RECORD DRAWINGS

PART 1 - GENERAL

1.01 Section Includes

Record Drawing requirements including format requirements and submittal procedures.

1.02 General Requirements

A. As the Work progresses, the Contractor shall be responsible for recording information on the approved Contract Documents concurrently with construction progress.

B. Mark on the Contract Drawings all changes in direction and location of structure, piping, equipment, electrical, and mechanical work.

C. If requested, mark on the Specifications the manufacturer, trade name, catalog, and supplier of each product actually installed, and mark changes made by Change Order or Field Order.

D. Record Drawings shall depict surveyed as-built information including horizontal and vertical locations as required herein. All Record Drawings shall be prepared by the Contractor in ACAD format using construction plan sheets provided by the Engineer. As-built information shall be field verified, measured, added to the ACAD files of the construction plan sheets provided by the Engineer, and certified, signed and sealed by the Contractor's licensed Surveyor who will be responsible for the accuracy of all dimensions and elevations. Sheet sizes and the scale of the Record Drawings shall match sheet sizing and scale of the construction plans. Add blowup details if necessary.

E. Record Drawings shall clearly show all field changes of dimension and detail including changes made by field order or by change order.

F. The surveyed as-built information shall be vertically based on the North American Vertical Datum of 1988 (NAVD 88) and the coordinate system shall be based horizontally on the North American Datum 83 (NAD83) (1990 adjustment). The as-built survey shall be referenced to the project benchmarks and shall be referenced to the state plane coordinates. All valves (center of pipe) and valve boxes (grade), hydrants (grade), blow offs (grade), sample points (grade) and meter boxes (grade), etc. shall be clearly shown.

G. The surveyed as-built location of the newly constructed facilities shall be in an ACAD overall base drawing which is in State Plane. Providing “paper space” views that are not in State Plane of the constructed facilities is not acceptable. Providing northing and easting point tables on separate new sheets added to the construction plans is not acceptable. The as-built northing and easting data must be on the individual construction plan sheets to which the data applies.

H. All water valves, hydrants, and blowoffs shall be horizontally referenced from at least two and preferably three permanent points.

I. The as-built information shown on the Record Drawings is to include, but not be limited to, the following:

1. Horizontal locations (state plane coordinates and stations and offsets) and vertical elevations for all utility and storm structures including but not limited to manholes, inlets and cleanouts, including structure top and invert elevations and invert elevations of all connecting pipes.
2. Distance along pipelines between structures.
3. Stormwater pond top of berm and pond bottom elevations and horizontal dimensions measured at a minimum of ten locations per pond, at locations designated by the engineer. Top of pond horizontal dimensions are also to be tied to property corners, easements, and rights-of-way.
4. Stormwater control structure dimensions and elevations, including all weirs, slots, orifices, grates, and skimmers.
5. Stormwater conveyance systems including dimensions, elevations, contours, and cross sections.
6. Horizontal locations (state plane coordinates and stations and offsets) and vertical elevations of all utility valves, fittings, connection points, etc.
7. Vertical elevations of all pipelines at crossings of potable water mains (whether the water main is existing or new) in order to document that the minimum required vertical separation has been met.
8. Grade elevation above utility pipeline where vertical elevations are required at all utility valves, fittings, connection points, etc.
9. Horizontal offsets from adjacent potable water mains (whether the water main is existing or new) in order to document that the minimum required horizontal separation has been met.
10. Utility pipeline horizontal locations (state plane coordinates and stations and offsets) and tied horizontally to edge of pavement and right-of-way lines, located every 200-ft plus all changes in horizontal offset.
11. Vertical elevations of the top of casing and top of carrier pipe measured at each end of crossings that have been jack and bored.
12. Horizontal locations (state plane coordinates and stations and offsets) of each end of steel casing pipe (also provide distance from edge of pavement and adjacent right-of-way lines).
13. Pipeline that is directional bored is to be horizontally and vertically located every 20’ along the bore. Provide this information by submitting boring logs and by drawing the as-built vertical and horizontal locations of the bored pipeline on the record drawings based on the boring logs. Provide state plane coordinates at each end of directional bored pipeline.

14. Pavement width and elevations at the centerline and edge of pavement every 200 feet plus at all changes in longitudinal slope, cross slope, inlet locations, and at all driveway and street intersections. For parking lots, record centerline and edge of pavement elevations along all drive aisles and islands.
15. All parking areas and sidewalk ramps designated for handicap access shall contain horizontal and vertical measurements in order to verify required widths and slopes have been met.
16. The horizontal location (state plane coordinates and stations and offsets) of all new pull and splice boxes.
17. The new lift station wet well top and inside bottom elevations, plus inverts of all connecting pipelines.
18. Lift station surveyed layout (horizontal and vertical) of all structures, valves, panels, conduits, piping, corners of all concrete pads and slabs, and bollards.
19. Valve vault top elevation, inside bottom elevation, and top of pipe elevations.
20. The horizontal location (state plane coordinates) at the lift station wet well and valve vault.
21. Horizontal and vertical data for any construction that deviates from the construction drawings.
22. Where the plans contain specific horizontal location data, such as station and offset, the as-built drawings are to reflect the actual horizontal location.
23. Where the plans contain specific vertical elevation data, the as-built drawings are to reflect the actual measured vertical elevation.

1.03 Submittal Requirements

A. Record Drawings are to be prepared by the Contractor, certified by the Contractor's licensed surveyor, and delivered to the Engineer for review. The Engineer will review the drawings for completeness in accordance with the requirements of this section within seven (7) full working days. For preliminary review, submittal in ACAD and PDF format is sufficient and signed and sealed copies are not necessary. Final submittal of complete Record Drawings shall consist of one set signed and sealed by the Contractor's licensed surveyor plus ACAD and PDF files of the Record Drawings delivered to the Engineer.

B. If the drawings are found to be incomplete or inaccurate, the drawings will be returned to the Contractor for correction.

C. In cases where the Owner determines partial clearances from permitting agencies are beneficial to the Owner for completed portions of the project, provide preliminary record drawings (ACAD format) to the Engineer for its use in preparing the partial clearance applications for the Owner.

D. Complete record drawings that are found to be satisfactory as a result of the Engineer's review will be used as the basis for the final project Record Drawings prepared by the Engineer using the Contractor provided record drawings plus Engineer added information.

E. Complete signed and sealed Record Drawings are required to be delivered to the Owner prior to final inspection of the project. Final inspections will only be scheduled upon receipt of signed and sealed record drawings that have been reviewed by the Engineer and delivered by the Engineer to the Owner.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 02220

SITE DEMOLITION

PART 1 GENERAL

1.01 Section Includes General Details Relative to: – See Sheet C-3 for items to be demolished

A. Demolition of designated site structures, retaining walls and foundations and removal of materials from project site.

B. Demolition and removal of pavements, curbs and gutters, drainage structures, utilities, signage or landscaping.

C. Disconnecting and capping or removal of identified utilities.

D. Filling voids in subgrade created as a result of removals or demolition.

E. Disposal of demolished materials.

1.02 Related Sections

A. Section 02230 - Site Preparation

B. Section 02310 - Finish Grading

1.03 Regulatory Requirements

A. Conform to applicable State and local codes for demolition of structures, safety of adjacent structures, dust control, and runoff control.

B. Obtain required permits and licenses from appropriate authorities. Pay associated fees including disposal charges.

C. Notify affected utility companies before starting work and comply with their requirements.

D. Do not close or obstruct roadways, sidewalks, or fire hydrants without appropriate permits.

E. Conform to applicable regulatory procedures when hazardous or contaminated materials are discovered.

F. Test soils around buried tanks for contamination.

1.04 Project Record Documents

Accurately record actual locations of capped utilities and subsurface obstructions that will remain after demolition.

1.05 Project Conditions

A. Structures to be demolished will be discontinued in use and vacated prior to start of work.

B. Owner assumes no responsibility for condition of structures to be demolished.

C. Conditions existing at time of inspection for bidding purposes will be maintained by the Owner as practicable. Variations within structures may occur by the Owner's removal and salvage operations prior to start of demolition work.

D. Unless otherwise indicated in Contract Documents or specified by the Owner, items of salvageable value to Contractor shall be removed from site and structures. Storage or sale of removed items on site will not be permitted and shall not interfere with other work specified in Contract Documents.

E. Explosives shall not be brought to site or used to demolish structures.

1.06 Sequencing

A. Interruption of facility operations must be kept to a minimum and no interruption of service to the Owner's customers can be allowed.

1.07 Scheduling

A. Notify the Owner, utility companies or local authorities furnishing gas, water, electrical, telephone or wastewater service, a minimum of fourteen (14) calendar days prior to starting the work, to remove any equipment owned by them in structures to be demolished and to remove, disconnect, cap or plug their services to facilitate demolition.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION

3.01 Preparation

A. Provide, erect, and maintain erosion control devices, temporary barriers, and security devices at locations indicated on Construction Drawings.

B. Protect existing landscaping materials, appurtenances, and structures which are not to be demolished. Repair damage caused by demolition operations at no cost to the Owner.

C. Prevent movement or settlement of adjacent structures. Provide bracing and shoring as needed.

D. Mark location of utilities. Protect and maintain in safe and operable condition utilities that are to remain. Prevent interruption of existing utility service to occupied or used facilities, except when authorized in writing by authorities having jurisdiction. Provide temporary services during interruptions to existing utilities as acceptable to the Owner.

3.02 Salvage – N/A

3.03 Demolition Requirements

A. Conduct demolition to minimize interference with adjacent structures or pavements.

B. Cease operations immediately if adjacent structures appear to be in danger and notify the Owner. Do not resume operations until directed by the Owner.

C. Conduct operations with minimum of interference to public or private access. Maintain ingress and egress at all times.

D. Obtain written permission from adjacent property owners when demolition equipment will traverse, infringe upon, or limit access to their property.

E. Sprinkle work with water to minimize dust. Provide hoses and water connections for this purpose.

F. Comply with governing regulations pertaining to environmental protection.

G. Clean adjacent structures and improvements of dust, dirt, and debris caused by demolition operations. Return adjacent areas to condition existing prior to start of work.

H. Demolition plan identifies major structures and items to be demolished. Include incidental demolition to completely demolish structures whether indicated on plan or not.

3.04 Demolition

A. Demolish buildings completely and remove from site using methods as required to complete work within limitations of governing regulations. Small structures may be removed intact when acceptable to the Owner.

B. Locate demolition equipment and remove materials so as to prevent excessive loading to supporting walls, floors, or framing.

C. Demolish concrete and masonry in small sections. Break up concrete slabs-on-grade that are 2-feet or more below proposed subgrade. Remove slabs-on-grade and below grade construction within 2-feet of proposed subgrade.

3.05 Filling Voids

A. Completely fill below grade areas and voids resulting from demolition or removal of structures, underground fuel storage tanks, wells, cisterns, etc., using approved select fill materials consisting of stone, gravel, and sand free from debris, trash, frozen materials, roots, and other organic matter.

B. Ensure that areas to be filled are free of standing water, frost, or unsuitable material, trash, and debris prior to fill placement.

C. Place fill materials in accordance with Section 02250 as applicable unless subsequent excavation for new work is required.

D. Grade surface to match adjacent grades and to provide flow of surface drainage after fill placement and compaction.

3.06 Disposal of Demolished Materials

A. Remove from site debris, rubbish, and other materials resulting from demolition operations.

B. No burning of any material, debris, or trash on-site or off-site will be allowed.

C. Transport materials removed from demolished structures with appropriate vehicles and dispose off-site to areas that are approved for disposal by governing authorities and appropriate property owners.

3.07 Cleanup

A. Clean the Project site to a condition satisfactory to the Engineer, free from demolished materials, rubbish or debris. Grade the site to meet adjacent contours and provide a positive flow for surface drainage.

B. Restore items intended to remain that have been damaged by demolition work at no cost to, and to the satisfaction of the Owner.

C. Return all interrupted utility services to their pre-demolition state and disconnect temporary services, unless otherwise specified.

END OF SECTION

SECTION 02230

SITE PREPARATION

PART 1 - GENERAL

1.01 Section Includes

A. Layout of work and protection of bench marks.

B. Protection of structures, trees, or vegetation to remain.

C. Clearing and grubbing.

D. Stripping and storing topsoil.

1.02 Related Sections

A. Section 02220 - Site Demolition

B. Section 02370 - Erosion and Sedimentation Control

1.03 Coordination

A. Notify the following utility owners which may have utilities in the project area and coordinate with them to avoid service interruptions and/or safety hazards:

1. Duke Energy
2. City of Ocoee

B. Contact “Sunshine State, One-Call” by dialing “811”, to determine if there are other utilities in the area, and their location. For additional information: www.callsunshine.com.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 Bench Marks and Monuments

Contractor shall be responsible for laying out the Work, shall protect and preserve the established reference points and property monuments, and shall make no changes or relocations without the prior written approval of the Owner. All benchmarks, property corners, and other survey monuments that are lost, damaged, or destroyed shall be replaced by a Licensed Surveyor at the Contractor’s expense.

3.02 Laying Out Work

A. Base lines, property lines, and easement lines, are shown on the Drawings. Benchmarks utilized are also shown on the drawings.

B. Stake out the construction, establish lines and levels, temporary bench marks, batter boards, centerlines and reference points for the work, and verify all dimensions relating to interconnection with existing features.

C. Report any inconsistencies in the proposed grades, lines and levels, dimensions and locations to the Engineer before commencing work.

D. Contain all construction activities within the right-of-way, easements, and property secured by the Owner, as shown on the drawings. Do not disturb surrounding properties or travel on surrounding properties without written consent from the property owner. Repair or reconstruct damaged areas on an immediate basis. All costs for repairs shall be the responsibility of the Contractor.

3.03 Burning

Burning is not allowed, unless notes on the drawings specifically allow it to occur. In the event burning is allowed, secure all necessary permits.

3.04 Protection of Trees and Shrubs

A. Protect all trees and shrubs located outside the right-of-way, easements, and Owner secured property, particularly those trees and shrubs located adjacent to work areas.

B. Within the right-of-way, easements, and Owner secured property, the intent is to allow trees and shrubs to remain in accordance with the following schedule:

1. New roadway construction – trees and shrubs to remain where located more than 15 feet from the back of curb, or outside the limits of excavation or fill areas, whichever is further.
2. Utility pipeline construction – trees and shrubs to remain outside a 15-foot-wide path, centered on the pipeline.

C. Protect branches, trunks, and roots of trees and shrubs that are to remain. Trees to remain in the construction area shall be boxed, fenced or otherwise protected before any work is started; remove boxing when directed by the Engineer. Do not permit heavy equipment or stockpiles within branch spread. Remove interfering branches without injury to trunks and cover scars with tree paint.

3.05 Relocation of Utilities

A. Active utilities which do not interfere with the work shall be supported and protected from damage. After obtaining the Engineer's approval, relocate or remove active utilities which will interfere with work as indicated. Pay for all damage to active utilities and for relocation or removal of all interfering utilities which are ascertainable from Drawings, surveys, site inspection or encountered during construction.

B. Coordinate with each utility and pay all costs associated with the protection of existing facilities during construction. Also coordinate necessary relocations or other construction related matters with each utility.

C. Inactive or abandoned utilities and appurtenant structures encountered shall be removed to avoid interference as directed by the Engineer. Exposed ends of abandoned lines shall be plugged or capped in a water-tight manner.

3.06 Clearing and Grubbing

A. Areas to receive clearing and grubbing shall include all areas to be occupied by the proposed improvements, areas for fill and site grading, and borrow sites. Remove trees outside of these areas only as indicated on the Drawings or as approved in writing by the Engineer.

B. Clearing shall consist of removing trees and brush and disposal of other materials that encroach upon or otherwise obstruct the work.

C. Exercise extreme care during the clearing and grubbing operations. Do not damage existing structures, pipes or utilities.

D. Grubbing shall consist of removing and disposing of stumps, roots larger than 2" in diameter, and matted roots. Remove to a depth of not less than 18" below the original surface level of the ground.

E. All combustible debris and refuse from site preparation operations shall be removed to legal offsite disposal areas.

3.07 Topsoil Removal

A. All areas to be occupied by proposed improvements, and borrow sites shall be stripped of all brush, weeds, grass, roots and other material.

B. Remove all loamy, organic topsoil suitable for seeding and planting to whatever depth encountered and store separately from other excavated material. Stockpile in designated areas and provide for proper drainage. Cover storage piles as required to prevent windblown dust.

C. All removed topsoil shall be stockpiled within the project work area. Topsoil can be incorporated into the project in all areas that are to be grassed.

D. Dispose of unsuitable topsoil as specified under disposal of debris. Excess topsoil shall be removed from site unless specifically noted on Contract Drawings.

3.08 Disposal of Debris

A. All combustible debris and refuse from site preparation operations shall be removed to legal offsite disposal areas.

B. All non-combustible debris (not including acceptable fill material, fences, or other structures), resulting from site preparation operations shall become the property of the Contractor and shall be removed to legal offsite disposal areas.

END OF SECTION

SECTION 02240

DEWATERING

PART 1 - GENERAL

1.01 Section Includes

Dewatering design and operation requirements

1.02 Related Sections

Section 02370 - Erosion and Sediment Control

1.03 General Requirements

A. Obtain the services of a qualified dewatering specialist to provide dewatering plan as may be necessary to complete the Work. Contractor shall be solely responsible for the design, installation, operation, maintenance, and any failure of any component of the system.

B. Dewatering discharge from the site shall comply with all NPDES general permit requirements and state water quality standards. Provide all testing and permitting required and comply with all treatment or disposal methods required to meet all local, state and federal requirements.

C. Design and provide dewatering system using accepted and professional methods consistent with current industry practice to eliminate water entering the excavation under hydrostatic head from the bottom and/or sides. Design system to prevent differential hydrostatic head which would result in floating out soil particles in a manner termed as a “quick” or “boiling” condition. System shall not be dependent solely upon sumps and/or pumping water from within the excavation where differential head would result in a quick condition, which would continue to worsen the integrity of the excavation’s stability.

D. Provide dewatering system of sufficient size and capacity to prevent ground and surface water flow into the excavation and to allow all Work to be installed in a dry condition.

E. No additional payment will be made for any supplemental measures to control seepage, groundwater, or artesian head.

F. If dewatering equipment needed exceeds any of the following: 1) 6" pump volute; 2) 100,000 GPD total 24-hour (1 day) dewatering, and; 3) 1,000,000 GPD pump capacity, the Contractor shall be required to permit the dewatering system with the water management district.

G. Contractor shall be responsible for and shall repair without cost to the Owner any damage to work in place, or other contractor's equipment, utilities, residences, highways, roads, railroads, private and municipal well systems, adjacent structures, natural resources, habitat, existing wells, and the excavation, including, damage to the bottom due to heave and including but not limited to, removal and pumping out of the excavated area that may result from Contractor's negligence, inadequate or improper design and operation of the dewatering system, and any mechanical or electrical failure of the dewatering system.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 General Requirements

A. Control, by acceptable means, all water regardless of source and be fully responsible for disposal of the water.

B. Confine discharge piping and/or ditches to available easement or to additional easement obtained by Contractor.

C. Control groundwater in a manner that preserves strength of foundation soils, does not cause instability or raveling of excavation slopes, and does not result in damage to existing structures. Where necessary to these purposes, lower water level in advance of excavation, utilizing wells, wellpoints, jet educators, or similar positive methods. Maintain the groundwater level to a minimum of 2 feet below excavations. Provide piezometers if directed by the Engineer to document the groundwater level is being maintained.

D. Commence dewatering prior to any appearance of water in excavation and continue until Work is complete to the extent that no damage results from hydrostatic pressure, flotation, or other causes.

E. Open pumping with sumps and ditches shall be allowed, provided it does not result in boils, loss of fines, softening of the ground, or instability of slopes.

F. Install wells and/or wellpoints, if required, with suitable screens and filters, so that continuous pumping of fines does not occur. During normal pumping, and upon development of well(s), levels of fine sand or silt in the discharge water shall not exceed 5 ppm. Install sand tester on discharge of each pump during testing to verify that levels are not exceeded.

G. Control grading around excavations to prevent surface water from flowing into excavation areas.

H. Remove subgrade materials rendered unsuitable by excessive wetting and replace with approved backfill material at no additional cost to the Owner.

I. Walls shall not be exposed to water pressure before structural work at the next higher level has properly cured and the cantilever action of walls is eliminated.

J. Any dewatering pumps within 1500-ft of private residences shall be equipped with satisfactory sound suppression.

K. Water from dewatering activities shall be disposed in a manner that does not cause flooding, erosion, or the transfer of sediments.

3.02 Maintaining Excavation in Dewatering Condition

A. Dewatering shall be a continuous operation. Interruptions due to power outages, or any other reason will not be permitted.

B. Continuously maintain excavation in a dry condition with positive dewatering methods during preparation of subgrade, installation of pipe, and construction of structures until the critical period of construction and/or backfill is completed to prevent damage of subgrade support, piping, structure, side slopes, or adjacent facilities from flotation or other hydrostatic pressure imbalance.

C. Provide standby equipment on site, installed, wired, and available for immediate operation if required to maintain dewatering on a continuous basis in the event any part of the system becomes inadequate or fails. If dewatering requirements are not satisfied due to inadequacy or failure of dewatering system, perform such work as may be required to restore damaged structures and foundation soils at no additional cost to Owner.

D. System maintenance shall include but not be limited to 24-hour supervision by personnel skilled in the operation, maintenance, and replacement of system components, and any other work required to maintain excavation in dewatered condition.

3.03 System Removal

Remove all dewatering equipment from the site, including wells and related temporary electrical service.

END OF SECTION

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SECTION 02250

COMPACTION CONTROL AND TESTING

PART 1 - GENERAL

1.01 Description

A. Work Specified Herein and Elsewhere

1. Work under this Section includes:

   a. Placement, compaction control, and field density testing requirements for all earthwork, including pavement subgrade.

2. Related work specified elsewhere:

   a. Trenching, Bedding, Cover, and Backfilling - Section 02320.
   b. Excavation and Fill - Section 02315.
   c. Finish Grading - Section 02310.

1.02 Testing

A. Tests will be performed by an approved independent soils laboratory to insure adequate density is being obtained. The Engineer shall approve selected soils laboratory and designate where and when samples shall be taken. The Contractor will pay initial costs to make tests. The laboratory shall submit test reports to the Engineer and the Contractor.

PART 2 - PRODUCTS

2.01 Materials

A. All materials and products are specified elsewhere in Division 2.

PART 3 - EXECUTION

3.01 Fill Placement

A. Compacted material that has been flooded and no longer meets the density specified shall be removed, replaced and recompacted.

B. If the in-place surface has dried, sprinkle with water before placing the next lift. The surface of smooth lifts shall be scarified before the next lift is placed.

C. Where fill is required on both sides of structures, fill and compact simultaneously on opposite sides in even layers. Other filling sequences shall be as specifically indicated on the Drawings.

D. Fill shall be spread in uniform horizontal lifts. The material shall be thoroughly mixed to insure a uniform moisture content slightly wetter than optimum but not greater than 5 percent above optimum water content as determined by the Modified Proctor Test, ASTM D1557.

E. Where cohesive structural fill is used, the moisture content when compacted shall be within 3 percent of the optimum moisture content. If the fill does not have a natural water content which falls within the acceptable range, the Contractor shall mix, dry, or moisten as necessary.

F. Place and compact each lift over an entire area prior to placing successive lifts, unless otherwise approved by the Engineer.

G. All materials shall be placed in loose lift thicknesses indicated hereafter.

3.02 Compaction

A. General

1. Unless otherwise indicated, the type of equipment and number of passes required to obtain the specified degree of compaction shall be determined at the site, subject to the approval of the Engineer.

2. Provide mechanical compaction for cohesive material and vibratory compaction for granular materials, unless otherwise approved by the Engineer.

B. Noncohesive soils shall be compacted with vibrating roller or equivalent; cohesive soils shall be compacted with sheeps-foot roller, pneumatic tamping, or approved equivalent, unless otherwise indicated.

C. Water Jetting

1. Water jetting, as specified in Section 02221, shall have the fill thoroughly and uniformly watered, avoiding excessive wetting of the adjacent material and surface runoff. Jet within 30 days of fill placement. Methods and procedures shall be subject to approval of the Engineer.

D. Granular Drainage Blankets

1. Granular drainage blankets, as specified in Sections 02223 and 02590, shall have each lift thoroughly and uniformly watered, avoiding excessive wetting of the less pervious material underneath. Compaction methods and procedures shall be subject to approval of the Engineer.

E. Topsoil

1. Topsoil, as specified in Section 02310, shall be compacted with a "cultipacker", roller, or approved equivalent equipment weighing 100 to 160 pounds per lineal foot of roller width.

3.03 Fill Lift Thicknesses and Compaction Densities

A. Unless otherwise indicated or approved by the Engineer, place fills in the loose lift thicknesses indicated hereafter, except when water jetting, and compact to a dry density not less than the following percentage of maximum dry density, determined by the Modified Proctor Test, ASTM D1557, unless otherwise noted.

3.04 Testing

A. The Contractor shall assist in providing samples for the following field density tests to insure required densities are being obtained:

1. One test for each 10,000 square feet or fraction thereof per lift of general backfilling.

2. Two tests for each 10,000 square feet or fraction thereof per lift of structural fill under slabs, foundations, and pavements.

3. One test per lift for each other type of fill, if so directed by the Engineer.

B. Tests shall be in accordance with ASTM D1557 or other tests suitable for the materials being tested.

C. The Contractor will pay for initial field density tests. Subsequent tests and associated costs necessitated as a result of the initial tests failing to meet specified requirements will be at the expense of the Contractor.

TYPE OF FILL	USAGE	REQ'D % OF LIFT THICKNESS	MODIFIED PROCTOR TEST
Trenched Pipe Bedding	Beneath piping	6"	95 D1557
Trenched Pipe Cover	Over and/or around piping	6"	95 D1557
Utilities Trench Backfill	"Influence area" beneath other piping or utility lines	8"	95 D1557
	"Influence area" beneath rigid paving and railroad tracks.	6"	95 D1557
	"Influent area" beneath non-rigid paving	9"	95 D1557
	Adjacent to or under structures	9"	98 D1557

	Croplands, plant site, lawns and landscaped areas	12"	85 D1557
Preloading	Soil stabilization	12"	85 D1557
Structural Fill	All locations under major structures and all lagoon structures.	6"	98 D1557
	All locations under minor structures (manholes, etc.)	6"	95 D1557
Impermeable	All locations	6" Fill	98 D1557
Granular Fill	Below concrete slab bedding, foundations, rigid paving, and excavated areas adjacent to structures	8"	98 D1557
	All other uses	12"	85 D1557
Granular Bedding	Beneath concrete slabs	6"	95 D1557
Granular Drainage Blanket	Below concrete slabs, paving, or piping	9"	95 D2049
	All other uses	12"	85 D2049
Granular Filter	Around open joint or perforated drain pipes and at pressure relief valves	9"	95 D1557
Structural Backfill	See Trench Backfill		
General Site Grading	Lagoon Embankment	8"	95 D1557
	Lagoon bentonite - soil mixtures	--	95 D1557
	Fill for abandoned or demolished structures	12"	85 D1557
	Fill in other locations not covered herein	12"	85 D1557
	Topsoil placement	12"	85 D1557

"Influence area" shall be considered the area within lines sloped downward at 45 degrees from the outer edges of paving, foundations, and utility lines.

END OF SECTION

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SECTION 02310

FINISH GRADING

PART 1 - GENERAL

1.01 Section Includes

Topsoil placement, grading of site

1.02 Related Sections

A. Section 02230 - Site Preparation

B. Section 02315 - Excavation and Fill

C. Section 02320 - Trenching, Bedding, and Backfilling

1.03 References

A. American Association of State Highway and Transportation Officials (AASHTO) latest edition:

1. AASHTO T267 – Determination of Organic Matter in Soils by Loss on Ignition

PART 2 - PRODUCTS

2.01 Topsoil

A. Topsoil shall be fertile, friable, natural topsoil typical of the area, free from subsoil, stones, plants, roots or other extraneous material and shall not be used while muddy or frozen.

B. Topsoil shall contain not less than 8% organic matter (AASHTO T267). The topsoil shall consist of either natural topsoils typical of the locality and free from coarse stone aggregate or surface soils stripped from the site and enriched with humus at a rate of 8% by volume. The soil mixture prepared by mixing surface soils and humus shall be free of oil, cinders, coarse stone, and woody root material.

PART 3 - EXECUTION

3.01 General

Provide all topsoil placement and finish grading and filling to achieve the lines and grades indicated on the Drawings. All earthwork shall be done in a manner that provides drainage.

3.02 Topsoil Placement

Place topsoil in all areas of new grading. The compacted subgrade to receive topsoil shall be scarified to a depth of 3 inches. Topsoil shall be spread evenly and compacted to a thickness of not less than 6 inches, to the proposed elevations and grades. Grade flush with walks, curbs, and paving.

3.03 Finish Grading

A. All areas of the project including all previously grassed areas that have been disturbed, borrow sites, excavated and filled sections and adjacent transition areas shall be uniformly smooth-graded. Depressions from settlement shall be filled and compacted. Tops of embankments and breaks in grade shall be rounded. All surfaces shall be finished to provide adequate drainage. Finished surfaces shall be reasonably smooth, compacted, free from irregular surface changes and comparable to the smoothness obtained by blade-grader operations.

B. Slope grades to drain away from structures at a minimum of ¼-inch per foot for 10 feet.

C. Finished surfaces adjacent to paved or surfaced areas and within 10 feet of structures shall be within 1 inch of the proposed grade. All other areas shall be within 3 inches of the proposed grade.

D. Newly graded areas shall be protected from traffic and erosion. All settlement or washing away that may occur from any cause prior to seeding or acceptance shall be repaired and grades re-established to the required elevations and slopes at no additional cost to the Owner.

E. Unless otherwise indicated, dispose of all surplus material.

END OF SECTION

SECTION 02315

EXCAVATION AND FILL

PART 1 - GENERAL

1.01 Section Includes

A. Excavation and fill for roads, ponds, general site work

B. Sheeting, shoring and bracing

C. Compaction

1.02 Related Sections

A. Section 02230 - Site Preparation

B. Section 02240 - Dewatering

C. Section 02310 - Finish Grading

D. Section 02320 - Trenching, Bedding, and Backfilling

E. Section 02370 - Erosion and Sedimentation Control

1.03 References

A. American Association of State Highway and Transportation Officials (AASHTO) latest edition:

1. AASHTO M145 - Classification of Soils and Soil Aggregate Mixtures
2. AASHTO T180 - Moisture-Density Relations of Soils Using a 10-lb Rammer and 18-in Drop

B. American Society for Testing and Materials (ASTM) latest edition:

1. ASTM D1557 - Laboratory Compaction Characteristics of Soil Using Modified Effort
2. ASTM D2487 - Classification of Soils for Engineering Purposes

C. Occupational Safety and Health Administration (OSHA) Regulations, including:

1. Part 1926 Subpart P – Excavations

1.04 Definitions

A. Backfill = material placed in newly excavated areas to the topsoil, paving sub-grade, or foundation level.

B. Influence Area = the area within lines sloped downward at 45 degrees from the outer edges of paving, foundations, and utility lines. As a minimum, the influence area shall extend 5 feet beyond the edge of pavement (where there is no curb) or 5 feet beyond the back of curb.

1.05 Quality Assurance

A. Field density testing frequencies:

1. One test for each 5,000 square feet or fraction thereof per lift of general backfilling, minimum 2 tests each layer.
2. One test per each lift of backfill around and under structures.
3. One test per lift per each change in type of fill.
4. One test per 1000 square feet of pavement subgrade, minimum of 2 tests.

B. Pond construction shall result in the finished pond having side slopes and dimensions that are in accordance with the construction drawings. It is the Contractor's sole responsibility to ensure that these requirements have been met. If the constructed side slopes are steeper than the required side slopes, or the pond volume is not within three (3) percent of the design volume, the Contactor may be required to make corrections to the pond at no additional cost to the Owner.

C. Sheeting, shoring, and bracing used for the support of excavations over 20 feet deep shall be designed by a professional engineer licensed by the State of Florida.

1.06 Preconstruction Requirements

Precondition surveys and vibration monitoring are required for those areas where residential structures are within 100 feet of the proposed construction.

PART 2 - PRODUCTS

2.01 General

It is intended that previously excavated materials conforming to the following requirements be utilized wherever possible.

2.02 Materials

A. Acceptable materials (suitable material): AASHTO M145 classification A-1, A-3, A-2-4, A-2-6; ASTM D2487 classification GW, GP, GM, SM, SW, SP; unless otherwise disapproved within the Soil and Subsurface investigation reports. No more than 12% of acceptable materials shall pass the number 200 sieve.

B. Unacceptable materials (unsuitable material): AASHTO M145 classification A-2-5, A-2-7, A-4, A-5, A-6, A-7, A-8; ASTM D2487 classification GC, SC, ML, MH, CL, CH, OL, OH, PT; unless otherwise approved within the Soil and Subsurface investigation reports.

C. Flowable fill shall be “Excavatable” and shall meet the requirements of FDOT specification section 121, with a maximum 28-day compressive strength of 100 psi and a minimum 28-day compressive strength of 80 psi.

2.03 Sheeting, Shoring, and Bracing

A. The structural strength and safety of all sheeting, shoring and bracing shall be the sole responsibility of the Contractor. Repair any damage resulting from failure to provide adequate supports.

B. Provide timber work, shoring, bracing, sheeting, and sheet piling where necessary to retain banks of excavations, prevent cave-in of adjacent ground, prevent displacement of utilities and structures, and to protect public safety.

C. Contractor is solely responsible for the design, installation, and operation of dewatering systems and their safety and conformity with local codes and regulations.

PART 3 - EXECUTION

3.01 General Construction Requirements

A. Provide suitable temporary drainage channels for any water that may flow along or across the work as specified hereafter.

B. Provide barriers, warning lights and other protective devices at all excavations.

C. Sidewalks, roads, streets, and pavements shall not be blocked or obstructed by excavated materials, except as authorized by the Engineer, in which case adequate temporary provisions must be made for satisfactory temporary passage of pedestrians, and vehicles. Minimize inconvenience to public travel or to tenants occupying adjoining property.

D. Where necessary to place excavated material adjacent to buildings, erect barriers to keep earth at least 4 feet from such buildings. Earth deposited on lawns shall be promptly and carefully removed to preserve the turf. All trees, shrubs, and landscaping shall be protected. Boring and jacking shall be used, if necessary, except where written permission is granted to remove trees and shrubs.

E. If open excavations cross existing rigid surfacing, the surfacing shall be removed for a width one foot beyond the anticipated edge of the excavation. The pavement break shall be sawed to insure a straight joint. Surface replacement shall match existing surfacing except as otherwise indicated on the Drawings. Where open excavation is allowed along or across public roadways, excavation, backfill, and surface replacement shall conform to the requirements of all permits applicable thereto. In no case shall surface replacement edges bear on less than 12" of undisturbed soil.

3.02 Preparation

A. Identify required lines, levels, contours, and datum.

B. Locate and identify existing utilities that are to remain and protect from damage.

C. Notify utility companies to remove or relocate utilities that are in conflict with proposed improvements.

D. Protect plant life, lawns, fences, existing structures, sidewalks, paving, and curbs from excavating equipment and vehicular traffic.

E. Protect benchmarks, property corners, and other survey monuments from damage or displacement. If marker needs to be removed it shall be referenced by licensed land surveyor and replaced, as necessary, by same.

F. Prior to placing fill in low areas, such as previously existing ditches, ponds, or lakes, perform following procedures:

1. Drain water out by gravity with ditch having flow line lower than lowest elevation in low area. If drainage cannot be performed by gravity ditch, use adequate pump to obtain the same results.
2. After drainage of low area is complete, remove mulch, mud, debris, and other unsuitable material by using acceptable equipment and methods that will keep natural soils underlying low area dry and undisturbed.
3. If proposed for fill, muck, mud, and other materials removed from low areas shall be dried on-site by spreading in thin layers for observation by Engineer. Material shall be inspected and, if found to be suitable for use as fill material, shall be incorporated into lowest elevation of site filling operation, but not under building or pavement subgrade or within 10'-0" of perimeter of building subgrade or paving subgrade. If, after observation by Engineer, material is found to be unsuitable, unsuitable material shall be removed from site.

3.03 Sheeting, Shoring, and Bracing

A. Furnish, install, and maintain, without additional compensation, sheeting, bracing, and shoring support required to keep excavations within the easement provided, to support the sides of the excavation, and to prevent any movement which may damage adjacent pavements or structures, damage or delay the work, or endanger life and health. Voids outside the supports shall be immediately filled and compacted.

B. Sheeting, where required, shall be driven below the bottom of excavation so the lowest set of wales and struts are above the bottom of the excavation to allow necessary working room.

C. The Engineer may direct in writing that supports in trenches be cut off at any specified elevation, in which case Contractor shall be paid for the supports left in place.

D. Contractor may leave in place, to be embedded in the backfill of the excavation, any or all supports for the purpose of preventing injury to persons or property, whether public or private. However, no supports which are within 4' of the ground or pavement surface may be left in place without written permission of the Engineer. No extra payment will be made for supports left in place at the Contractor's option.

E. All supports not left in place shall be removed in such manner as to avoid endangering the piping, structures, utilities or property, whether public or private. All voids left by the withdrawal of sheeting shall be immediately filled and compacted.

F. The right of the Engineer to order supports left in place shall not be construed as creating an obligation on his part to issue such orders. Failure by the Engineer to exercise this right shall not relieve the Contractor from total liability for damages to persons or property resulting from the failure of the Contractor to leave in place sufficient supports to prevent any caving or moving of the ground adjacent to the excavation.

3.04 Excavation

A. Do not excavate for any structure until that structure is scheduled for construction. Excavate only to the depth and dimensions necessary for the construction. Slope sides of excavations in accordance with OSHA requirements and the recommendations contained within the project geotechnical report.

B. The bottom of all excavations shall be undisturbed earth unless otherwise indicated, and shall be approved by the Engineer before any subsequent work is started. Over excavate a minimum of 2 feet where excavations occur within unsuitable soils, and replace over excavated material with suitable soils.

C. Excavations carried below depths indicated on the Drawings without the previous approval of the Engineer shall be filled with 2500 psi concrete or flowable fill to the correct level at the expense of the Contractor.

D. Maintain excavations in good order. If the bearing capacity of the foundation soils is reduced because the excavation is allowed to remain open prior to commencing work, the weathered soil shall be removed and replaced with 2500 psi concrete or flowable fill at the Owner's discretion at the expense of the Contractor.

E. All suitable materials removed from excavation areas shall be used for the project. Excess excavated suitable material shall be stockpiled on site at a location of the Owner's choosing, and shall become the property of the Owner, unless otherwise indicated on the Drawings.

F. Suitable onsite excavated materials containing silty or slightly clayey to clayey fine sands shall be sufficiently dried by surface spreading and discing if necessary, or by mixing with cleaner fine sands prior to placement in fill areas.

G. Unsuitable materials within the influence area of construction shall be excavated, removed from the site, and disposed, unless otherwise indicated on the Drawings.

H. Excavations shall be kept dry, compacted, and stable to a depth two feet below the bottom of the excavation.

I. If portions of the bottom of excavations consist of material unstable to such a degree that, in the opinion of the Engineer, it cannot adequately support the construction, the bottom shall be over excavated and stabilized with approved coarse granular stabilization material. Depth of stabilization shall be as directed by the Engineer. The initial 50 tons of stabilization shall be incidental to the Contract. Compensation will be allowed only for such additional quantities as the Engineer shall direct in writing to be placed.

3.05 Filling

A. All fill material shall be suitable soils or flowable fill. Fill placed within 1 foot of structures shall not contain rock or stone larger than 2 inch diameter. If a sufficient quantity of suitable material is not available from other excavations within the site, provide additional suitable material or flowable fill.

B. Fill within the influence area of roadways, structures, foundations, or slabs, shall be placed in layers of 8 inch loose depth. In all other areas, place fill in layers of 12 inch loose depth.

C. Take necessary precautions not to cause settlement or damage to adjacent slabs, walls, structures, or foundations. Place fill materials evenly adjacent to structures, without wedging against structures.

D. Where filling is required on both sides of structures, fill and compact simultaneously on opposite sides in even layers.

3.06 Compaction

A. Unless otherwise indicated, the type of equipment and number of passes required to obtain the specified degree of compaction shall be determined at the site, subject to the approval of the Engineer.

B. Provide mechanical compaction for cohesive material and vibratory compaction for granular materials, unless otherwise approved by the Engineer. Vibratory compaction is not allowed within 100 feet of existing structures. In these areas, compaction shall be accomplished by static means only. If compaction difficulties arise, the Engineer shall be consulted to review and possibly modify compaction procedures.

C. Noncohesive soils shall be compacted with vibrating roller or equivalent; cohesive soils shall be compacted with sheeps-foot roller, pneumatic tamping, or approved equivalent, unless otherwise indicated.

D. Before compaction, moisten or aerate each layer as necessary to provide optimum moisture content. Do not place backfill or fill material on surfaces that are muddy, frozen, or contain frost or ice.

3.07 Testing and Cleanup

A. Provide for testing and cleanup as soon as practicable, so these operations do not lag far behind pipe installation. Perform preliminary cleanup and grading operations immediately after backfilling.

B. All surplus excavated material shall be disposed of by the Contractor.

3.08 Field Quality Control

A. Minimum Density Requirement (ASTM D1557 or AASHTO T180):

1. Fill placed under and within the influence area of roadways, structures, slabs, foundations = 98 percent
2. Fill placed within pond and road embankment = 95 percent
3. Fill placed within public road right-of-way and utility easements outside the road influence area = 95 percent
4. Fill placed within landscape areas = 85 percent
5. Fill placed within all other areas = 90 percent

Where fill is placed and differing density requirements are defined, the more stringent density requirement governs.

END OF SECTION

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SECTION 02320

TRENCHING, BEDDING, AND BACKFILLING

PART 1 - GENERAL

1.01 Section Includes

A. Trenching for piping and electrical work.

B. Excavation for manholes, junction boxes, meter vaults, and appurtenances.

C. Sheeting, shoring and bracing

D. Bedding, backfilling, and compaction.

1.02 Related Sections

A. Section 02230 - Site Preparation

B. Section 02240 - Dewatering

C. Section 02310 - Finish Grading

D. Section 02315 - Excavation and Fill

E. Section 02370 - Erosion and Sedimentation Control

1.03 References

A. American Association of State Highway and Transportation Officials (AASHTO) latest edition:

1. AASHTO M145 - Classification of Soils and Soil Aggregate Mixtures
2. AASHTO T180 - Moisture-Density Relations of Soils Using a 10-lb Rammer and 18-in Drop

B. American Society for Testing and Materials (ASTM) latest edition:

1. ASTM D1557 - Laboratory Compaction Characteristics of Soil Using Modified Effort
2. ASTM D2487 - Classification of Soils for Engineering Purposes

C. Occupational Safety and Health Administration (OSHA) Regulations, including:

1. Part 1926 Subpart P – Excavations

1.04 Definitions

A. Bedding = Area from bottom of trench to centerline of pipe

B. Backfill = material above the top of pipe to the topsoil, paving sub-grade, or foundation level.

C. Influence Area = the area within lines sloped downward at 45 degrees from the outer edges of paving, foundations, and utility lines. As a minimum, the influence area shall extend 5 feet beyond the edge of pavement (where there is no curb) or 5 feet beyond the back of curb.

1.05 Quality Assurance

A. Field density testing frequencies:

1. One test for each 300 linear feet of pipeline or fraction thereof per lift of general backfilling in the pipeline trench. Where less than 300 linear feet of pipeline is installed, one test per lift of backfill is required, staggered along the pipeline at locations determined by the Engineer
2. One test for each 100 square feet or fraction thereof of backfill around and under structures, with a minimum of two tests per lift.
3. One test per lift per each change in type of fill.

B. Sheeting, shoring, and bracing used for the support of excavations over 20 feet deep shall be designed by a professional engineer licensed by the State of Florida.

1.06 Preconstruction Requirements

Precondition surveys and vibration monitoring are required for those areas where residential structures are within 100 feet of the proposed construction.

PART 2 - PRODUCTS

2.01 General

It is intended that previously excavated materials conforming to the following requirements be utilized wherever possible.

2.02 Materials

A. Acceptable materials (suitable material): AASHTO M145 classification A-1, A-3, A-2-4, A-2-6; ASTM D2487 classification GW, GP, GM, SM, SW, SP; unless otherwise disapproved within the Soil and Subsurface investigation reports. No more than 12 percent of acceptable materials shall pass the number 200 sieve.

B. Unacceptable materials (unsuitable material): AASHTO M145 classification A-2-5, A-2-7, A-4, A-5, A-6, A-7, A-8; ASTM D2487 classification GC, SC, ML, MH, CL, CH, OL, OH, PT; unless otherwise approved within the Soil and Subsurface investigation reports.

C. Flowable fill shall be “Excavatable” and shall meet the requirements of FDOT specification section 121, with a maximum 28-day compressive strength of 100 psi and a minimum 28-day compressive strength of 80 psi.

2.03 Sheeting, Shoring, and Bracing

A. The structural strength and safety of all sheeting, shoring and bracing shall be the sole responsibility of the Contractor. Repair any damage resulting from failure to provide adequate supports.

B. Provide timber-work, shoring, bracing, sheeting, and sheet piling where necessary to retain banks of excavations, prevent cave-in of adjacent ground, prevent displacement of utilities and structures, and to protect public safety.

C. Contractor is solely responsible for the design, installation, and operation of dewatering systems and their safety and conformity with local codes and regulations.

PART 3 - EXECUTION

3.01 General Construction Requirements

A. Provide suitable temporary drainage channels for any water that may flow along or across the work as specified hereafter.

B. Provide barriers, warning lights and other protective devices at all excavations.

C. Sidewalks, roads, streets, and pavements shall not be blocked or obstructed by excavated materials, except as authorized by the Engineer, in which case adequate temporary provisions must be made for satisfactory temporary passage of pedestrians, and vehicles. Minimize inconvenience to public travel or to tenants occupying adjoining property.

D. Where necessary to place excavated material adjacent to buildings, erect barriers to keep earth at least 4 feet from such buildings. Earth deposited on lawns shall be promptly and carefully removed to preserve the turf. All trees, shrubs, and landscaping shall be protected. Boring and jacking shall be used, if necessary, except where written permission is granted to remove trees and shrubs.

E. If open excavations cross existing rigid surfacing, the surfacing shall be removed for a width one foot beyond the anticipated edge of the excavation. The pavement break shall be sawed to insure a straight joint. Surface replacement shall match existing surfacing except as otherwise indicated on the Drawings. Where open excavation is allowed along or across public roadways, excavation, backfill, and surface replacement shall conform to the requirements of all permits applicable thereto. In no case shall surface replacement edges bear on less than 12 inches of undisturbed soil.

3.02 Preparation

A. Identify required lines, levels, contours, and datum.

B. Locate and identify existing utilities that are to remain and protect from damage.

C. Notify utility companies to remove or relocate utilities that are in conflict with proposed improvements.

D. Protect plant life, lawns, fences, existing structures, sidewalks, paving, and curbs from excavating equipment and vehicular traffic.

E. Contractor shall be responsible for laying out the Work, shall protect and preserve the established reference points and property monuments, and shall make no changes or relocations without the prior written approval of the Owner. All benchmarks, property corners, and other survey monuments that are lost, damaged, or destroyed shall be replaced by a Licensed Surveyor at the Contractor's expense.

3.03 Sheeting, Shoring, and Bracing

A. Furnish, install, and maintain, without additional compensation, sheeting, bracing, and shoring support required to keep excavations within the easement provided, to support the sides of the excavation, and to prevent any movement which may damage adjacent pavements or structures, damage or delay the work, or endanger life and health. Voids outside the supports shall be immediately filled and compacted.

B. Sheeting, where required, shall be driven below the bottom of excavation so the lowest set of wales and struts are above the bottom of the excavation to allow necessary working room.

C. The Engineer may direct in writing that supports in trenches be cut off at any specified elevation, in which case Contractor shall be paid for the supports left in place.

D. Contractor may leave in place, to be embedded in the backfill of the excavation, any or all supports for the purpose of preventing injury to persons or property, whether public or private. However, no supports which are within 4 feet of the ground or pavement surface may be left in place without written permission of the Engineer. No extra payment will be made for supports left in place at the Contractor's option.

E. All supports not left in place shall be removed in such manner as to avoid endangering the piping, structures, utilities or property, whether public or private. All voids left by the withdrawal of sheeting shall be immediately filled and compacted.

F. The right of the Engineer to order supports left in place shall not be construed as creating an obligation on his part to issue such orders. Failure by the Engineer to exercise this right shall not relieve the Contractor from total liability for damages to persons or property resulting from the failure of the Contractor to leave in place sufficient supports to prevent any caving or moving of the ground adjacent to the excavation.

3.04 Trenching

A. All excavations shall be made by open cut unless otherwise indicated. Sides of trenches shall be kept as nearly vertical as possible from the trench bottom to a level of one foot above the top of the pipe. Slope sides of trenches in accordance with OSHA requirements and the recommendations contained within the project geotechnical report.

B. Excavation of trenches shall not advance more than 50 feet ahead of completed pipe installation except as approved by the Engineer.

C. Excavate trenches to depth indicated or required for indicated flow lines and invert elevations. Over excavate trenches a minimum of 2 feet where excavations occur within unsuitable soils, and replace over excavated material with suitable soils.

D. Where rock is encountered, carry excavation 6 inches below scheduled elevation and backfill with a 6 inch layer of crushed stone or gravel prior to installation of pipe.

E. For pipes or conduit 5 inches or less, excavate to indicated depths. Hand excavate bottom cut to accurate elevations and support pipe or conduit on undisturbed soil.

F. For pipes or conduit 6 inches or larger, and other work indicated to receive subbase, excavate to subbase depth indicated, or, if not otherwise indicated, to 6 inches below bottom of work to be supported.

G. Except as otherwise indicated, excavate for pressure piping so top of piping is minimum 3 feet below finished grade.

H. Unsuitable excavated materials shall be removed from the site and disposed, unless otherwise indicated on the Drawings.

I. Grade bottoms of trenches as indicated, notching under pipe bells to provide solid bearing for entire body of pipe.

J. Trench bottoms shall be kept dry, compacted, and stable to a depth two feet below the bottom of the trench.

K. Dig trenches to the uniform width required for particular item to be installed, sufficiently wide to provide ample working room. Provide 9 -12 inch clearance on each side of pipe or conduit.

L. If more than one pipe is to be installed in a trench, the pipes shall be spaced a minimum of one foot apart for pipes 4 inches and larger.

M. If portions of the bottom of trenches consist of material unstable to such a degree that, in the opinion of the Engineer, it cannot adequately support the pipe or structure, the bottom shall be over excavated and stabilized with approved coarse granular stabilization material. Depth of stabilization shall be as directed by the Engineer. The initial 50 tons of stabilization shall be incidental to the Contract. Compensation will be allowed only for such additional quantities as the Engineer shall direct in writing to be placed.

N. Do not backfill trenches until tests and inspections have been made.

3.05 Trench Backfilling

A. Following placement of pipe and inspection of joints, install tamped bedding material. Place bedding fill materials in layers of 6-inch loose depth.

B. All bedding and backfill material shall be suitable soils or flowable fill. Backfill material within 1 foot of pipe and appurtenances shall not contain rock or stone larger than 2-inch diameter. If a sufficient quantity of suitable material is not available from the trench or other excavations within the site, provide additional suitable material or flowable fill.

C. After completion of bedding and preliminary approval of piping and testing, the pipe shall be covered to a point one foot above the top of the pipe for the full trench width, placed in layers of 8-inch loose depth.

D. Place backfill over pipe. Where trench is within the influence area of roadways, structures, foundations, or slabs, place backfill in layers of 8-inch loose depth. In all other areas, place backfill in layers of 12-inch loose depth.

E. Take necessary precautions not to cause settlement or damage to adjacent slabs, walls, structures, or foundations. Place backfill and fill materials evenly adjacent to structures, without wedging against structures or displacement of piping or conduit.

3.06 Minor Structural Excavation and Backfilling

A. Minor structures are defined as manholes, junction boxes, inlets, valve vaults, and meter vaults. Do not excavate for any structure until that structure is scheduled for construction. Excavate only to the depth and dimensions necessary for the construction.

B. The bottom of all excavations shall be undisturbed earth unless otherwise indicated, and shall be approved by the Engineer before any subsequent work is started. Over excavate a minimum of 2 feet where excavations occur within unsuitable soils, and replace over excavated material with suitable soils.

C. Excavations carried below depths indicated on the Drawings without the previous approval of the Engineer shall be filled with 2500 psi concrete or flowable fill at the Owner's discretion to the correct level at the expense of the Contractor.

D. Maintain excavations in good order. If the bearing capacity of the foundation soils is reduced because the excavation is allowed to remain open prior to commencing work, the weathered soil shall be removed and replaced with 2500 psi concrete or flowable fill at the Owner's discretion at the expense of the Contractor.

E. Do not backfill until new concrete has properly cured, coatings have been approved, and any required tests have been accepted.

F. Fill within the influence area of roadways, structures, foundations, or slabs, shall be placed in layers of 8-inch loose depth. In all other areas, place fill in layers of 12-inch loose depth.

G. Exercise care during backfilling operations to avoid any puncture, break or other damage to waterproofing systems, if any. Backfill adjacent to waterproofing in the presence of the Engineer.

H. Where backfilling is required on both sides of structures, backfill and compact simultaneously on opposite sides in even layers. Other backfilling sequences shall be as specifically noted.

3.07 Compaction

A. Unless otherwise indicated, the type of equipment and number of passes required to obtain the specified degree of compaction shall be determined at the site, subject to the approval of the Engineer.

B. Provide mechanical compaction for cohesive material and vibratory compaction for granular materials, unless otherwise approved by the Engineer. Vibratory compaction is not allowed within 100 feet of existing structures. In these areas, compaction shall be accomplished by static means only. If compaction difficulties arise, the Engineer shall be consulted to review and possibly modify compaction procedures.

C. Noncohesive soils shall be compacted with vibrating roller or equivalent; cohesive soils shall be compacted with sheeps-foot roller, pneumatic tamping, or approved equivalent, unless otherwise indicated.

D. Before compaction, moisten or aerate each layer as necessary to provide optimum moisture content. Do not place backfill or fill material on surfaces that are muddy, frozen, or contain frost or ice.

3.08 Testing and Cleanup

A. Provide for testing and cleanup as soon as practicable, so these operations do not lag far behind pipe installation. Perform preliminary cleanup and grading operations immediately after backfilling.

B. All surplus excavated material shall be disposed of by the Contractor.

3.09 Field Quality Control

A. Minimum Density Requirement (ASTM D1557 or AASHTO T180):

1. Backfill placed under and within the influence area of roadways, structures, slabs, foundations = 98 percent
2. Backfill placed within pond and road embankment = 95 percent
3. Backfill placed within public road right-of-way and utility easements outside the road influence area = 95 percent
4. Backfill placed within landscape areas = 85 percent
5. Backfill placed within all other areas = 90 percent

Where backfill is placed and differing density requirements are defined, the more stringent density requirement governs.

END OF SECTION

SECTION 02370

EROSION AND SEDIMENTATION CONTROL

PART 1 - GENERAL

1.01 Section Includes

Designing, providing, maintaining, removing temporary erosion and sedimentation controls.

1.02 Related Sections

A. Section 01415 – Stormwater Pollution Prevention/NPDES Requirements

B. Section 02230 - Site Preparation

C. Section 02240 - Dewatering

D. Section 02315 - Excavation and Fill

E. Section 02320 - Trenching, Bedding, and Backfilling

1.03 References

A. Florida Department of Transportation (FDOT) Standard Specifications for Road and Bridge Construction, latest edition:

1. Specification 300 - Prime and Tack Coats for Base Courses
2. Specification 985 - Geotextile Fabrics

B. State of Florida Erosion and Sediment Control Manual, latest edition.

1.04 Owner's Instructions / Sequencing

A. Owner has authority to limit surface area of erodible earth material exposed by clearing and grubbing, excavation, trenching, borrow and embankment operations. Owner also has authority to direct Contractor to provide immediate permanent or temporary erosion and sediment control measures.

B. Contractor shall respond to erosion and sediment control maintenance requirements or implement additional measures to control erosion ordered by Owner or governing authorities within 48 hours or sooner if required at no additional cost to the Owner.

C. Contractor will be required to incorporate permanent erosion control features into project at earliest practical time to minimize need for temporary controls.

PART 2 - PRODUCTS

2.01 Erosion Control

A. Seeding and Mulching

B. Sodding

C. Hydro-seeding

D. Coarse Aggregate

E. Prime Coat - Per FDOT Specification 300

2.02 Sedimentation Control

A. Silt Fence - Per Details on the Drawings

PART 3 - EXECUTION

3.01 Erosion Control

A. Maintain temporary erosion control systems as directed by Owner or governing authorities to control erosion and siltation during life of contract.

B. The erosion and sediment control measures shown on the plans represent a minimum requirement. The Contractor is responsible for determining additional erosion and sediment control measures needed in order to prevent the transfer of sediment from the project area and prevent the erosion of surfaces during construction, as needed to protect adjacent properties and water bodies.

C. Permanently grass cut slopes as excavation proceeds to extent considered desirable and practical as determined by the Owner.

D. Grass all disturbed areas within 7 days of initial disturbance. Type of grassing shall be as follows: temporary grassing to be sodding at all drainage structures, retention areas, swales and ditches, and where slopes are steeper than 5:1. Temporary grassing can be seed and mulch at all other locations unless otherwise indicated in the drawings or specifications.

E. Erosion control of areas to be paved shall meet the following:

1. Install subgrade and base course materials within 48 hours of the removal/open cutting of existing pavement consisting of streets, driveways, or sidewalk. Install final surface courses within 14 days after removal of existing pavement.
2. Areas to receive asphalt shall receive erosion control measures no later than 48 hours after installation of base course. Temporary erosion control consists of placement of a bituminous prime coat and sanding the surface. Permanent erosion control consists of placement of the structural course.

3. Areas to receive concrete paving shall be either protected with a layer of FDOT coarse aggregate material or shall be paved within 48 hours of installation of the subgrade.

F. Dirt roads are to be stabilized and compacted within 7 days of the completion of trenching and grading activities.

3.02 Sedimentation Control

A. Install prior to construction.

B. Inspect every two weeks during construction.

C. Remove any sediment build-up.

D. Repair and reinstall any damaged or missing sediment control measures. Install additional measures if inspection reveals additional sedimentation control is necessary.

E. Rough excavate and grade any proposed stormwater ponds at the start of site grading activities. Direct site runoff to the ponds to minimize runoff to offsite areas.

END OF SECTION

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SECTION 02740

PAVING

PART 1 - GENERAL

1.01 Section Includes

A. Asphalt pavement, including binder and surface course.

B. Repair and restoration of existing paving, curbing, driveways, and sidewalks.

C. Paving and temporary paving timing requirements.

1.02 References

A. Florida Department of Transportation (FDOT) Standard Specifications for Road and Bridge Construction, latest edition:

1. Section 334 - Superpave Asphalt Concrete

1.03 Submittals

Submit proposed design mix for review and approval. Submit for each proposed mix the following: Gradation analysis; proposed asphalt binder.

1.04 Quality Assurance

A. Field compaction density and thickness testing frequencies of the asphalt shall be tested once every 200 linear feet of paving per 24-ft wide strip, staggered left, center and right of centerline. Where less than 200 linear feet of asphalt is placed in one day, provide minimum of one test for each per day's construction at a location designated by the Engineer.

B. Asphalt extraction gradation shall be tested from grab samples collected once every 1800 square yards of asphalt delivered to the site, or a minimum of once per day. Obtain the results in a timely manner (no later than the end of the day) so that adjustments can be made if necessary.

C. All other testing requirements and acceptance criteria shall be in accordance with FDOT specifications.

1.05 Project Conditions

A. Apply asphalt in accordance with FDOT requirements. Do not apply when the base is wet, contains excess moisture, or during rain.

B. Do not spread the mixture when the wind is blowing to such an extent that proper and adequate compaction cannot be maintained or when sand, dust, etc., are being deposited on the surface being paved to the extent that the bond between layers will be diminished.

PART 2 - PRODUCTS

2.01 General

The superpave mix and thickness shall be in accordance with the construction notes.

PART 3 - EXECUTION

3.01 General

All installation and testing procedures shall be in accordance with FDOT requirements, except for the frequency of testing outlined herein and measurement and payment requirements of section 01270.

END OF SECTION

SECTION 02910

LANDSCAPING

PART 1 - GENERAL

1.01 Section Includes

Materials, installation, maintenance of trees, ground cover, and shrubs

1.02 Related Sections

Section 02920 – Lawns and Grasses

1.03 General Requirements

A. Furnish all labor, materials, equipment, and incidentals required to install trees, ground cover, and shrubs, to place accessory planting materials and to maintain and guarantee all planted areas, in areas as shown on the Drawings. All work shall be in strict adherence with sound nursery practice and shall include maintenance and watering of all the work of this Contract until final completion and acceptance by the Owner.

B. The landscaping shall be performed by a subcontractor who is fully experienced in projects of this scope and whose main business is landscaping. The subcontractor shall be subject to the approval of the Engineer.

C. Provide under this Section all landscaping appurtenances as shown on the landscaping drawings and specifications.

1.04 Submittals

A. Submit to the Engineer for approval, complete written maintenance instructions for each type of plant furnished under the Contract.

B. Submit representative samples of any or all of required accessory planting materials as ordered by the Engineer.

C. All trees, shrubs and sod shall have a valid and current state of Florida, Division of Plant Industry (DPI) inspection certification prior to being transported to the construction site. Submit the DPI certification to the Engineer and maintain a copy of the certification onsite with the construction records.

1.05 Warranty

The life and satisfactory condition of all plant material planted shall be guaranteed by the Contractor for a minimum of one calendar year. Guarantee shall include complete replacement with material of the same kind and size as in the original work if not in a healthy condition, as determined by the Engineer, at the end of the warranty period.

1.06 Maintenance

A. Plant material maintenance shall begin when planting operations start and shall extend until final acceptance of the work.

B. Maintain all plant materials under this Contract to the satisfaction of the Engineer. Maintenance shall include necessary watering, cultivation, weeding, pruning, spraying, tightening and repair to guy wires, removal of dead material, resetting, and other work required to conform with referenced standards and accepted nursery standards as approved.

C. Plant materials which are in a tilted or in a leaning position shall be properly righted

D. After final acceptance by the Owner and until 120 days after acceptance of all plantings, the landscaping subcontractor shall make monthly inspections of materials and report in writing to the Engineer the conditions of the plants and the necessary requirements to keep the plants in a healthy growing condition.

PART 2 - PRODUCTS

2.01 Materials

A. Plant species and size shall conform to those indicated in the Plant List and in plant locations shown on the Drawings. All plants shall be Florida Grade No. 1, or better.

B. Plants shall be sound, healthy, vigorous, free from plant diseases, insects, pest, or their eggs, and shall have healthy normal root systems. Plants shall be nursery grown stock, freshly dug. No heeled in, cold storage or collected stock will be acceptable.

C. Shape and Form:

1. Plant material shall be symmetrical, typical for the variety and species, and shall conform to the measurements specified in the Plant List.
2. Plants used where symmetry is required shall be matched as nearly as possible.
3. Plants shall not be pruned prior to delivery except as authorized.
4. All plants shall have been transplanted or root pruned at least once in the past 3 years.
5. Unless otherwise noted, street trees shall be free of branches up to 6 feet, with the single leader well branched, and with straight trunks.
6. Shrubs shall have been twice transplanted, have fully developed root systems, be heavily canned with foliage to base, fulfill dimensions required, and be typical of the species.
7. Ground covers shall have sturdy fibrous root systems and shall be heavily leafed.

D. Measurement: The height and/or width of trees shall be measured from the ground or across the normal spread of branches with the plants in their normal position. The measurement shall not include the immediate terminal growth.

E. Substitutions in plant species or size shall be made only with the written approval of the Engineer.

F. Ground cover plants shall be planted in beds which receive 4 inches of approved topsoil, thoroughly disced into the soil. The finished surface, compacted and settled, shall conform generally with and at all points to the required grade. Plants shall be spaced as shown, and in accordance with the best practices of the trade.

G. Planting Soil:

1. Soil for backfilling around plants and planting beds shall be a good grade of garden loam as approved. Soil shall be free of heavy clay, coarse sand, stones, lumps, sticks or other foreign material. The soil shall not be delivered or used in a muddy condition.
2. The soil shall be taken from ground that has never been stripped. There shall be a slight acid reaction to the soil with no excess of calcium or carbonate. The soil shall be free from excess weeds or other objectionable material.
3. Soil for trees and shrubs shall be delivered in a loose, friable condition. All trees should average approximately 1 cubic yard per tree. There will be 4-inches of planting soil in ground cover areas and 1/8 cubic yard per shrub or vine.
4. No marl shall be used in ground cover planting beds.

H. Any required landscaping stone shall be inert, nonleaching material as specified on the Drawings. Provide physical samples for approval before purchase. No crushed limerock shall be used.

PART 3 - EXECUTION

3.01 Planting Procedures

A. Plant Locations: All plants shall be located as shown on the Drawings, to dimensions if shown, to scale if not dimensioned. Large areas or beds shall be scaled and the plants spaced evenly. Approval by the Engineer is required before any plants are installed.

B. Tree Staking: All tree staking and bracing shall be included herein in accordance with sound nursery practice and shall generally be in accordance with the details shown. Furnish all materials required for staking and bracing as approved.

C. Tree Pits: Pits for trees shall be at least 2 feet greater in diameter than the specified diameter of the ball. Pits shall be of sufficient depth to allow a 6-inch layer of planting soil under the ball when it is set to grade. Bottom of pit shall be loosened prior to backfilling. Other specifications for tree pits shall be as shown on the plans.

D. Digging and Handling:

1. Plants shall be handled at all times so that roots or balls are adequately protected from sun or drying winds. Tops or roots of plants allowed to dry out will be rejected.
2. Balled or burlapped plants shall be moved with firm, natural balls of soil, not less than 1-foot diameter of ball to every 1-inch caliper of trunk, and a depth of not less than 2/3 of ball diameter. No plant shall be accepted when the ball of earth surrounding its roots has been cracked or broken. All trees, except palm and seedling pines, shall be dug with ball and burlapped. Root pruning shall have been done a minimum of four weeks before planting at the job.
3. Bare root plants shall be dug with spread of root and of sufficient depth to ensure full recovery of the plant.

E. When balled and burlapped plants are set, planting soil shall be carefully tamped under and around the base of the balls to prevent voids. All burlap, rope, wires, etc., shall be removed from the sides and tops of balls, but no burlap shall be pulled from underneath. Roots of bare rooted plants shall be properly spread out and planting soil carefully worked in among them.

F. Before plants are backfilled with planting soil, fertilizer tables, Agriform 20-10-5 or equal, shall be placed in each pit. Provide three tablets for each tree and one for each shrub or vine.

G. All plants shall be set straight or plumb, in locations shown on the Drawings. Except as otherwise specified, plants shall be planted in pits and shall be set at such level that, after settlement, they bear the same relation of the finished grade or surrounding ground as they bore to the grade of the soil from which they are taken.

H. Pruning shall be carefully done by experienced plantsmen. Prune immediately upon acceptance by the Owner, including any broken branches, thinning all small branches and tipping back main branches (except main leaders).

I. Excess soil and debris shall be disposed of off the project site unless ordered stockpiled by the Engineer.

3.02 Obstructions Below Ground

A. If underground construction utilities or obstructions are encountered in excavation of the planting areas, or pits, other locations for the plant material may be selected by the Engineer.

B. Such changes shall be done without additional compensation.

3.03 Tree and Plant Protection

A. The Contractor shall remove only those trees selected for removal by the Engineer. Prior to removal of said trees, the Contractor shall obtain a tree removal permit, if required. All other trees in the vicinity of the work shall be protected against damage by the Contractor until all work under the Contract has been completed.

B. Consult with the Engineer, and remove agreed-on roots and branches which interfere with construction. Employ qualified tree surgeon to remove, and to treat cuts.

C. Provide temporary barriers to the height of six feet (6-foot/0-inches), around each, or around each group of trees and plants.

D. Protect root zones of trees and plants:

1. Do not allow vehicular traffic or parking.
2. Do not store materials or products.
3. Prevent dumping of refuse or chemically injurious materials or liquids.
4. Prevent puddling or continuous running water.

E. Carefully supervise excavating, grading and filling, and subsequent construction operations, to prevent damage.

F. In case of inadvertent damage to any tree, by the Contractor or any of his subcontractors or employees, the Contractor shall provide replacement of each size tree with a new tree of acceptable type, size and quality, subject in each case to the approval of the Owner.

G. Completely remove barricades, including foundations, when construction has progressed to the point that they are no longer needed, and when approved by the Engineer.

H. Clean and repair damage caused by installation, fill and grade the areas of the site to required elevations and slopes, and clean the area.

3.04 Replacement

A. At the end of the warranty period, any plant required under this Contract that is dead or not in satisfactory growth as determined by the Engineer shall be removed. Plants replaced shall be guaranteed for 90 days after date of replacement.

B. Replacement of plants necessary during the guarantee period shall be the responsibility of the Contractor, except for possible replacements of plants resulting from removal, vandalism, acts of neglect on the part of others, or acts of God.

C. All replacements shall be plants of the same kind and size as specified in the landscape drawings. They shall be furnished and planted as herein specified. The cost shall be the responsibility of the Contractor.

END OF SECTION

SECTION 02920

LAWNS AND GRASSES

PART 1 - GENERAL

1.01 Section Includes

Soil preparation, sodding, seeding, mulching, fertilizing, watering, and maintenance of grassed areas

1.02 References

Florida Department of Transportation Standard Specifications for Road and Bridge Construction, latest implemented edition.

1.03 Submittals

A. All sod shall have a valid and current state of Florida, Division of Plant Industry (DPI) inspection certification prior to being transported to the construction site. Submit the DPI certification to the Owner and maintain a copy of the certification onsite with the construction records.

B. Tickets from each sod pallet of sod delivered to the site shall be provided to the Owner. The tickets are to identify the sod type, the sod farm (source) of the sod, and the date the sod was cut.

C. Provide signed copies of a statement by the vendor certifying that each lot of seed has been tested by a recognized laboratory for seed testing within 6 months of date of delivery. This statement shall include: name and address of laboratory, date of test, lot number for each kind of seed, and the results of tests as to name, percentages of purity and of germination, and percentage of weed content for each kind of seed furnished, and, in case of a mixture, the proportions of each kind of seed.

1.04 Quality Assurance

A. Sod shall be no more than 10% brown per piece of sod when delivered to the site and shall be free of weeds and other grass contamination.

B. Sod shall be delivered to the site no more than 48 hours after it has been cut and shall be installed upon delivery. Sod shall be fresh and uninjured.

C. Sod shall have a soil mat of sufficient thickness adhering firmly to the roots in order to withstand all necessary handling.

1.05 Delivery, Storage, and Handling

A. Sod delivered to the site shall be in pallets, with sod pieces generally 16-inches by 24-inches (+/-) with no sod piece smaller than 12-inches on any side.

B. Sod delivered to the site shall be kept out of direct sunlight and shall be kept moist until installation.

C. Sod not meeting these specifications upon delivery as determined by the Owner shall be removed from the project site and not installed.

1.06 Warranty

All seeding shall be warrantied by the General Contractor to be true to name and in a vigorous growing condition through one growing cycle including one summer and one winter season.

1.07 Certification

Sod shall have a valid and current State of Florida, Division of Plant Industry (DPI) inspection certification prior to being transported to the construction site.

1.08 Maintenance

A. Maintenance for lawns shall begin immediately after seeding or sodding. Provide fertilizing, watering, mowing and replanting and continue as necessary until a close healthy stand of specified grasses is established.

B. Mowing and watering shall be continued until project completion as directed by the Owner.

PART 2 - PRODUCTS

2.01 Lime

Lime shall be agricultural grade dolomitic limestone, ground sufficiently fine so that at least 80 percent will pass through a No. 8 sieve, and it shall contain not less than 80 percent calcium carbonate equivalent. Moisture content at time of delivery shall not exceed 8 percent.

2.02 Fertilizer

Fertilizer shall be a composition recommended by a local County Agricultural Agent or State Agricultural Extension Service or a preformulated 10-6-4 mixture.

2.03 Water

Water shall be free from oil, acid, alkali, salts, and other harmful substances.

2.04 Sod

A. Sodding is to match existing adjacent lawns and shall be well matted with grass roots.

B. Sod shall be either field or nursery grown sod that is native to the locality of the Project. The Contractor shall obtain the Owner's approval of the source of the sod prior to cutting the sod.

C. Sod grown on soil high in organic matter, such as peat, will not be acceptable. The consistency of sod shall be such that it will not break, crumble or tear during handling and placing. Sod shall be reasonably free of stones, crab grass, noxious weeds, and other objectionable plants or substances injurious to plant growth.

D. Sod shall have at least 1 inch of soil adhering firmly to the roots and cut in rectangular pieces with the shortest side not less than 12 inches. At the time of cutting sod the grass shall be mowed to a height not less than 2 inches nor more than 4 inches.

E. Sod cut for more than 48 hours shall not be used without the approval of the Owner.

F. Bermuda Sodding shall be 419 Tifway Bermuda.

G. Bahia Sodding shall be Argentine Bahia Sod.

H. If so designated on the drawings, Bahia Sodding along coastal areas subject to high salt content shall be Seashore Paspalum Bahia (Paspalum vagination), such as Sea Isle 1, as produced by Turfgrass America, or approved equal.

I. St. Augustine sodding is to be provided in those areas where the adjacent sod is St. Augustine sod.

2.05 Seed and Mulch

A. Permanent grass seed shall be scarified argentine bahia, in accordance with FDOT specification 981.

B. Temporary grass seed shall be annual rye grass in accordance with FDOT specification 981.

C. Mulch shall be dry mulch in accordance with FDOT specification 981.

PART 3 - EXECUTION

3.01 General

A. All grassing, whether temporary or permanent, will be inspected by the Owner or the Owner's representative at the time of installation or shortly thereafter to determine whether it is acceptable in accordance with these specifications. Any sod found to be unacceptable shall be removed and replaced with new sod within 48 hours (prior to root establishment) as directed by the Owner.

B. Grassed areas will be inspected by the Owner or the Owner's representative throughout the construction period, not just at project completion. Any established sod subsequently found to be unacceptable shall be removed and replaced with new sod within 7 calendar days as directed by the Owner.

3.02 Timing Requirements

A. Grass all disturbed areas, whether temporary or permanent grassing, within 7 days of initial disturbance.

B. Permanently grass disturbed areas after all required testing is complete.

3.03 Regrading of Topsoil

Topsoil shall be graded reasonably smooth and level after final settlement. All humps shall be removed and depressions or eroded areas filled in with additional topsoil before proceeding with seeding or sodding.

3.04 Preparation for Sodding or Seeding

A. Preparation shall not be started until all other site and utility work and finished grading within the areas to be seeded have been completed.

B. Loosen topsoil by tilling it to a depth of at least 3 inches and smooth out all surface resulting irregularities. Leave area free of rocks or hard soil clods that will not pass through the tines of a standard garden rake.

C. At least 7 days before applying fertilizer, spread lime uniformly in sufficient quantity to produce a soil pH of 6.5. Work lime thoroughly into topsoil to a depth of 3 inches.

D. Apply fertilizer uniformly at a rate of 20 pounds per 1000 square feet. Work fertilizer into soil prior to seeding or sodding.

E. The area over which sod is to be placed shall be scarified or loosened to a depth of 2 inches and then raked smooth and free of debris.

F. The area shall be graded as needed to ensure the new sod matches the existing sod grade.

3.05 Sodding

A. Sodding operations shall follow immediately behind operations for the preparation of the areas for sodding and shall generally take place on the same day.

B. Provide sod in areas indicated on the Drawings. Generally, all disturbed areas are to be sodded except for those areas specifically identified to be seeded and mulched or hydroseeded. Sodding shall also be used in ditches and drainage swales and on all embankment slopes steeper than 3 to 1 unless protection is provided against erosion of seeding.

C. Sod which has been cut for more than 72 hours prior to installation shall not be used unless specifically authorized by the Owner.

D. Place sod with the edges in close contact and alternate courses staggered. Lightly tamp or roll to eliminate air pockets. On slopes 2 to 1 or steeper, stake sod with not less than 4 stakes per square yard and with at least one stake for each piece of sod. Stakes shall be driven with the flat side parallel to the slope.

E. Do not place sod when the ground surface is frozen or when air temperature may exceed 90 degrees F. Sodding shall not be performed when weather and soil conditions are, in the Owner's opinion, unsuitable for proper results.

F. In ditches, the sod shall be placed with the longer dimension perpendicular to the flow of water in the ditch. On slopes, starting at the bottom of the slope, the sod shall be placed with the longer dimension parallel to the contours of the ground. In order to prevent vertical edges at the outer limits, the outer pieces of sod shall be tamped into place.

G. Any voids shall be sanded prior to watering and rolling.

H. Upon completion of the sodding, the entire area shall be rolled thoroughly with the equipment specified. The area shall be rolled, then watered, and then rolled a second time providing a total of two trips over the entire area that has been sodded.

3.06 Seeding and Mulching

A. Scatter seed uniformly over the grassing area while the soil is still loose and moist at the rate of 100 pounds per acre.

B. Seed of quick growing species of grass, such as rye, Italian rye, millet or other cereal grass, shall be spread in conjunction with the permanent type seed mixture. The type of quick-growth seed used shall be appropriate to provide an early ground cover during the particular season when planting is done. The rate of spread shall be 30 pounds per acre, unless otherwise specified.

C. Apply approximately 2 inches, loose thickness, of the mulch material uniformly over the seeded area, and cut into the soil so as to provide an early ground cover during the particular season when planting is done. The rate of spread shall be 30 pounds per acre, unless otherwise specified.

D. Roll thoroughly the entire seeded area immediately after completion of the seeding.

3.07 Hydroseeding

A. Hydroseeding shall result in an application of 7 pounds of seed per 1000 square feet.

B. Mulch material is not required in the areas to be hydroseeded.

C. The spraying equipment shall have a container or water tank equipped with a liquid level gauge calibrated to read in increments not larger than 50 gallons (190 liters) over the entire range of the tank capacity, mounted so as to be visible to the nozzle operator. The container or tank shall also be equipped with a mechanical power-driven agitator capable of keeping all the solids in the mixture in complete suspension at all times until used.

D. The unit shall also be equipped with a pressure pump capable of delivering 100 gallons (380 liters) per minute at a pressure of 100 pounds per square inch (690 kPa). The pump shall be mounted in a line that will re-circulate the mixture through the tank whenever it is not being sprayed from the nozzle. All pump passages and pipe lines shall be capable of providing clearance for 5/8-inch (15 mm) solids. The power unit for the pump and agitator shall have controls mounted so as to be accessible to the nozzle operator. There shall be an indicating pressure gauge connected and mounted immediately at the back of the nozzle.

E. The nozzle pipe shall be mounted on an elevated supporting stand in such a manner that it can be rotated through 360 degrees horizontally and inclined vertically from at least 20 degrees below to at least 60 degrees above the horizontal. There shall be a quick acting, three-way control valve connecting the recirculating line to the nozzle pipe and mounted so that the nozzle operator can control and regulate the amount of flow of mixture delivered to the nozzle. At least three different types of nozzles shall be supplied so that mixtures may be properly sprayed over distance varying from 20 to 100 feet (6 to 30 m). One shall be a close-range ribbon nozzle, one a medium range ribbon nozzle, and one a long range jet nozzle. For case of removal and cleaning, all nozzles shall be connected to the nozzle pipe by means of quick release couplings.

F. In order to reach areas inaccessible to the regular equipment, an extension hose at least 50 feet (15 m) in length shall be provided to which the nozzles may be connected.

G. Lime, if needed, shall be applied separately, in the quantity specified, prior to the fertilizing and seeding operations. Not more than 220 pounds (100 kg) of lime shall be added to and mixed with each 100 gallons (380 liters) of water. Seed and fertilizer shall be mixed together in the relative proportions specified, but not more than a total of 220 pounds (100 kg) of these combined solids shall be added to and mixed with each 100 gallons (380 liters) of water.

H. All water used shall be obtained from fresh water sources and shall be free from injurious chemicals and other toxic substances harmful to plant life. Brackish water shall not be used at any time. The Contractor shall identify to the Owner all sources of water at least 2 weeks prior to use. The Owner may take samples of the water at the source or from the tank at any time and have a laboratory test the samples for chemical and saline content. The Contractor shall not use any water from any source that is disapproved by the Owner following such tests.

I. All mixtures shall be constantly agitated from the time they are mixed until they are finally applied to the seedbed. All such mixtures shall be used within 2 hours from the time they were mixed or they shall be wasted and disposed of at locations acceptable to the Owner.

J. Lime, if needed, shall be sprayed only upon previously prepared seedbeds. After the applied lime mixture has dried, the lime shall be worked into the top 3 inches (8 cm), after which the seedbed shall again be properly graded and dressed to a smooth finish.

K. Mixtures of seed and fertilizer shall only be sprayed upon previously prepared seedbeds on which the lime, if required, shall already have been worked in. The mixtures shall be applied by means of a high-pressure spray that shall always be directed upward into the air so that the mixtures will fall to the ground like rain in a uniform spray. Nozzles or sprays shall never be directed toward the ground in such a manner as might produce erosion or runoff.

L. Particular care shall be exercised to ensure that the application is made uniformly and at the prescribed rate and to guard against misses and overlapped areas. Checks on the rate and uniformity of application may be made by observing the degree of wetting of the ground or by distributing test sheets of paper or pans over the area at intervals and observing the quantity of material deposited thereon.

M. After the soil has dried, rake and roll the seeded areas.

3.08 Watering

Immediately after placing erosion control or mulch, water seeded areas thoroughly with a fine mist spray. Keep soil thoroughly moist until seeds have sprouted and achieved a growth of 1 inch. For sod, immediately begin watering and continually keep moist until the sod has firmly knit itself to the topsoil.

3.09 Protection of Work

Protect newly seeded and sodded areas from all traffic by erecting temporary fences and signs. Protect slopes from erosion. Properly and promptly repair all damaged work when required.

3.10 Application of Fertilizer

Six weeks after completion of seeding or sodding apply granular fertilizer over all areas at the rate of two pounds of nitrogen nutrients per 1000 square feet of area.

3.11 Turf Establishment

A. Any sod that is more than 10% brown and has not become green within 14 calendar days of installation shall be re-sodded as directed by the Owner.

B. Any sod that does not have root establishment (can be pulled up by hand) 14 calendar days or more after installation shall be re-sodded as directed by the Owner.

C. All bare spots larger than 1 square foot shall be re-grassed as directed by the Owner.

D. Any bare areas compromising more than 1% of any given 1000 square foot area shall be re-grassed as directed by the Owner.

E. For the re-grassing, areas that were sodded are to be re-sodded and areas that were seeded are to be re-seeded.

F. Scattered bare spots, none of which is larger than one square foot, will be allowed up to a maximum of 3% of the total area.

G. Except for factors caused by a third party (other than the Contractor, subcontractor or supplier for the project), all re-grassing or repair of washed out and eroded areas shall be at no additional cost to the Owner.

H. Grassed areas not showing a close uniform stand of healthy specified grasses at the time of substantial completion shall be replaced and maintained until final payment is made to the Contractor.

3.12 Clean-Up

At the time of final inspection of work, but before final acceptance, remove from seeded and sodded areas all debris, rubbish, excess materials, tools, and equipment.

END OF SECTION

SECTION 03100

CONCRETE FORMS

PART 1 GENERAL

1.01 Section Includes General Requirements for:

General formwork, forms, form liners and coatings, and form ties

1.02 Related Sections

A. Section 03150 - Concrete Accessories

1.03 References

A. American Concrete Institute (ACI) latest edition:

1. ACI 301 - Structural Concrete for Buildings
2. ACI 318 - Building Code Requirements for Reinforced Concrete
3. ACI 347 - Guide to Formwork for Concrete
4. ACI SP-4 - Formwork for Concrete

1.04 System Description

A. Provide formwork to produce members of the size, shape, and exterior finish required, for the structural adequacy of the forms to carry construction loads without excessive deflection, and for the safe use of forms in connection with completion of the concrete work. The Contractor shall be responsible for any injury or damage arising from inadequate forms or from premature removal of formwork.

1.05 Submittals

A. Submit samples of patterned concrete form liner panels and form ties.

B. Submit formwork shop drawings prepared by a licensed professional ENGINEER in the State of Florida to the A/E for record purposes only. Shop drawings shall indicate layout, materials and formwork capacities.

PART 2 PRODUCTS

2.01 Formwork

A. Form ties shall be a watersealing snap-in type. For patterned concrete, use stainless steel snap ties.

B. Plywood forms and liners shall be minimum grade B-B High Density Overlay Concrete Form Panels, Class I.

C. Formwork lumber shall be straight and clean. All nails shall be withdrawn and surfaces in contact with concrete shall be thoroughly cleaned before reuse

D. Metal forms shall be in accordance with ACI SP-4.

2.02 Patterned Concrete Form Liners

A. Special liners shall be configured in such a manner as to produce patterned finish concrete that will duplicate the surface appearance of the cut limestone building panels. The location, extent, and configuration of the surface treatment shall be as indicated on the Drawings. In addition to form release agents, rustication may be slightly beveled, approximately 1 to 8 maximum, to facilitate form release.

B. Produce the patterned concrete with a smooth finish by using either plywood and/or tempered hardboard, complying with requirements for Grade A Forms, in conjunction with finished lumber, or approved fiberglass liners; or an approved equal liner. Liner joint marks shall not be apparent.

PART 3 EXECUTION

3.01 General

A. Coordinate with other trades and properly place and locate in position all necessary dowels, bolts, anchors, anchor slots, inserts, sleeves, openings, hangers, metal ties and other fastening devices required for attachment and support of adjacent work. Securely anchor all embedded items.

B. Formwork shall comply with ACI 347 and to shape, lines and dimensions of the members as indicated on the Drawings. Joints in forms shall be horizontal or vertical. Forms shall be properly braced or tied to maintain position and shape under all dead and live loads and to prevent leakage. Forms shall be assembled so their removal will not damage the concrete. Tolerances for formed surfaces shall be in compliance with ACI 301.

C. Lumber formwork may be used for surfaces which will not be exposed to view. Use plywood or metal forms for exposed surfaces.

D. Provide temporary openings at the base of forms greater than 4 feet high, if necessary, to facilitate cleaning and inspection immediately before depositing concrete.

E. All external corners of concrete exposed to view shall be chamfered by using 3/4 inch by 3/4 inch by 45 degree wood stripping, except as otherwise indicated on the Drawings.

3.02 Grade A Forms

A. Unless otherwise indicated, Grade A forms shall be used for all exposed concrete.

B. Grade A forms shall consist of steel forms lined with 3/16 inch thick tempered hardboard or 1/4 inch thick plywood, or by using plywood forms.

C. Full sized sheets shall be used wherever possible. The edges of all sheets shall be straightened to insure tight, close fitting joints. Bulges or depressions more than 1/8 inch in 4 feet will not be permitted. Open joints which would permit leakage shall be sufficient cause for rejection of forms. Other tolerances shall be as allowed by ACI 347.

3.03 Grade B Forms

A. Use lumber, plywood or metal forms. All joints shall be solidly backed, aligned and made leakproof.

B. Unless otherwise indicated, Grade B Forms are intended for use where concrete will not be exposed to view, such as below grade, below normal liquid levels in water-retaining structures, or inside manholes, boxes, vaults, etc.

3.04 Surface Treatment of Formwork

A. The inside surface of lumber forms shall be soaked with clean water prior to placing concrete. All other forms shall be treated with an approved form oil or lacquer. If oil is used, all excess oil shall be wiped off.

3.05 Inspection of Formwork

A. Concrete shall not be placed until the forms have been inspected by the E/A to assure surfaces in conformance with the Drawings and Specifications. The inspection of formwork by the E/A does not relate to the structural adequacy or the safety of the formwork.

3.06 Removal of Forms

A. Forms shall be removed in accordance with requirements of ACI 318, without damaging the concrete. Leave shoring in place until concrete will safely support its own weight plus any live loads that may be placed upon it.

END OF SECTION

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SECTION 03150

CONCRETE ACCESSORIES

PART 1 GENERAL

1.01 Section Includes General Requirements for:

Construction joints, waterstops

1.02 Related Sections

A. Section 03100 - Concrete Forms

B. Section 07900 - Joint Sealants

1.03 American Iron and Steel Requirements

A. All of the iron and steel products used on this project are to be produced in the United States, subject to the American Iron and Steel.

B. The term "iron and steel products" means the following products made primarily of iron or steel: lined or unlined pipes and fittings, manhole covers and other municipal castings, hydrants, tanks, flanges, pipe clamps and restraints, valves, structural steel, reinforced precast concrete, and construction materials.

1.04 References

A. American Society for Testing and Materials (ASTM) latest edition:

1. ASTM D1751 - Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types)

2. ASTM D1752 - Preformed Sponge Rubber and Cork Expansion Joint Fillers for Concrete Paving and Structural Construction

1.05 Submittals

A. Provide samples and certifications of all proposed materials.

B. Certification from the manufacturer that its proposed iron and steel products are produced in the United States and are in compliance with the requirements in H.R. 3547, “Consolidated Appropriations Act, 2014,” (Appropriations Act).

PART 2 PRODUCTS

2.01 Joint Fillers

A. Joint fillers shall be products of the following manufacturers, or equal

1. W. R. Meadows, Inc., Elgin, Illinois
2. W. R. Grace and Co., Cambridge, Massachusetts

B. Preformed sponge rubber joint filler shall conform to ASTM D1752, Type I.

C. Preformed cork joint filler shall conform to ASTM D1752, Type II.

D. Preformed bituminous fiber joint filler shall be non_extruding type conforming to ASTM D1751.

E. Control joint strips shall have a minimum depth of 25 percent of slab thickness and a minimum thickness of 1/8 inch.

2.02 Joint Sealants

A. Sealants for joints shall be in accordance with Section 07900.

2.03 Waterstop

A. Waterstop shall be either rubber (SBR or Neoprene) or PVC and shall be dense, homogeneous and uniform. PVC is preferred. Holes and imperfections shall be cause for rejection.

B. Waterstops for construction joints shall be 4 inch by 3/16 inch minimum split waterstop or 6 inch by 3/8 inch minimum with hollow center bulb. Waterstops for expansion joints shall be 9 inch by 3/8 inch with 3/4 inch hollow center bulb. Multiple rib type of waterstop is preferred, if available. Where size and type of waterstop are not indicated, 6 inch by 3/8 inch minimum with hollow center bulb shall be used.

C. Provide prefabricated tees, crosses, and other configurations as required for all intersections of waterstop.

PART 3 EXECUTION

3.01 Preparation

A. Remove existing concrete and provide openings for installation of new work as indicated on Drawings. Repair all damage to existing work caused by concrete removal.

3.02 General

A. Arrange construction joint bulkheads to allow concrete to be placed between construction joints in one continuous operation.

B. Provide construction joints with shear transfer keyways and waterstops as indicated. Unless otherwise indicated on the Drawings, spacing of construction joints for walls shall not exceed 75 feet.

C. Erect bulkheads where shown on the Drawings or where approved by the E/A. Bulkheads shall be at right angles to the main reinforcement and shall produce a tongue and grooved joint of the configuration indicated on the Drawings. Install waterstop as indicated.

D. Obtain the E/A's approval if it becomes necessary to eliminate or relocate construction joints shown on the Drawings.

E. Tops of edge forms, bulkheads and screeds shall be set to the finished elevations and to provide uniform pitch to drains as indicated on Drawings.

3.03 Horizontal Joints

A. Provide methods of achieving a leakproof joint. No horizontal construction joints will be permitted in slabs, beams, or girders.

3.04 Vertical Joints

A. Joints in reinforced slabs, beams, and girders shall be perpendicular to the axis or plane of the members joined.

3.05 Expansion Joints

A. Provide expansion joints and waterstops where indicated. Joint fillers shall be placed on each side of waterstops.

B. Unless otherwise indicated, provide preformed sponge rubber or preformed cork filler. Allow for installation of two component traffic grade polyurethane sealant in compliance with Section 07900.

C. For drives, pavements, parking areas, walks and slabs on grade, provide preformed non-extruding asphalt strip or bituminous fiber joint filler set 1/8_inch below finished surface unless otherwise indicated. Tool concrete edges on each side of joint. No sealant is required.

D. Unless otherwise indicated, provide preformed sponge rubber or cork filler with allowance for installation of two-component polysulfide sealant in compliance with Section 07900.

3.06 Waterstops

A. Provide continuous waterstops where so indicated on the Drawings.

B. Embed approximately half of the waterstop on each side of the joint. Field splice and joint PVC waterstop by heat sealing butt joints. Rubber waterstop shall be spliced or jointed with solid web rubber unions and the manufacturer's approved cold applied cement.

C. All splices and joints shall be in accordance with the manufacturer's recommendations to produce a water-tight joint. Lap splices will not be permitted. Support and protect the waterstop during construction. Repair or replace all damaged waterstop.

END OF SECTION

SECTION 03300

CAST-IN-PLACE CONCRETE

PART 1 GENERAL

1.01 Section Includes General Requirements for:

Formwork, reinforcement, accessories, and cast-in-place concrete.

1.02 References

A. American Concrete Institute (ACI) latest edition:

1. ACI 301 - Structural Concrete for Buildings
2. ACI 305 - Hot Weather Concreting
3. ACI 306 - Cold Weather Concreting
4. ACI 315 - Detailing Manual
5. ACI 318 - Building Code Requirements for Structural Concrete
6. ACI 347 - Formwork for Concrete

B. American Association of State Highway and Transportation Officials (AASHTO) latest edition:

1. AASHTO T152 - Air Content of Freshly Mixed Concrete by the Pressure Method

C. American Society for Testing and Materials (ASTM) latest edition:

1. ASTM A185 - Steel Welded Wire Reinforcement, Plain, for Concrete
2. ASTM A615 - Deformed and Plain Billet-Steel Bars for Concrete Reinforcement
3. ASTM C31 - Making and Curing Concrete Test Specimens in the Field
4. ASTM C33 - Concrete Aggregates
5. ASTM C39 - Test Method for Compressive Strength of Cylindrical Concrete Specimens
6. ASTM C94 - Ready-Mixed Concrete
7. ASTM C138 - Test Method for Density (Unit Weight), Yield, and Air Content (Gravimetric) of Concrete
8. ASTM C143 - Test Method for Slump of Hydraulic Cement Concrete
9. ASTM C150 - Portland Cement
10. ASTM C173 - Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method
11. ASTM C231 - Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method
12. ASTM C260 - Air-Entraining Admixtures for Concrete
13. ASTM C309 - Liquid Membrane-Forming Compounds for Curing Concrete

14. ASTM D1751 - Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Bituminous Types)

1.03 Submittals

A. Submit reinforcement steel shop drawings prepared in accordance with ACI 315, Manual of Standard Practice for Detailing Reinforced Concrete Structures. Drawings shall indicate bending diagrams, shapes, dimensions, clearances, splicing and laps, accessories, and installation notes.

B. Submit manufacturer's literature for all admixtures proposed for the work.

C. Submit delivery tickets in accordance with ASTM C94 for each batch of ready-mixed concrete. Information on the ticket shall include class of concrete, water content, time of loading, truck number, admixtures, and quantity.

D. At least 35 days prior to placing of concrete, the Contractor shall submit proposed mix proportions and samples of proposed materials.

1.04 Quality Control

A. Materials and methods of mixing and placing concrete shall conform to ACI 318, Building Code Requirements for Reinforced Concrete.

B. Tests for slump shall be made when directed by the Engineer in accordance with ASTM C143.

C. Air content tests shall be made, when directed by the Engineer, in accordance with ASTM C138, C173, C231, or AASHTO T-152.

PART 2 PRODUCTS

2.01 Formwork

A. Formwork lumber shall be straight and clean. All nails shall be withdrawn and surfaces in contact with concrete shall be thoroughly cleaned before reuse.

2.02 Reinforcement

A. Reinforcement bars shall be ASTM A615, Grade 60 deformed bars, except as otherwise indicated.

B. Welded wire fabric shall conform to ASTM A185. Where welded wire fabric is shown but not sized on Drawings, use 6" x 6" x W2.9 x W2.9 WWF.

C. Accessories for proper installation of reinforcement shall conform to CRSI "Manual of Standard Practice for Reinforced Concrete Construction". Bar supports at exposed surfaces shall be Class C-Plastic Protected.

D. Reinforcement fabrication shall conform to ACI 315 and ACI 318, and approved shop drawings.

E. Where the Drawings require Fibermesh concrete, the reinforcement shall be polypropylene fibers engineered and designed for secondary reinforcement of concrete slabs, complying with ASTM C 1116 Type III, as manufactured by Fibermesh Co., or approved equal.

2.03 Joint Fillers

A. Joint fillers shall be products of the following manufacturers, or equal:

1. W. R. Meadows, Inc., Elgin, Illinois
2. W. R. Grace and Co., Cambridge, Massachusetts.

B. Preformed bituminous fiber joint filler shall be non-extruding type conforming to ASTM D1751.

C. Control joint strips shall have a minimum depth of 25 percent of slab thickness and a minimum thickness of 1/8 inch.

2.04 Concrete Materials

A. Water shall be clean and potable

B. Portland cement shall be ASTM C150 Type I, II or III.

C. Fine and coarse aggregate shall be clean, hard, natural, or manufactured material conforming to ASTM C33.

D. The nominal maximum size of the aggregate shall not be larger than three-fourths of the minimum clear spacing between individual reinforcing bars. Coordinate with maximum aggregate sizes specified hereafter for classes of concrete.

E. Admixtures shall conform to ASTM C260 (air entrainment) or C494 (water reduction) and shall be products of one of the following manufacturers, or equal.

1. Dewey and Almy Chemical Div., W. R. Grace and Co.
2. Euclid Chemical Co.
3. Master Builders Co.
4. Sika Chemical Corp.

2.05 Miscellaneous Materials

A. Vapor barrier shall be polyethylene film 0.006 inches thick and shall conform to Product Standard PS-17.

B. Liquid membrane curing compound shall conform to ASTM C309, Type 1 or Type 2. Type 2 compound shall be used for P.C.C. pavement only. All permanently exposed exterior slabs shall receive clear acrylic curing and sealing compound. Moisture loss shall not be more than 0.055 gr./sq. cm when applied to 200 sq. ft./gal.

C. Liquid membrane curing compound shall be products of one of the following manufacturers, or equal:

1. W.R. Meadows "Curettard"
2. Sonneborn-Contech "Sonsil"
3. Burke Co. "Res-Xnu"
4. Lambert Corp. "Gardseal"

D. Chemical hardener shall be colorless aqueous solution containing a blend of magnesium fluosilicate and zinc fluosilicate combined with a wetting agent, conforming to Federal Specifications TT-C-800A and Corps of Engineers Specification CE 204.

E. Chemical hardener shall be products of one of the following manufacturers, or equal:

1. Euclid Chemical Co. "Surfhard"
2. Sonneborn-Contech "Lapidolith"
3. Master Builders "Saniseal"
4. Lambert Corp. "Solidus"

2.06 Concrete Mixtures

A. Concrete not indicated otherwise shall be Class A concrete.

B. The proportions of cement, aggregate, and water shall be selected by the Contractor in accordance with ACI 318 to provide a plastic and workable mix. Coarse aggregate shall be limited to prevent harshness and honeycombing. Coarse aggregate size shall not be greater than the maximum listed for the various classes of concrete and as previously specified under aggregate.

C. Class A structural concrete shall have a 28 day strength of 4000 psi, shall contain not less than 540 pounds (5-3/4 bags) of cement per cubic yard of concrete, shall have a water-cement ratio of not more than 0.47 (5-1/4 gallons per bag of cement), and shall contain 4 percent to 6 percent entrained air, by volume, except interior slabs subject to abrasion shall not contain more than 3 percent entrained air. In addition, Class A concrete shall contain a water-reducing, densifying admixture and have a maximum slump of 4 inches. The maximum aggregate size for slabs shall be 1 inch.

D. Class B lean concrete shall have a 28 day strength of 3000 psi, it shall contain not less than 420 pounds (4-1/2 bags) of cement per cubic yard of concrete, shall have a water-cement ratio of not more than 0.71 (8 gallons per bag of cement), and shall have a 5 inch maximum slump. The maximum aggregate size shall be 2 inches.

E. Water-reducing densifying admixture added to Class A concrete shall reduce the water-cement ratio while maintaining slump and compressive strength. Use as manufacturer recommends.

F. Other admixtures may be proposed by the Contractor or requested by the Engineer and shall be provided at no additional cost to the Owner. Subject to approval, admixtures may be used for the following:

1. To increase slump up to 50 percent while maintaining compressive strength and water-cement ratio.
2. To retard set during hot weather

G. Calcium chloride, admixtures containing calcium chloride, or admixtures not approved, in writing by the Engineer, are prohibited.

PART 3 EXECUTION

3.01 General

A. Comply with ACI 305 or 306 for hot or cold weather concreting.

B. Do not mix salt, chemicals, or other foreign materials with the concrete to prevent freezing without approval of the Engineer. Maintain the temperature of concrete above 50 degrees F for 5 days after placement. When high early strength Portland cement concrete is used, the temperature shall not be less than 70 degrees F for 2 days or 50 degrees F for 3 days.

C. In no case shall the temperature of concrete exceed 90 degrees F at the time of placement.

3.02 Preparation

A. Remove existing concrete and provide openings for installation of new work as indicated on Drawings. Repair all damage to existing work caused by concrete removal.

B. Coordinate with other trades and properly place and locate in position all necessary dowels, bolts, anchors, anchor slots, inserts, sleeves, openings, hangers, metal ties and other fastening devices required for attachment and support of adjacent work. Securely anchor all embedded items.

C. The subgrade and/or bedding shall be compacted and free of frost. If placement is allowed at temperatures below freezing, provide temporary heat and protection as required to remove all frost. Saturate the subgrade approximately 8 hours before placement and sprinkle ahead of the placement of concrete in areas where vapor barrier is not used. Remove all standing water, ice, mud, and foreign matter before concrete is deposited.

D. On porous subgrade or beddings, or where indicated on the Drawings, provide vapor barrier. Lay vapor barrier sheets with 6 inch edge laps and tape or seal with mastic. Stretch and weight edges and laps to maintain their positions until concrete is placed. Coordinate with placement of reinforcement.

3.03 Formwork Requirements

A. Formwork shall comply with ACI 347 and to shape, lines and dimensions as indicated on the Drawings. Forms shall be properly braced or tied to maintain position and shape under all dead and live loads and to prevent leakage. Forms shall be assembled so their removal will not damage the concrete. Tolerances for formed surfaces shall be in compliance with ACI 301.

B. Lumber formwork may be used for surfaces which will not be exposed to view. Use plywood or metal forms for exposed surfaces.

C. The inside surface of lumber forms shall be soaked with clean water prior to placing concrete. All other forms shall be treated with an approved form oil or lacquer. If oil is used, all excess oil shall be wiped off.

3.04 Reinforcement

A. The placement of reinforcing steel shall conform to "Placing Reinforcing Bars", as published by the Concrete Reinforcing Steel Institute except as noted.

B. Provide continuous reinforcement or dowels through construction joints. One half of reinforcement shall be discontinued across control joints unless otherwise indicated. All reinforcement shall be discontinued across expansion joints.

C. Splice laps shall be as indicated on the Drawings.

D. Fabric reinforcement for slabs shall be overlapped at splices not less than the spacing of the cross wires plus 2 inches. Fabric shall extend to within 4 inches of concrete edges.

E. Unless otherwise shown, place reinforcement 2 to 3 inches below the top of the finished slab. Mesh shall either be sandwiched between two layers of fresh concrete or supported on mesh supports. Supports that may puncture the vapor barrier, if any, shall not be used.

F. Where reinforcing is fibermesh, incorporate polypropylene fibers fully into the concrete prior to placement.

3.05 Joints

A. Provide construction joints with shear transfer keyways as indicated.

B. Tops of edge forms and screeds shall be set to the finished elevations and to provide uniform pitch to drains as indicated on Drawings.

C. For drives, pavements, parking areas, walks and slabs on grade, provide preformed non-extruding asphalt strip or bituminous fiber joint filler set 1/8 inch below finished surface unless otherwise indicated. Tool concrete edges on each side of joint. No sealant is required.

3.06 Batching

A. Materials for concrete shall be proportioned and batched according to the approved design mix.

B. Water shall be measured to within 1 pint of the total amount required per batch. Admixtures shall be measured by weight or volume to an accuracy of 3 percent.

3.07 Mixing and Transporting Concrete

A. Concrete shall be ready-mixed or job-mixed at the Contractor's option. Ready-mixed concrete shall be mixed and delivered to the project in accordance with ASTM C94. Job-mixed concrete shall be in accordance with the requirements of ACI 318.

B. Concrete shall be in its final position within one hour after the water and aggregate have been added to the cement, except in cool weather (50 degrees F or less).

C. Concrete shall be transported from the mixer to place of final deposit in such manner to prevent separation or loss of ingredients.

3.08 General Concrete Placement Schedule

A. All structural concrete shall be Class A Concrete.

B. Sidewalks, curbing, and driveways shall be Class B Concrete.

3.09 Depositing Concrete

A. Concrete shall be placed in accordance with the requirements of ACI 318 and within 10 feet of its final position. Place concrete only during normal working hours unless the Engineer is notified at least 24 hours in advance. Concrete shall not be placed until the Engineer has approved the formwork, reinforcement, and embedded items and debris has been removed.

B. Whenever new concrete is to be placed against existing surfaces, roughen and clean the surface to improve bond.

C. Provide runways and chutes to discharge concrete close to final position to minimize spreading and segregation.

D. Place slabs-on-grade using formed construction joints. Maximum size of pour shall be 40 feet each way for slabs with wire mesh reinforcement and 75 feet each way for slabs with bar reinforcement. Allow 24 hours between pours of adjacent slabs. Provide joints as specified or shown. Set continuous joint strips between slabs and abutting vertical surfaces as indicated on the Drawings.

3.10 Finishing Slabs and Flatwork

A. Unless otherwise indicated, provide the following slab finishes:

Description	Concrete Finish
Class B concrete surfaces	Float
Submerged slabs	1 Troweling
Exposed slabs	3 Trowelings
Ramps and walks	Float and broom finish

B. Concrete shall be within ¼ inch of a 10 foot straightedge in all directions except where slabs are dished for drains. Deviations from the elevation indicated shall not exceed ¼ inch.

C. Slabs sloped for drainage shall not have depressions that retain water.

D. Immediately after placement, screed concrete with straightedges or power strikeoffs. Do not use roller screeds or vibrating screeds.

E. Stakes for wet screeds shall be driven down flush with subgrade or pulled out as work progresses to avoid disturbing screeded concrete.

F. For drains in level slabs, form a 5 foot diameter depression approximately ½ inch below the adjacent slab surface.

G. Unless otherwise indicated on the Drawings, slabs sloped for drainage shall be uniformly pitched toward the drains at 1/8 inch per foot. Form a dished depression at drains unless otherwise indicated.

H. Immediately after screeding, darby surface with wood or magnesium darby to eliminate ridges and to fill in voids left by screeding.

3.11 Float Finish

A. Float concrete using magnesium or aluminum hand floats or power floats after the concrete has stiffened to a point where only a ¼ inch indentation can be imparted by normal foot pressure.

B. Float finish shall result in a uniform, smooth, granular texture. After floating, check slab tolerances with 10-foot straightedge. Fill low spots with fresh concrete; do not sprinkle with dry cement.

3.12 Trowel Finish

A. Where scheduled, or indicated, trowel with steel trowels after floating.

B. Initial troweling shall be done either by power or by hand with the trowel blade kept as flat as possible against concrete surface to prevent washboard or chatter effect.

C. Second troweling may be done by power if three trowelings are scheduled. If two trowelings are specified, second troweling shall be done by hand.

D. Third troweling shall be done by hand and shall continue until the concrete is consolidated to a uniform, smooth, dense surface free of trowel marks and irregularities.

E. Allow sufficient time between successive trowelings to allow the concrete to become harder. Each successive troweling shall be done with trowels that are progressively smaller and are tipped more to increase compaction of the concrete surface.

3.13 Brooming

A. Broom at right angles to direction of traffic to give a non-skid finish. Use a fine, soft-bristled broom for pedestrian ramps and walks, and a coarse, hard-bristled broom for vehicular pavement.

3.14 Control Joints

A. Control joints for non-structural slabs shall consist of partial depth plastic strips set flush with finished surface or 1/8 inch wide joints cut with a diamond saw. Control joints shall be one- quarter to one-third the depth of the slab unless otherwise indicated.

B. Saw joints as soon as concrete has hardened sufficiently so aggregate will not be dislodged but before shrinkage stresses develop cracks. Sawn joints shall be filled with approved joint sealant.

C. Unless otherwise indicated on the Drawings, spacing of control joints shall not exceed 25 feet in each direction.

3.15 Protection and Curing

A. Comply with ACI 305 and 306 for protecting and curing concrete in hot and cold weather. Fresh concrete shall be protected from rain, premature drying and excessively hot or cold temperatures, and shall be maintained with minimal moisture loss for the period of time necessary for the hydration of the cement and proper hardening of the concrete. Cure all concrete for a minimum period of 7 days (3 days for high early strength concrete) after placing.

B. Immediately after finishing, begin curing by covering with constantly saturated moisture retaining fabrics, impervious sheeting, or membrane curing compounds. Surfaces shall be thoroughly wetted with a fine spray before they are covered with sheeting.

C. Sheeting shall provide complete surface coverage with all joints lapped at least 4 inches and shall be placed and secured in a manner that will not mar or damage the concrete surface.

D. Apply membrane-curing compound in accordance with manufacturer's recommendations. Apply by spraying in a two coat continuous operation. Apply the coats at right angles to each other with a coverage of 200 square feet per gallon per coat. Begin application not later than 4 hours after finishing of the surface. The application shall result in an uninterrupted adherent film free of defects.

E. On surfaces scheduled to receive sealants, paint, seamless flooring, or other adhesive bonded finishes, either the membrane curing compound shall be compatible with the bonding agent or the curing compound shall be removed with sandblasting, acid etching or grinding, to the satisfaction of the installer of the finish surfacing. Bonded surfaces that fail to adhere to the concrete shall be removed and replaced at no additional cost to the Owner.

F. Apply hardener to floors of mechanical and electrical rooms and in other areas as required. Application shall be in strict accordance with the manufacturer's recommendations and as follows:

1. Hardener shall be applied at original container consistency without dilution to dry, clean surfaces no sooner than 30 days following completion of curing. NOTE: Hardener shall not be applied over surfaces covered with membrane curing agent.
2. Application shall generally be a three-coat process adjusted to accommodate extreme concrete densities only if prior review has been obtained from the Engineer. Application coverage shall be made at the approximate rate of one gallon to 100 square feet.
3. Apply first and second coats generously to surface, mop or squeegee standing water to leave a uniformly wet surface, allow to dry. Apply third coat in a manner similar to first two, except that surplus must be scrubbed with stiff bristled broom and flushed from floor surface with clear water. Scrubbing and flushing shall remove all traces of effervescence. Remove excess water and allow to dry.

3.16 Defective Concrete

A. All concrete not formed as indicated on the Drawings within tolerances specified in ACI 347 shall be removed and replaced.

B. Temperature and shrinkage cracks which develop prior to final acceptance of the work shall be repaired.

3.17 Miscellaneous Concrete Work

A. Provide concrete equipment pads and supports as indicated and conforming to approved shop drawings. Fastening devices and accessories shall be located by templates or setting diagrams furnished by the manufacturer.

3.18 Clean-Up

A. All concrete floor construction shall have the surfaces thoroughly scrubbed and cleaned with clear water. After cleaning, the floors shall be protected until they are accepted.

B. Clean all surfaces affected by the Concrete Work. No extraneous concrete or discoloration shall be left on any construction.

3.19 Concrete Testing

A. Compressive Strength Tests: Conform to ASTM C31 and ASTM C39. One set of four cylinders for each 50 cubic yards or fraction thereof, of each strength concrete placed in any one day. Test one specimens at seven days; test two specimens at 28 days. One specimen shall be retained for 56 days and tested only at the direction of the Engineer.

B. Slump Tests: Conform to ASTM C143. Perform one test for each load point of discharge and one for each set of compressive strength test specimens.

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SECTION 04220
CONCRETE UNIT MASONRY

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Concrete masonry units.
2. Mortar and grout.
3. Steel reinforcing bars.
4. Masonry-joint reinforcement.
5. Embedded flashing.
6. Miscellaneous masonry accessories.
7. Masonry-cell fill.

1.2 DEFINITIONS

A. CMU(s): Concrete masonry unit(s).

B. Reinforced Masonry: Masonry containing reinforcing steel in grouted cells.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: For the following:

1. Masonry Units: Show sizes, profiles, coursing, and locations of special shapes.
2. Reinforcing Steel: Detail bending, lap lengths, and placement of unit masonry reinforcing bars. Comply with ACI 315. Show elevations of reinforced walls.
3. Fabricated Flashing: Detail corner units, end-dam units, and other special applications.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For testing agency.

B. Material Certificates: For each type and size of the following:

1. Masonry units.

    a. Include data on material properties.
    b. For masonry units used in structural masonry, include data and calculations establishing average net-area compressive strength of units.

2. Cementitious materials. Include name of manufacturer, brand name, and type.
3. Mortar admixtures.
4. Preblended, dry mortar mixes. Include description of type and proportions of ingredients.
5. Grout mixes. Include description of type and proportions of ingredients.
6. Reinforcing bars.
7. Joint reinforcement.

C. Mix Designs: For each type of mortar. Include description of type and proportions of ingredients.

1. Include test reports for mortar mixes required to comply with property specification. Test in accordance with ASTM C109/C109M for compressive strength, ASTM C1506 for water retention, and ASTM C91/C91M for air content.
2. Include test reports, in accordance with ASTM C1019, for grout mixes required to comply with compressive strength requirement.

D. Statement of Compressive Strength of Masonry: For each combination of masonry unit type and mortar type, provide statement of average net-area compressive strength of masonry units, mortar type, and resulting net-area compressive strength of masonry determined in accordance with TMS 602/ACI 530.1/ASCE 6.

E. Cold-Weather and Hot-Weather Procedures: Detailed description of methods, materials, and equipment to be used to comply with requirements.

1.6 QUALITY ASSURANCE

A. Testing Agency Qualifications: Qualified in accordance with ASTM C1093 for testing indicated.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Store masonry units on elevated platforms in a dry location. If units are not stored in an enclosed location, cover tops and sides of stacks with waterproof sheeting, securely tied. If units become wet, do not install until they are dry.

B. Store cementitious materials on elevated platforms, under cover, and in a dry location. Do not use cementitious materials that have become damp.

C. Store aggregates where grading and other required characteristics can be maintained and contamination avoided.

D. Deliver preblended, dry mortar mix in moisture-resistant containers. Store preblended, dry mortar mix in delivery containers on elevated platforms in a dry location or in covered weatherproof dispensing silos.

E. Store masonry accessories, including metal items, to prevent corrosion and accumulation of dirt and oil.

1.8 FIELD CONDITIONS

A. Protection of Masonry: During construction, cover tops of walls, projections, and sills with waterproof sheeting at end of each day's work. Cover partially completed masonry when construction is not in progress.

1. Extend cover a minimum of 24 inches down both sides of walls, and hold cover securely in place.

B. Do not apply uniform floor or roof loads for at least 12 hours and concentrated loads for at least three days after building masonry walls or columns.

C. Stain Prevention: Prevent grout, mortar, and soil from staining the face of masonry to be left exposed or painted. Immediately remove grout, mortar, and soil that come in contact with such masonry.

1. Protect base of walls from rain-splashed mud and from mortar splatter by spreading coverings on ground and over wall surface.
2. Protect surfaces of window and door frames, as well as similar products with painted and integral finishes, from mortar droppings.
3. Turn scaffold boards near the wall on edge at the end of each day to prevent rain from splashing mortar and dirt onto completed masonry.

D. Cold-Weather Requirements: Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen substrates. Remove and replace unit masonry damaged by frost or by freezing conditions. Comply with cold-weather construction requirements contained in TMS 602/ACI 530.1/ASCE 6.

1. Cold-Weather Cleaning: Use liquid cleaning methods only when air temperature is 40 deg F and higher and will remain so until masonry has dried, but not less than seven days after completing cleaning.

E. Hot-Weather Requirements: Comply with hot-weather construction requirements contained in TMS 602/ACI 530.1/ASCE 6.

PART 2 - PRODUCTS

2.1 SOURCE LIMITATIONS

A. Source Limitations for Masonry Units: Obtain exposed masonry units of a uniform texture and color, or a uniform blend within the ranges accepted for these characteristics, from single source from single manufacturer for each product required.

B. Source Limitations for Mortar Materials: Obtain mortar ingredients of a uniform quality, including color for exposed masonry, from single manufacturer for each cementitious component and from single source or producer for each aggregate.

2.2 PERFORMANCE REQUIREMENTS

A. Provide structural unit masonry that develops indicated net-area compressive strengths at 28 days.

1. Determine net-area compressive strength of masonry from average net-area compressive strengths of masonry units and mortar types (unit-strength method) in accordance with TMS 602/ACI 530.1/ASCE 6.
2. Determine net-area compressive strength of masonry by testing masonry prisms in accordance with ASTM C1314.

2.3 UNIT MASONRY, GENERAL

A. Masonry Standard: Comply with TMS 602/ACI 530.1/ASCE 6 except as modified by requirements in the Contract Documents.

B. Defective Units: Referenced masonry unit standards may allow a certain percentage of units to contain chips, cracks, or other defects exceeding limits stated. Do not use units where such defects are exposed in the completed Work.

C. Fire-Resistance Ratings: Comply with requirements for fire-resistance-rated assembly designs indicated.

1. Where fire-resistance-rated construction is indicated, units are listed and labeled by a qualified testing agency acceptable to authorities having jurisdiction.

2.4 CONCRETE MASONRY UNITS

A. Shapes: Provide shapes indicated and as follows, with exposed surfaces matching exposed faces of adjacent units unless otherwise indicated.

1. Provide special shapes for lintels, corners, jambs, sashes, movement joints, headers, bonding, and other special conditions.
2. Provide square-edged units for outside corners unless otherwise indicated.

B. Insulated CMUs: Where indicated, units contain rigid, specially shaped, molded-polystyrene insulation units complying with ASTM C578, Type I, designed for installing in cores of masonry units.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

a. Concrete Block Insulating Systems
b. Shelter Enterprises Inc.

C. CMUs: ASTM C90.

1. Unit Compressive Strength: Provide units with minimum average net-area compressive strength of 2800 psi
2. Density Classification: Normal weight unless otherwise indicated.
3. Size (Width): Manufactured to dimensions 3/8 inch less-than-nominal dimensions.
4. Exposed Faces: Provide color and texture matching the range represented by Architect's sample.
5. Faces to Receive Plaster: Where units are indicated to receive a direct application of plaster, provide textured-face units made with gap-graded aggregates.

2.5 MASONRY LINTELS

A. General: Provide one of the following:

B. Concrete Lintels Matching CMU in Color, Texture: ASTM C1623, matching density classification; and with reinforcing bars indicated. Provide lintels with net-area compressive strength not less than that of CMUs.

C. Precast or Formed-in-Place Concrete Lintels: Precast or formed-in-place concrete lintels complying with requirements in Structural Drawings and with reinforcing bars indicated.

D. Masonry Lintels: Prefabricated or built-in-place masonry lintels made from bond beam CMUs matching adjacent CMUs in color, texture, and density classification, with reinforcing bars placed as indicated and filled with coarse grout. Cure precast lintels before handling and installing. Temporarily support built-in-place lintels until cured.

2.6 MORTAR AND GROUT MATERIALS

A. Portland Cement: ASTM C150/C150M, Type I or II, except Type III may be used for cold-weather construction. Provide natural color or white cement as required to produce mortar color indicated.

1. Alkali content is not more than 0.1 percent when tested in accordance with ASTM C114.

B. Hydrated Lime: ASTM C207, Type S.

C. Portland Cement-Lime Mix: Packaged blend of portland cement and hydrated lime containing no other ingredients.

D. Masonry Cement: ASTM C91/C91M.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

a. Lafarge North America Inc.
b. Lehigh Hanson; Heidelberg Cement Group

E. Aggregate for Mortar: ASTM C144.

1. For mortar that is exposed to view, use washed aggregate consisting of natural sand or crushed stone.
2. For joints less than 1/4 inch thick, use aggregate graded with 100 percent passing the No. 16 sieve.
3. White-Mortar Aggregates: Natural white sand or crushed white stone.
4. Colored-Mortar Aggregates: Natural sand or crushed stone of color necessary to produce required mortar color.

F. Aggregate for Grout: ASTM C404.

G. Cold-Weather Admixture: Non-chloride, noncorrosive, accelerating admixture complying with ASTM C494/C494M, Type C, and recommended by manufacturer for use in masonry mortar of composition indicated.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

a. Euclid Chemical Company (The); a subsidiary of RPM International, Inc.
b. GCP Applied Technologies Inc.

H. Water-Repellent Admixture: Liquid water-repellent mortar admixture intended for use with CMUs containing integral water repellent from same manufacturer.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

a. ACM Chemistries
b. Euclid Chemical Company (The); a subsidiary of RPM International, Inc.
c. GCP Applied Technologies Inc.
d. Master Builders Solutions; brand of MBCC Group

I. Water: Potable.

2.7 TIES AND ANCHORS

A. General: Ties and anchors extend at least 1-1/2 inches into masonry but with at least a 5/8-inch cover on outside face.

B. Materials: Provide ties and anchors specified in this article that are made from materials that comply with the following unless otherwise indicated:

1. Hot-Dip Galvanized, Carbon-Steel Wire: ASTM A82/A82M, with ASTM A153/A153M, Class B-2 coating.
2. Steel Plates, Shapes, and Bars: ASTM A36/A36M

2.8 MISCELLANEOUS MASONRY ACCESSORIES

A. Compressible Filler: Premolded filler strips complying with ASTM D1056, Grade 2A1; compressible up to 35 percent; of width and thickness indicated; formulated from neoprene, urethane, or PVC.

B. Preformed Control-Joint Gaskets: Made from styrene-butadiene-rubber compound, complying with ASTM D2000, Designation M2AA-805 and designed to fit standard sash block and to maintain lateral stability in masonry wall; size and configuration as indicated.

2.9 MASONRY-CELL FILL

A. Loose-Fill Insulation: Perlite complying with ASTM C549, Type II (surface treated for water repellency and limited moisture absorption) or Type IV (surface treated for water repellency and to limit dust generation).

B. Lightweight-Aggregate Fill: ASTM C331/C331M.

2.10 MORTAR AND GROUT MIXES

A. General: Do not use admixtures, including pigments, air-entraining agents, accelerators, retarders, water-repellent agents, antifreeze compounds, or other admixtures unless otherwise indicated.

1. See structural drawings for requirements.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

1. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.
2. Verify that foundations are within tolerances specified.
3. Verify that reinforcing dowels are properly placed.
4. Verify that substrates are free of substances that would impair mortar bond.

B. Before installation, examine rough-in and built-in construction for piping systems to verify actual locations of piping.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION, GENERAL

A. Build chases and recesses to accommodate items specified in this and other Sections.

B. Leave openings for equipment to be installed before completing masonry. After installing equipment, complete masonry to match construction immediately adjacent to opening.

C. Use full-size units without cutting if possible. If cutting is required to provide a continuous pattern or to fit adjoining construction, cut units with motor-driven saws; provide clean, sharp, unchipped edges. Allow units to dry before laying unless wetting of units is specified. Install cut units with cut surfaces and, where possible, cut edges concealed.

3.3 TOLERANCES

A. Dimensions and Locations of Elements:

1. For dimensions in cross section or elevation, do not vary by more than plus 1/2 inch or minus 1/4 inch.
2. For location of elements in plan, do not vary from that indicated by more than plus or minus 1/2 inch.
3. For location of elements in elevation, do not vary from that indicated by more than plus or minus 1/4 inch in a story height or 1/2 inch total.

B. Lines and Levels:

1. For bed joints and top surfaces of bearing walls, do not vary from level by more than 1/4 inch in 10 feet, or 1/2-inch maximum.
2. For conspicuous horizontal lines, such as lintels, sills, parapets, and reveals, do not vary from level by more than 1/8 inch in 10 feet, 1/4 inch in 20 feet, or 1/2-inch maximum.
3. For vertical lines and surfaces do not vary from plumb by more than 1/4 inch in 10 feet, 3/8 inch in 20 feet, or 1/2-inch maximum.
4. For conspicuous vertical lines, such as external corners, door jambs, reveals, and expansion and control joints, do not vary from plumb by more than 1/8 inch in 10 feet, 1/4 inch in 20 feet, or 1/2-inch maximum.

5. For lines and surfaces, do not vary from straight by more than 1/4 inch in 10 feet, 3/8 inch in 20 feet, or 1/2-inch maximum.
6. For vertical alignment of exposed head joints, do not vary from plumb by more than 1/4 inch in 10 feet, or 1/2-inch maximum.
7. For faces of adjacent exposed masonry units, do not vary from flush alignment by more than 1/16 inch.

C. Joints:

1. For bed joints, do not vary from thickness indicated by more than plus or minus 1/8 inch, with a maximum thickness limited to 1/2 inch.
2. For exposed bed joints, do not vary from bed-joint thickness of adjacent courses by more than 1/8 inch.
3. For head and collar joints, do not vary from thickness indicated by more than plus 3/8 inch or minus 1/4 inch.
4. For exposed head joints, do not vary from thickness indicated by more than plus or minus 1/8 inch.

3.4 LAYING MASONRY WALLS

A. Lay out walls in advance for accurate spacing of surface bond patterns with uniform joint thicknesses and for accurate location of openings, movement-type joints, returns, and offsets. Avoid using less-than-half-size units, particularly at corners, jambs, and, where possible, at other locations.

B. Bond Pattern for Exposed Masonry: Unless otherwise indicated, lay exposed masonry in running bond; do not use units with less-than-nominal 4-inch horizontal face dimensions at corners or jambs.

C. Lay concealed masonry with all units in a wythe in running bond or bonded by lapping not less than 4 inches. Bond and interlock each course of each wythe at corners. Do not use units with less-than-nominal 4-inch horizontal face dimensions at corners or jambs.

D. Stopping and Resuming Work: Stop work by stepping back units in each course from those in course below; do not tooth. When resuming work, clean masonry surfaces that are to receive mortar, remove loose masonry units and mortar, and wet brick if required before laying fresh masonry.

E. Built-in Work: As construction progresses, build in items specified in this and other Sections. Fill in solidly with masonry around built-in items.

F. Fill space between steel frames and masonry solidly with mortar unless otherwise indicated.

G. Where built-in items are to be embedded in cores of hollow masonry units, place a layer of metal lath, wire mesh, or plastic mesh in the joint below, and rod mortar or grout into core.

H. Fill cores in hollow CMUs with grout 24 inches under bearing plates, beams, lintels, posts, and similar items unless otherwise indicated.

3.5 MORTAR BEDDING AND JOINTING

A. Lay hollow CMUs as follows:

1. Bed face shells in mortar and make head joints of depth equal to bed joints.
2. Bed webs in mortar in grouted masonry, including starting course on footings.
3. Fully bed entire units, including areas under cells, at starting course on footings where cells are not grouted.

B. Lay solid CMUs with completely filled bed and head joints; butter ends with sufficient mortar to fill head joints and shove into place. Do not deeply furrow bed joints or slush head joints.

C. Tool exposed joints slightly concave when thumbprint hard, using a jointer larger than joint thickness unless otherwise indicated.

D. Cut joints flush for masonry walls to receive plaster or other direct-applied finishes (other than paint) unless otherwise indicated.

E. Cut joints flush where indicated to receive waterproofing unless otherwise indicated.

3.6 MASONRY-CELL FILL INSTALLATION

A. Pour loose-fill insulation into cavities to fill void spaces. Maintain inspection ports to show presence of fill at extremities of each pour area. Close the ports after filling has been confirmed. Limit the fall of fill to one story high, but not more than 20 feet.

B. Install molded-polystyrene insulation units into masonry unit cells before laying units.

3.7 CONTROL JOINTS

A. General: Install control-joint materials in unit masonry as masonry progresses. Do not allow materials to span control and expansion joints without provision to allow for in-plane wall or partition movement.

B. Form control joints in concrete masonry as follows:

1. Fit bond-breaker strips into hollow contour in ends of CMUs on one side of control joint. Fill resultant core with grout, and rake out joints in exposed faces for application of sealant.
2. Install preformed control-joint gaskets designed to fit standard sash block.
3. Install interlocking units designed for control joints. Install bond-breaker strips at joint. Keep head joints free and clear of mortar, or rake out joint for application of sealant.

3.8 LINTELS

A. Provide masonry lintels where shown and where openings of more than 24 inches for block-size units are shown without structural steel or other supporting lintels.

B. Provide minimum bearing of 8 inches at each jamb unless otherwise indicated.

3.9 FLASHING

A. General: Install embedded flashing at ledges and other obstructions to downward flow of water in wall where indicated.

B. Install flashing as follows unless otherwise indicated:

1. Prepare masonry surfaces so they are smooth and free from projections that could puncture flashing.
2. At lintels, extend flashing a minimum of 6 inches into masonry at each end. At heads and sills, extend flashing 6 inches at ends and turn up not less than 2 inches to form end dams.
3. Install metal drip edges with ribbed sheet metal flashing by interlocking hemmed edges to form hooked seam. Seal seam with elastomeric sealant complying with requirements in Section 079200 "Joint Sealants" for application indicated.

C. Install single-wythe CMU flashing system in bed joints of CMU walls where indicated to comply with manufacturer's written instructions. Install CMU cell pans with upturned edges located below face shells and webs of CMUs above and with weep spouts aligned with face of wall. Install CMU web covers so that they cover upturned edges of CMU cell pans at CMU webs and extend from face shell to face shell.

D. Install nailers for flashing and other related construction where they are shown to be built into masonry.

3.10 REINFORCED UNIT MASONRY

A. Temporary Formwork and Shores: Construct formwork and shores as needed to support reinforced masonry elements during construction.

1. Construct formwork to provide shape, line, and dimensions of completed masonry as indicated. Make forms sufficiently tight to prevent leakage of mortar and grout. Brace, tie, and support forms to maintain position and shape during construction and curing of reinforced masonry.
2. Do not remove forms and shores until reinforced masonry members have hardened sufficiently to carry their own weight and other loads that may be placed on them during construction.

B. Placing Reinforcement: Comply with requirements in TMS 602/ACI 530.1/ASCE 6.

C. Grouting: Do not place grout until entire height of masonry to be grouted has attained enough strength to resist grout pressure.

1. Comply with requirements in TMS 602/ACI 530.1/ASCE 6 for cleanouts and for grout placement, including minimum grout space and maximum pour height.
2. Limit height of vertical grout pours to not more than 48 inches.

3.11 FIELD QUALITY CONTROL

A. Testing and Inspecting: Owner will engage special inspectors to perform tests and inspections and prepare reports. Allow inspectors access to scaffolding and work areas as needed to perform tests and inspections. Retesting of materials that fail to comply with specified requirements is done at Contractor's expense.

B. Inspections: Special inspections in accordance with Structural drawing information.

1. Begin masonry construction only after inspectors have verified proportions of site-prepared mortar.
2. Place grout only after inspectors have verified compliance of grout spaces and of grades, sizes, and locations of reinforcement.
3. Place grout only after inspectors have verified proportions of site-prepared grout.

3.12 REPAIRING, POINTING, AND CLEANING

A. Remove and replace masonry units that are loose, chipped, broken, stained, or otherwise damaged or that do not match adjoining units. Install new units to match adjoining units; install in fresh mortar, pointed to eliminate evidence of replacement.

B. Pointing: During the tooling of joints, enlarge voids and holes, except weep holes, and completely fill with mortar. Point up joints, including corners, openings, and adjacent construction, to provide a neat, uniform appearance. Prepare joints for sealant application, where indicated.

C. In-Progress Cleaning: Clean unit masonry as work progresses by dry brushing to remove mortar fins and smears before tooling joints.

D. Final Cleaning: After mortar is thoroughly set and cured, clean exposed masonry as follows:

1. Remove large mortar particles by hand with wooden paddles and nonmetallic scrape hoes or chisels.
2. Test cleaning methods on sample wall panel; leave one-half of panel uncleaned for comparison purposes. Obtain Architect's approval of sample cleaning before proceeding with cleaning of masonry.
3. Protect adjacent stone and non-masonry surfaces from contact with cleaner by covering them with liquid strippable masking agent or polyethylene film and waterproof masking tape.
4. Wet wall surfaces with water before applying cleaners; remove cleaners promptly by rinsing surfaces thoroughly with clear water.
5. Clean concrete masonry by applicable cleaning methods indicated in NCMA TEK 8-4A.

3.13 MASONRY WASTE DISPOSAL

A. Salvageable Materials: Unless otherwise indicated, excess masonry materials are Contractor's property. At completion of unit masonry work, remove from Project site.

END OF SECTION

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SECTION 06100
ROUGH CARPENTRY

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Wood products.
2. Wood-preservative-treated lumber.
3. Dimension lumber framing.

1.2 DEFINITIONS

A. Boards or Strips: Lumber of less than 2 inches nominal size in least dimension.

B. Dimension Lumber: Lumber of 2 inches nominal size or greater but less than 5 inches nominal size in least dimension.

C. Lumber grading agencies, and abbreviations used to reference them, include the following:

1. NLGA: National Lumber Grades Authority.
2. SPIB: The Southern Pine Inspection Bureau.

1.3 DELIVERY, STORAGE, AND HANDLING

A. Stack wood products flat with spacers beneath and between each bundle to provide air circulation. Protect wood products from weather by covering with waterproof sheeting, securely anchored. Provide for air circulation around stacks and under coverings.

PART 2 - PRODUCTS

2.1 WOOD PRODUCTS

A. Lumber: Comply with DOC PS 20 and applicable rules of grading agencies indicated. If no grading agency is indicated, comply with the applicable rules of any rules-writing agency certified by the ALSC Board of Review. Grade lumber by an agency certified by the ALSC Board of Review to inspect and grade lumber under the rules indicated.

1. Factory mark each piece of lumber with grade stamp of grading agency.
2. Where nominal sizes are indicated, provide actual sizes required by DOC PS 20 for moisture content specified. Where actual sizes are indicated, they are minimum dressed sizes for dry wood products.

B. Maximum Moisture Content:

1. Boards: 15 percent.
2. Dimension Lumber: 15 percent unless otherwise indicated.

2.2 WOOD-PRESERVATIVE-TREATED LUMBER

A. Preservative Treatment by Pressure Process: AWPA U1, Use categories as follows:

1. UC3A (All Other Commodity Specifications): Coated products excluding sawn products in exterior construction not in contact with ground, exposed to all weather cycles but protected from liquid water. Include all rough carpentry.

   a. Wood cants, nailers, curbs, equipment support bases, blocking, stripping, and similar members in connection with roofing, flashing, vapor barriers, and waterproofing.

2. Preservative Chemicals: Acceptable to authorities having jurisdiction and containing no arsenic or chromium. Do not use inorganic boron (SBX) for sill plates.
3. After treatment, redry dimension lumber to 19 percent maximum moisture content.

B. Kiln-dry lumber after treatment to a maximum moisture content of 19 percent. Do not use material that is warped or that does not comply with requirements for untreated material.

C. Mark lumber with treatment quality mark of an inspection agency approved by the ALSC Board of Review.

D. Application: Treat all rough carpentry unless otherwise indicated.

1. Wood cants, nailers, curbs, equipment support bases, blocking, stripping, and similar members in connection with roofing, flashing, vapor barriers, and waterproofing.

2.3 FASTENERS

A. General: Fasteners are to be of size and type indicated and comply with requirements specified in this article for material and manufacture. Provide nails or screws, in sufficient length, to penetrate not less than 1-1/2 inches into wood substrate.

1. Where rough carpentry is exposed to weather, in ground contact, pressure-preservative treated, or in area of high relative humidity, provide fasteners with hot-dip zinc coating complying with ASTM A153/A153M or ASTM F2329.

B. Nails, Brads, and Staples: ASTM F1667.

C. Power-Driven Fasteners: Fastener systems with an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC70.

D. Post-Installed Anchors: Fastener systems with an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC01 as appropriate for the substrate.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Framing Standard: Comply with AF&PA's WCD 1, "Details for Conventional Wood Frame Construction," unless otherwise indicated.

B. Set work to required levels and lines, with members plumb, true to line, cut, and fitted. Fit rough carpentry accurately to other construction. Locate nailers, blocking, and similar supports to comply with requirements for attaching other construction.

C. Do not splice structural members between supports unless otherwise indicated.

D. Provide blocking and framing as indicated and as required to support facing materials, fixtures, specialty items, and trim.

1. Provide metal clips for fastening gypsum board or lath at corners and intersections where framing or blocking does not provide a surface for fastening edges of panels. Space clips not more than 16 inches o.c.

E. Sort and select lumber so that natural characteristics do not interfere with installation or with fastening other materials to lumber. Do not use materials with defects that interfere with function of member or pieces that are too small to use with minimum number of joints or optimum joint arrangement.

F. Comply with AWPA M4 for applying field treatment to cut surfaces of preservative-treated lumber.

1. Use inorganic boron for items that are continuously protected from liquid water.
2. Use copper naphthenate for items not continuously protected from liquid water.

G. Securely attach rough carpentry work to substrate by anchoring and fastening as indicated, complying with the following:

1. Table 2304.10.1, "Fastening Schedule," in ICC's International Building Code (IBC).
2. Table R602.3(1), "Fastener Schedule for Structural Members," and Table R602.3(2), "Alternate Attachments," in ICC's International Residential Code for One- and Two-Family Dwellings.
3. ICC-ES evaluation report for fastener.

H. Securely attach roofing nailers to substrates by anchoring and fastening to withstand bending, shear, or other stresses imparted by Project wind loads and fastener-resistance loads as designed in accordance with ASCE/SEI 7.

I. Use steel common nails unless otherwise indicated. Select fasteners of size that will not fully penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections between members. Install fasteners without splitting wood. Drive nails snug but do not countersink nail heads unless otherwise indicated.

3.2 INSTALLATION OF WOOD BLOCKING AND NAILERS

A. Install where indicated and where required for attaching other work. Form to shapes indicated and cut as required for true line and level of attached work. Coordinate locations with other work involved.

B. Attach wood blocking to substrates to support applied loading. Recess bolts and nuts flush with surfaces unless otherwise indicated.

C. Attach wood roofing nailers securely to substrate to resist the designed outward and upward wind loads indicated on Drawings and in accordance with ANSI/SPRI ED-1, Tables A6 and A7.

D. Provide permanent grounds of dressed, pressure-preservative-treated, key-beveled lumber not less than 1-1/2 inches wide and of thickness required to bring face of ground to exact thickness of finish material. Remove temporary grounds when no longer required.

3.3 PROTECTION

A. Protect wood that has been treated with inorganic boron (SBX) from weather. If, despite protection, inorganic boron-treated wood becomes wet, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.

END OF SECTION

SECTION 07210

THERMAL INSULATION

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Glass-fiber blanket insulation.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

1.3 DELIVERY, STORAGE, AND HANDLING

A. Protect insulation materials from physical damage and from deterioration due to moisture, soiling, and other sources. Store inside and in a dry location. Comply with manufacturer's written instructions for handling, storing, and protecting during installation.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Surface-Burning Characteristics: Maximum flame-spread and smoke-developed indexes less than Class A, 25 and 450 when tested in accordance with ASTM E84.

B. Fire-Resistance Ratings: Comply with ASTM E119 or UL 263; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

1. Indicate design designations from UL's "Fire Resistance Directory" or from listings of another qualified testing agency.

C. Fire Propagation Characteristics: Passes NFPA 285 testing as part of an approved assembly.

D. Thermal-Resistance Value (R-Value): R-value as indicated on Drawings in accordance with ASTM C518.

1. R-Value at Operation Building in Attic Space: R-38.

2.2 GLASS-FIBER BLANKET INSULATION

A. Glass-Fiber Blanket Insulation, Unfaced: ASTM C665, Type I; passing ASTM E136 for combustion characteristics.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following]:

a. CertainTeed; SAINT-GOBAIN
b. Johns Manville; a Berkshire Hathaway company
c. Knauf Insulation
d. Owens Corning

2.3 INSULATION FASTENERS

A. Insulation Fastener Accessories: Provide double-pointed weld pins, lagging pins, quilting pins, duct liner pins, insulation hangers, specialty washers, special caps, j-hooks, capacitor discharge annular weld pins, capacitor discharge acoustical lagging pins, and other accessory materials that are recommended in writing by insulation fastener manufacturer to produce complete insulation supports.

2.4 ACCESSORIES

A. Insulation for Miscellaneous Voids:

1. Glass-Fiber Insulation: ASTM C764, Type II, loose fill; with maximum flame-spread and smoke-developed indexes of 5, per ASTM E84.

PART 3 - EXECUTION

3.1 PREPARATION

A. Clean substrates of substances that are harmful to insulation, including removing projections capable of puncturing insulation or vapor retarders, or those that interfere with insulation attachment.

3.2 INSTALLATION, GENERAL

A. Comply with insulation manufacturer's written instructions applicable to products, applications and applicable codes.

B. Install insulation that is undamaged, dry, and unsoiled and that has not been left exposed to ice, rain, or snow at any time.

C. Install insulation with manufacturer's R-value label exposed after insulation is installed.

D. Extend insulation to envelop entire area to be insulated. Fit tightly around obstructions and fill voids with insulation. Remove projections that interfere with placement.

E. Provide sizes to fit applications and selected from manufacturer's standard thicknesses, widths, and lengths. Apply single layer of insulation units unless multiple layers are otherwise shown or required to make up total thickness or to achieve R-value.

F. Miscellaneous Voids: Install insulation in miscellaneous voids and cavity spaces where required to prevent gaps in insulation using the following materials:

1. Glass-Fiber Insulation: Compact to approximately 40 percent of normal maximum volume equaling a density of approximately 2.5 lb/cu. ft..

G. Loose-Fill Insulation: Apply in accordance with ASTM C1015 and manufacturer's written instructions.

1. Level horizontal applications to uniform thickness as indicated, lightly settle to uniform density, but do not compact excessively.
2. For cellulosic-fiber loose-fill insulation, comply with CIMA's Technical Bulletin #2, "Standard Practice for Installing Cellulose Building Insulation."

3.3 PROTECTION

A. Protect installed insulation from damage due to harmful weather exposures, physical abuse, and other causes.

B. Provide temporary coverings or enclosures where insulation is subject to abuse and cannot be concealed and protected by permanent construction immediately after installation.

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SECTION 07542

THERMOPLASTIC-POLYOLEFIN (TPO) ROOFING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Thermoplastic polyolefin (TPO) roofing system.
2. Accessory roofing materials.
3. Roof insulation.
4. Insulation accessories and cover board.

B. Related Requirements:

1. Section 061000 "Rough Carpentry" for wood nailers, curbs, and blocking; and for wood-based, structural-use roof deck panels.
2. Section 076200 "Sheet Metal Flashing and Trim" for metal roof flashings and counter flashings.
3. Section 079200 "Joint Sealants" for joint sealants, joint fillers, and joint preparation.

1.2 DEFINITIONS

A. Roofing Terminology: Definitions in ASTM D1079 and glossary in NRCA's "The NRCA Roofing Manual: Membrane Roof Systems" apply to Work of this Section.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Roofing Conference: Conduct conference at Project site.

1. Meet with Owner, Architect, Owner's insurer if applicable, testing and inspecting agency representative, roofing Installer, roofing system manufacturer's representative, deck Installer, air barrier Installer, and installers whose work interfaces with or affects roofing, including installers of roof accessories and roof-mounted equipment.
2. Review methods and procedures related to roofing installation, including manufacturer's written instructions.
3. Review and finalize construction schedule, and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
4. Examine deck substrate conditions and finishes for compliance with requirements, including flatness and fastening.

5. Review structural loading limitations of roof deck during and after roofing.
6. Review base flashings, special roofing details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that affects roofing system.
7. Review governing regulations and requirements for insurance and certificates if applicable.
8. Review temporary protection requirements for roofing system during and after installation.
9. Review roof observation and repair procedures after roofing installation.

1.4 ACTION SUBMITTALS

A. Product Data:

1. Thermoplastic polyolefin (TPO) roofing system.
2. Accessory roofing materials.
3. Roof insulation.
4. Insulation accessories and cover board.

B. Shop Drawings: Include roof plans, sections, details, and attachments to other work, including the following:

1. Layout and thickness of insulation.
2. Base flashings and membrane termination details.
3. Flashing details at penetrations.
4. Insulation fastening patterns for corner, perimeter, and field-of-roof locations.

C. Samples for Verification: For the following products:

1. Roof membrane and flashings, of color required.

D. Wind Uplift Resistance Submittal: For roofing system, indicating compliance with wind uplift performance requirements.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer, manufacturer, and, testing agency.

B. Manufacturer Certificates:

1. Performance Requirement Certificate: Signed by roof membrane manufacturer, certifying that roofing system complies with requirements specified in "Performance Requirements" Article.

   a. Submit evidence of compliance with performance requirements.

2. Special Warranty Certificate: Signed by roof membrane manufacturer, certifying that all materials supplied under this Section are acceptable for special warranty.

C. Product Test Reports: For roof membrane and insulation, for tests performed by a qualified testing agency, indicating compliance with specified requirements.

D. Evaluation Reports: For components of roofing system, from ICC-ES.

E. Field Test Reports:

1. Fastener-pullout test results and manufacturer's revised requirements for fastener patterns.

F. Field quality-control reports.

G. Sample Warranties: For manufacturer's special warranties.

1.6 CLOSEOUT SUBMITTALS

A. Maintenance Data: For roofing system to include in maintenance manuals.

B. Certified statement from existing roof membrane manufacturer stating that existing roof warranty has not been affected by Work performed under this Section.

1.7 QUALITY ASSURANCE

A. Installer Qualifications: A qualified firm that is approved, authorized, or licensed by roofing system manufacturer to install manufacturer's product and that is eligible to receive manufacturer's special warranty.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Deliver roofing materials to Project site in original containers with seals unbroken and labeled with manufacturer's name, product brand name and type, date of manufacture, approval or listing agency markings, and directions for storing and mixing with other components.

B. Store liquid materials in their original undamaged containers in a clean, dry, protected location and within the temperature range required by roofing system manufacturer. Protect stored liquid material from direct sunlight.

1. Discard and legally dispose of liquid material that cannot be applied within its stated shelf life.

C. Protect roof insulation materials from physical damage and from deterioration by sunlight, moisture, soiling, and other sources. Store in a dry location. Comply with insulation manufacturer's written instructions for handling, storing, and protecting during installation.

D. Handle and store roofing materials, and place equipment in a manner to avoid permanent deflection of structure.

1.9 FIELD CONDITIONS

A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit roofing system to be installed according to manufacturer's written instructions and warranty requirements.

1.10 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace components of roofing system that fail in materials or workmanship within specified warranty period.

1. Special warranty includes roof membrane, base flashings, roof insulation,, fasteners,, cover boards,, vapor retarder, and other components of roofing system.
2. Warranty Period: 20 years from date of Substantial Completion.

B. Special Project Warranty: Submit roofing Installer's warranty, on warranty form at end of this Section, signed by Installer, covering the Work of this Section, including all components of roofing system such as roof membrane, base flashing, roof insulation,, fasteners,, cover boards, vapor retarders for the following warranty period:

1. Warranty Period: Two years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. General Performance: Installed roofing system and flashings to withstand specified uplift pressures, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Roof system and flashings to remain watertight.

1. Accelerated Weathering: Roof to withstand 2000 hours of exposure when tested according to ASTM G152, ASTM G154, or ASTM G155.
2. Impact Resistance: Roof membrane to resist impact damage when tested according to ASTM D3746, ASTM D4272, or the "Resistance to Foot Traffic Test" in FM Approvals 4470.

B. Material Compatibility: Roofing materials to be compatible with one another and adjacent materials under conditions of service and application required, as demonstrated by roof membrane manufacturer based on testing and field experience.

C. Wind Uplift Resistance: Design roofing system to resist the following wind uplift pressures when tested according to FM Approvals 4474, UL 580, or UL 1897:

D. See Structural drawings for roof pressure information.

E. SPRI's Directory of Roof Assemblies Listing: Roof membrane, base flashings, and component materials comply with requirements in FM Approvals 4450 or FM Approvals 4470 as part of a roofing system, and are listed in SPRI's Directory of Roof Assemblies for roof assembly identical for that specified for this Project.

1. Wind Uplift Load Capacity: See structural drawings

2.2 THERMOPLASTIC POLYOLEFIN (TPO) ROOFING SYSTEM

A. TPO Sheet: ASTM D6878/D6878M, internally fabric- or scrim-reinforced, self-adhering TPO sheet.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

   a. Carlisle Syntec Systems
   b. GAF
   c. Johns Manville; a Berkshire Hathaway company
   d. Versico Roofing Systems; Carlisle Construction Materials

2. Source Limitations: Obtain components for roofing system from roof membrane manufacturer, or, manufacturers approved by roof membrane manufacturer.
3. Thickness: 60 mils, nominal.
4. Exposed Face Color: White.

2.3 ACCESSORY ROOFING MATERIALS

A. General: Accessory materials recommended by roofing system manufacturer for intended use and compatible with other roofing components.

1. Adhesive and Sealants: Comply with VOC limits of authorities having jurisdiction.
2. Adhesives and sealants shall comply with the following limits for VOC content:

   a. Gypsum Board and Panel Adhesives: 50 g/L.
   b. Multipurpose Construction Adhesives: 70 g/L.
   c. Fiberglass Adhesives: 80 g/L.
   d. Contact Adhesives: 80 g/L.
   e. PVC Welding Compounds: 510 g/L.
   f. Other Adhesives: 250 g/L.
   g. Single-Ply Roof Membrane Sealants: 450 g/L.

B. Sheet Flashing: Manufacturer's standard unreinforced TPO sheet flashing, 55 mils thick, minimum, of same color as TPO sheet.

C. Bonding Adhesive: Manufacturer's standard.

D. Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with corrosion-resistance provisions in FM Approvals 4470, designed for fastening roofing components to substrate, and acceptable to roofing system manufacturer.

E. Miscellaneous Accessories: Provide pourable sealers, preformed cone and vent sheet flashings, preformed inside and outside corner sheet flashings, T-joint covers, lap sealants, and other accessories.

2.4 ROOF INSULATION

A. General: Preformed roof insulation boards manufactured or approved by TPO roof membrane manufacturer.

B. Polyisocyanurate Board Insulation: ASTM C1289, Type II, Class 1, Grade 2, felt or glass-fiber mat facer on both major surfaces.

1. Compressive Strength: 20 psi.
2. Size: 48 by 48 inches.
3. Thickness:

a. Base Layer: 2 ½ inches.
b. Upper Layer: 2 inches

2.5 INSULATION ACCESSORIES AND COVER BOARD

A. General: Roof insulation accessories recommended by insulation manufacturer for intended use and compatibility with other roofing system components.

B. Fasteners: Factory-coated steel fasteners with metal or plastic plates complying with corrosion-resistance provisions in FM Approvals 4470, designed for fastening roof insulation and cover boards to substrate, and acceptable to roofing system manufacturer.

C. Insulation Adhesive: Insulation manufacturer's recommended adhesive formulated to attach roof insulation to substrate or to another insulation layer as follows:

1. Full-spread, spray-applied, low-rise, two-component urethane adhesive.

D. Glass-Mat Gypsum Cover Board: ASTM C1177/C1177M, water-resistant gypsum board.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

a. CertainTeed; SAINT-GOBAIN
b. Georgia-Pacific Gypsum LLC
c. Gold Bond Building Products, LLC provided by National Gypsum Company
d. USG Corporation

2. Thickness: 1/2 inch.
3. Surface Finish: Fiberglass facer.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements and other conditions affecting performance of the Work.

1. Verify that wood blocking, curbs, and nailers are securely anchored to roof deck at penetrations and terminations and that nailers match thicknesses of insulation.
2. Verify that minimum concrete drying period recommended by roofing system manufacturer has passed.
3. Verify that concrete substrate is visibly dry and free of moisture, and that minimum concrete internal relative humidity is not more than **75** percent, or as recommended by roofing system manufacturer, when tested according to ASTM F2170.

    a. Test Frequency: One test probe per each 500 sq. ft., or portion thereof, of roof deck, with not less than three tests probes.
    b. Submit test reports within 24 hours after performing tests.

4. Verify that concrete-curing compounds that will impair adhesion of roofing components to roof deck have been removed.
5. Verify that joints in precast concrete roof decks have been grouted flush with top of concrete.
6. Verify that minimum curing period recommended by roofing system manufacturer for lightweight insulating concrete roof decks has passed.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Clean substrate of dust, debris, moisture, and other substances detrimental to roofing system installation according to roofing system manufacturer's written instructions. Remove sharp projections.

B. Prevent materials from entering and clogging roof drains and conductors and from spilling or migrating onto surfaces of other construction. Remove roof-drain plugs when no work is taking place or when rain is forecast.

C. Perform fastener-pullout tests according to roof system manufacturer's written instructions.

1. Submit test result within 24 hours after performing tests.

a. Include manufacturer's requirements for any revision to previously submitted fastener patterns required to achieve specified wind uplift requirements.

3.3 INSTALLATION OF ROOFING, GENERAL

A. Install roofing system according to roofing system manufacturer's written instructions, SPRI's Directory of Roof Assemblies listed roof assembly requirements, and FM Global Property Loss Prevention Data Sheet 1-29.

B. Complete terminations and base flashings and provide temporary seals to prevent water from entering completed sections of roofing system at end of workday or when rain is forecast. Remove and discard temporary seals before beginning Work on adjoining roofing.

C. Install roof membrane and auxiliary materials to tie in to existing roofing to maintain weathertightness of transition.

3.4 INSTALLATION OF INSULATION

A. Coordinate installing roofing system components so insulation is not exposed to precipitation or left exposed at end of workday.

B. Comply with roofing system and roof insulation manufacturer's written instructions for installing roof insulation.

C. Installation Over Concrete Decks:

1. Install base layer of insulation with joints staggered not less than 24 inches in adjacent rows.

   a. Where installing composite and non-composite insulation in two or more layers, install non-composite board insulation for bottom layer and intermediate layers, if applicable, and install composite board insulation for top layer.
   b. Trim insulation neatly to fit around penetrations and projections, and to fit tight to intersecting sloping roof decks.
   c. Make joints between adjacent insulation boards not more than 1/4 inch in width.
   d. Fill gaps exceeding 1/4 inch with insulation.
   e. Cut and fit insulation within 1/4 inch of nailers, projections, and penetrations.
   f. Loosely lay base layer of insulation units over substrate.
   g. Adhere base layer of insulation to concrete roof deck according to SPRI's Directory of Roof Assemblies listed roof assembly requirements for specified Wind Uplift Load Capacity and FM Global Property Loss Prevention Data Sheet 1-29, as follows:

1) Prime surface of concrete deck with asphalt primer at rate of 3/4 gal./100 sq. ft., and allow primer to dry.
2) Set insulation in a solid mopping of hot roofing asphalt, applied within plus or minus 25 deg F of equiviscous temperature.
3) Set insulation in ribbons of bead-applied insulation adhesive, firmly pressing and maintaining insulation in place.
4) Set insulation in a uniform coverage of full-spread insulation adhesive, firmly pressing and maintaining insulation in place.

2. Install upper layers of insulation with joints of each layer offset not less than 12 inches from previous layer of insulation.

a. Staggered end joints within each layer not less than 24 inches in adjacent rows.
b. Install with long joints continuous and with end joints staggered not less than 12 inches in adjacent rows.
c. Trim insulation neatly to fit around penetrations and projections, and to fit tight to intersecting sloping roof decks.
d. Make joints between adjacent insulation boards not more than 1/4 inch in width.
e. Fill gaps exceeding 1/4 inch with insulation.
f. Cut and fit insulation within 1/4 inch of nailers, projections, and penetrations.
g. Loosely lay each layer of insulation units over substrate.
h. Adhere each layer of insulation to substrate using adhesive according to SPRI's Directory of Roof Assemblies listed roof assembly requirements for specified Wind Uplift Load Capacity and FM Global Property Loss Prevention Data Sheet 1-29, as follows:

1) Set each layer of insulation in a solid mopping of hot roofing asphalt, applied within plus or minus 25 deg F of equiviscous temperature.
2) Set each layer of insulation in ribbons of bead-applied insulation adhesive, firmly pressing and maintaining insulation in place.
3) Set each layer of insulation in a uniform coverage of full-spread insulation adhesive, firmly pressing and maintaining insulation in place.

3.5 INSTALLATION OF COVER BOARDS

A. Install cover boards over insulation with long joints in continuous straight lines with end joints staggered between rows. Offset joints of insulation below a minimum of 6 inches in each direction.

1. Trim cover board neatly to fit around penetrations and projections, and to fit tight to intersecting sloping roof decks.
2. At internal roof drains, conform to slope of drain sump.

a. Trim cover board so that water flow is unrestricted.

3. Cut and fit cover board tight to nailers, projections, and penetrations.
4. Loosely lay cover board over substrate.
5. Adhere cover board to substrate using adhesive according to SPRI's Directory of Roof Assemblies listed roof assembly requirements for specified Wind Uplift Load Capacity and FM Global Property Loss Prevention Data Sheet 1-29, as follows:

    a. Set cover board in a solid mopping of hot roofing asphalt, applied within plus or minus 25 deg F of equiviscous temperature.
    b. Set cover board in ribbons of bead-applied insulation adhesive, firmly pressing and maintaining insulation in place.
    c. Set cover board in a uniform coverage of full-spread insulation adhesive, firmly pressing and maintaining insulation in place.

B. Install slip sheet over cover board and beneath roof membrane.

C. Place plates on insulation in required fastening patterns and secure in accordance with manufacturer’s instructions.

1. Install plates and fasteners tight and flat to substrate with no dimpling, and with fastener extending 1 inch minimum into roof deck; do not overdrive fasteners.

3.6 INSTALLATION OF ADHERED ROOF MEMBRANE

A. Adhere roof membrane over area to receive roofing according to roofing system manufacturer's written instructions.

B. Unroll roof membrane and allow to relax before installing.

C. Start installation of roofing in presence of roofing system manufacturer's technical personnel.

D. Accurately align roof membrane, and maintain uniform side and end laps of minimum dimensions required by manufacturer. Stagger end laps.

E. Bonding Adhesive: Apply to substrate and underside of roof membrane at rate required by manufacturer, and allow to partially dry before installing roof membrane. Do not apply to splice area of roof membrane.

F. In addition to adhering, mechanically fasten roof membrane securely at terminations, penetrations, and perimeter of roofing.

G. Apply roof membrane with side laps shingled with slope of roof deck where possible.

H. Seams: Clean seam areas, overlap roof membrane, and hot-air weld side and end laps of roof membrane and sheet flashings, to ensure a watertight seam installation.

1. Test lap edges with probe to verify seam weld continuity. Apply lap sealant to seal cut edges of roof membrane and sheet flashings.

2. Verify field strength of seams a minimum of twice daily, and repair seam sample areas.
3. Repair tears, voids, and lapped seams in roof membrane that do not comply with requirements.

I. Spread sealant bed over deck-drain flange at roof drains, and securely seal roof membrane in place with clamping ring.

3.7 INSTALLATION OF BASE FLASHING

A. Install sheet flashings and preformed flashing accessories, and adhere to substrates according to roofing system manufacturer's written instructions.

B. Apply bonding adhesive to substrate and underside of sheet flashing at required rate, and allow to partially dry. Do not apply to seam area of flashing.

C. Flash penetrations and field-formed inside and outside corners with cured or uncured sheet flashing.

D. Clean seam areas, overlap, and firmly roll sheet flashings into the adhesive. Hot-air weld side and end laps to ensure a watertight seam installation.

E. Terminate and seal top of sheet flashings and mechanically anchor to substrate through termination bars.

3.8 FIELD QUALITY CONTROL

A. Testing Agency: Engage a qualified testing agency to perform tests and to inspect substrate conditions, surface preparation, roof membrane application, sheet flashings, protection, and drainage components, and to furnish reports to Architect.

B. Final Roof Inspection: Arrange for roofing system manufacturer's technical personnel to inspect roofing installation on completion, in presence of Architect, and to prepare inspection report.

C. Repair or remove and replace components of roofing system where inspections indicate that they do not comply with specified requirements.

D. Additional testing and inspecting, at Contractor's expense, will be performed to determine if replaced or additional work complies with specified requirements.

3.9 PROTECTING AND CLEANING

A. Protect roofing system from damage and wear during remainder of construction period. When remaining construction does not affect or endanger roofing system, inspect roofing system for deterioration and damage, describing its nature and extent in a written report, with copies to Architect and Owner.

B. Correct deficiencies in or remove roofing system that does not comply with requirements, repair substrates, and repair or reinstall roofing system to a condition free of damage and deterioration at time of Substantial Completion and according to warranty requirements.

C. Clean overspray and spillage from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction.

3.10 ROOFING INSTALLER'S WARRANTY

A. WHEREAS _____ of _____, herein called the "Roofing Installer," has performed roofing and associated work ("work") on the following project:

1. Owner: City of Ocoee, Florida.
2. Owner Address: 1800 A.D. Mims Road, Ocoee, FL.
3. Building Name/Type: Ocoee WWTP Electric Building.
4. Area of Work: New TPO Roof.
5. Acceptance Date: _____.
6. Warranty Period: 20 years.
7. Expiration Date: _____.

B. AND WHEREAS Roofing Installer has contracted (either directly with Owner or indirectly as a subcontractor) to warrant said work against leaks and faulty or defective materials and workmanship for designated Warranty Period,

C. NOW THEREFORE Roofing Installer hereby warrants, subject to terms and conditions herein set forth, that during Warranty Period Roofing Installer will, at Roofing Installer's own cost and expense, make or cause to be made such repairs to or replacements of said work as are necessary to correct faulty and defective work and as are necessary to maintain said work in a watertight condition.

D. This Warranty is made subject to the following terms and conditions:

1. Specifically excluded from this Warranty are damages to work and other parts of the building, and to building contents, caused by:

   a. lightning;
   b. peak gust wind speed exceeding _____ mph.
   c. fire;
   d. failure of roofing system substrate, including cracking, settlement, excessive deflection, deterioration, and decomposition;
   e. faulty construction of parapet walls, copings, chimneys, skylights, vents, equipment supports, and other edge conditions and penetrations of the work;
   f. vapor condensation on bottom of roofing; and
   g. activity on roofing by others, including construction contractors, maintenance personnel, other persons, and animals, whether authorized or unauthorized by Owner.

2. When work has been damaged by any of foregoing causes, Warranty shall be null and void until such damage has been repaired by Roofing Installer and until cost and expense thereof have been paid by Owner or by another responsible party so designated.
3. Roofing Installer is responsible for damage to work covered by this Warranty but is not liable for consequential damages to building or building contents resulting from leaks or faults or defects of work.
4. During Warranty Period, if Owner allows alteration of work by anyone other than Roofing Installer, including cutting, patching, and maintenance in connection with penetrations, attachment of other work, and positioning of anything on roof, this Warranty shall become null and void on date of said alterations, but only to the extent said alterations affect work covered by this Warranty. If Owner engages Roofing Installer to perform said alterations, Warranty shall not become null and void unless Roofing Installer, before starting said work, shall have notified Owner in writing, showing reasonable cause for claim, that said alterations would likely damage or deteriorate work, thereby reasonably justifying a limitation or termination of this Warranty.
5. During Warranty Period, if original use of roof is changed and it becomes used for, but was not originally specified for, a promenade, work deck, spray-cooled surface, flooded basin, or other use or service more severe than originally specified, this Warranty shall become null and void on date of said change, but only to the extent said change affects work covered by this Warranty.
6. Owner shall promptly notify Roofing Installer of observed, known, or suspected leaks, defects, or deterioration and shall afford reasonable opportunity for Roofing Installer to inspect work and to examine evidence of such leaks, defects, or deterioration.
7. This Warranty is recognized to be the only warranty of Roofing Installer on said work and shall not operate to restrict or cut off Owner from other remedies and resources lawfully available to Owner in cases of roofing failure. Specifically, this Warranty shall not operate to relieve Roofing Installer of responsibility for performance of original work according to requirements of the Contract Documents, regardless of whether Contract was a contract directly with Owner or a subcontract with Owner's General Contractor.

E. IN WITNESS THEREOF, this instrument has been duly executed this _____ day of _____, _____.

1. Authorized Signature: _____.
2. Name: _____.
3. Title: _____.

END OF SECTION

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SECTION 07620

SHEET METAL FLASHING AND TRIM

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes: Custom flashing and trim fabrications, made from the following:

1. Sheet metal materials.
2. Underlayment.
3. Miscellaneous materials.

B. Related Requirements:

1. Section 061000 "Rough Carpentry" for wood nailers, curbs, and blocking.

1.2 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1. Review construction schedule. Verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
2. Review special roof details, roof drainage, roof-penetration flashing, equipment curbs, and condition of other construction that affect sheet metal flashing and trim.
3. Review requirements for insurance and certificates if applicable.
4. Review sheet metal flashing observation and repair procedures after flashing installation.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: For sheet metal flashing and trim.

1. Plans, elevations, sections, and attachment details.
2. Identification of material, thickness, weight, and finish for each item and location in Project.
3. Details for forming, including profiles, shapes, seams, and dimensions.
4. Details for joining, supporting, and securing, including layout and spacing of fasteners, cleats, clips, and other attachments. Include pattern of seams.
5. Details of termination points and assemblies.
6. Details of connections to adjoining work.

7. Formed flashing and trim at scale of not less than 1-1/2 inches per 12 inches.

C. Samples for Initial Selection: Manufacturer's standard color sheets, showing full range of available colors for each type of exposed finish.

1.4 CLOSEOUT SUBMITTALS

A. Maintenance Data: For sheet metal flashing and trim, and its accessories.

1.5 QUALITY ASSURANCE

A. Fabricator Qualifications: Entity that employs skilled workers who custom fabricate sheet metal flashing and trim similar to that required for this Project and whose products have a record of successful in-service performance.

B. For roof edge flashings and copings that are ANSI/SPRI/FM 4435/ES-1 tested, shop is to be listed as able to fabricate required details as tested and approved.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Do not store sheet metal flashing and trim materials in contact with other materials that might cause staining, denting, or other surface damage.

1. Store sheet metal flashing and trim materials away from uncured concrete and masonry.
2. Protect stored sheet metal flashing and trim from contact with water.

B. Protect strippable protective covering on sheet metal flashing and trim from exposure to sunlight and high humidity, except to extent necessary for period of sheet metal flashing and trim installation.

1.7 COORDINATION

A. Coordinate sheet metal flashing and trim layout and seams with sizes and locations of penetrations to be flashed, and joints and seams in adjacent materials.

B. Coordinate sheet metal flashing and trim installation with adjoining roofing and wall materials, joints, and seams to provide leakproof, secure, and noncorrosive installation.

1.8 WARRANTY

A. Special Warranty on Finishes: Manufacturer agrees to repair finish or replace sheet metal flashing and trim that shows evidence of deterioration of factory-applied finishes within specified warranty period.

1. Exposed Panel Finish: Deterioration includes, but is not limited to, the following:

a. Color fading more than 5 Delta E units when tested in accordance with ASTM D2244.
b. Chalking in excess of a No. 8 rating when tested in accordance with ASTM D4214.
c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.

2. Finish Warranty Period: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Sheet metal flashing and trim assemblies, including cleats, anchors, and fasteners, are to withstand wind loads, structural movement, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Completed sheet metal flashing and trim are not to rattle, leak, or loosen, and are to remain watertight.

B. Sheet Metal Standard for Flashing and Trim: Comply with NRCA's "The NRCA Roofing Manual: Architectural Metal Flashing, Condensation and Air Leakage Control, and Reroofing", and, SMACNA's "Architectural Sheet Metal Manual" requirements for dimensions and profiles shown unless more stringent requirements are indicated.

C. SPRI Wind Design Standard: Manufacture and install roof edge flashings and copings tested in accordance with ANSI/SPRI/FM 4435/ES-1 and capable of resisting the following design pressure:

1. Design Pressure: As indicated on Drawings.

D. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes.

1. Temperature Change: 120 deg F, ambient; 180 deg F, material surfaces.

2.2 SHEET METAL MATERIALS

A. Protect mechanical and other finishes on exposed surfaces from damage by applying strippable, temporary protective film before shipping.

B. Aluminum Sheet: Coil-coated sheet, ASTM B209/B209M, alloy as standard with manufacturer, with temper as required to suit forming operations and structural performance required.

1. Thickness: 0.032 inch.
2. Surface: Smooth, flat.
3. Exposed Coil-Coated Finish:
4. Color: As selected by Architect from manufacturer's full range.

5. Concealed Finish: Pretreat with manufacturer's standard white or light-colored acrylic or polyester backer finish, consisting of prime coat and wash coat with minimum total dry film thickness of 0.5 mil.

2.3 UNDERLAYMENT

A. Synthetic Underlayment: Laminated or reinforced, woven polyethylene or polypropylene, synthetic roofing underlayment; bitumen free; slip resistant; suitable for high temperatures over 220 deg F; and complying with physical requirements of ASTM D226/D226M for Type I and Type II felts.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

a. Atlas Molded Products, a division of Atlas Roofing Corporation
b. Intertape Polymer Group
c. Kirsch Building Products
d. SDP Advanced Polymer Products Inc.

2.4 MISCELLANEOUS MATERIALS

A. Provide materials and types of fasteners, protective coatings, sealants, and other miscellaneous items as required for complete sheet metal flashing and trim installation and as recommended by manufacturer of primary sheet metal or manufactured item unless otherwise indicated.

B. Fasteners: Wood screws, annular threaded nails, self-tapping screws, self-locking rivets and bolts, and other suitable fasteners designed to withstand design loads and recommended by manufacturer of primary sheet metal or manufactured item.

1. General: Blind fasteners or self-drilling screws, gasketed, with hex-washer head.

a. Exposed Fasteners: Heads matching color of sheet metal using plastic caps or factory-applied coating. Provide metal-backed EPDM or PVC sealing washers under heads of exposed fasteners bearing on weather side of metal.
b. Blind Fasteners: High-strength aluminum or stainless steel rivets suitable for metal being fastened.
c. Spikes and Ferrules: Same material as gutter; with spike with ferrule matching internal gutter width.

2. Fasteners for Zinc-Coated (Galvanized) or Aluminum-Zinc Alloy-Coated Steel Sheet: Series 300 stainless steel or hot-dip galvanized steel in accordance with ASTM A153/A153M or ASTM F2329/F2329M.
3. Fasteners for Aluminum Sheet: Aluminum or Series 300 stainless steel.

C. Sealant Tape: Pressure-sensitive, 100 percent solids, polyisobutylene compound sealant tape with release-paper backing. Provide permanently elastic, non-sag, nontoxic, non-staining tape 1/2 inch wide and 1/8 inch thick.

D. Elastomeric Sealant: ASTM C920, elastomeric polyurethane or polysulfide polymer sealant; of type, grade, class, and use classifications required to seal joints in sheet metal flashing and trim and remain watertight.

E. Butyl Sealant: ASTM C1311, single-component, solvent-release butyl rubber sealant; polyisobutylene plasticized; heavy bodied for hooked-type expansion joints with limited movement.

F. Epoxy Seam Sealer: Two-part, noncorrosive, aluminum seam-cementing compound, recommended by aluminum manufacturer for exterior nonmoving joints, including riveted joints.

G. Bituminous Coating: Cold-applied asphalt emulsion in accordance with ASTM D1187/D1187M.

H. Asphalt Roofing Cement: ASTM D4586/D4586M, asbestos free, of consistency required for application.

2.5 FABRICATION, GENERAL

A. Custom fabricate sheet metal flashing and trim to comply with details indicated and recommendations in cited sheet metal standard that apply to design, dimensions, geometry, metal thickness, and other characteristics of item required.

1. Fabricate sheet metal flashing and trim in shop to greatest extent possible.
2. Fabricate sheet metal flashing and trim in thickness or weight needed to comply with performance requirements, but not less than that specified for each application and metal.
3. Verify shapes and dimensions of surfaces to be covered and obtain field measurements for accurate fit before shop fabrication.
4. Form sheet metal flashing and trim to fit substrates without excessive oil-canning, buckling, and tool marks; true to line, levels, and slopes; and with exposed edges folded back to form hems.
5. Conceal fasteners and expansion provisions where possible. Do not use exposed fasteners on faces exposed to view.

B. Fabrication Tolerances:

1. Fabricate sheet metal flashing and trim that is capable of installation to a tolerance of 1/4 inch in 20 ft. on slope and location lines indicated on Drawings and within 1/8-inch offset of adjoining faces and of alignment of matching profiles.
2. Fabricate sheet metal flashing and trim that is capable of installation to tolerances specified.

C. Expansion Provisions: Form metal for thermal expansion of exposed flashing and trim.

1. Form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with butyl sealant concealed within joints.
2. Use lapped expansion joints only where indicated on Drawings.

D. Sealant Joints: Where movable, non-expansion-type joints are required, form metal in accordance with cited sheet metal standard to provide for proper installation of elastomeric sealant.

E. Fabricate cleats and attachment devices from same material as accessory being anchored or from compatible, noncorrosive metal.

F. Fabricate cleats and attachment devices of sizes as recommended by cited sheet metal standard for application, but not less than thickness of metal being secured.

G. Seams:

1. Fabricate nonmoving seams with flat-lock seams. Tin edges to be seamed, form seams, and solder.
2. Fabricate nonmoving seams with flat-lock seams. Form seams and seal with elastomeric sealant unless otherwise recommended by sealant manufacturer for intended use. Rivet joints where necessary for strength.
3. Seams for Aluminum: Fabricate nonmoving seams with flat-lock seams. Form seams and seal with epoxy seam sealer. Rivet joints where necessary for strength.

H. Do not use graphite pencils to mark metal surfaces.

2.6 ROOF-DRAINAGE SHEET METAL FABRICATIONS

A. Hanging Gutters:

1. Fabricate to cross section required, complete with end pieces, outlet tubes, and other accessories as required.
2. Fabricate in minimum 96-inch- long sections.
3. Furnish flat-stock gutter brackets and flat-stock gutter spacers and straps fabricated from same metal as gutters, of size recommended by cited sheet metal standard, but with thickness not less than dimension indicated on Drawings.
4. Fabricate expansion joints, expansion-joint covers, gutter bead reinforcing bars, and gutter accessories from same metal as gutters.Shop fabricate interior and exterior corners.
5. Gutter Profile: Style A in accordance with cited sheet metal standard.
6. Expansion Joints: Butt type with cover plate.
7. Accessories: Wire-ball downspout strainer
8. Gutters with Girth up to 15 Inches (380 mm): Fabricate from the following materials:

    a. Aluminum: 0.032 inch thick.

B. Downspouts: Fabricate rectangular downspouts to dimensions indicated on Drawings, complete with mitered elbows. Furnish with metal hangers from same material as downspouts and anchors. Shop fabricate elbows.

1. Fabricated Hanger Style: Fig. 1-35A in accordance with SMACNA's "Architectural Sheet Metal Manual."
2. Fabricate from the following materials:

a. Aluminum: 0.032 inch thick.

2.7 LOW-SLOPE ROOF SHEET METAL FABRICATIONS

A. Roof Edge Flashing (Gravel Stop) and Fascia Cap: Fabricate in minimum 96-inch-long, but not exceeding 12 ft. long sections. Furnish with 6-inch- wide, joint cover plates.

1. Joint Style: Overlapped, 4 inches wide.
2. Fabricate from the following materials:

a. Aluminum: 0.050 inch thick.

B. Copings: Fabricate in minimum 96-inch- long, but not exceeding 12 ft.- long, sections. Fabricate joint plates of same thickness as copings. Furnish with continuous cleats to support edge of external leg and interior leg. Miter corners, weld watertight. Shop fabricate interior and exterior corners.

1. Coping Profile: Fig. 3-4A in accordance with SMACNA's "Architectural Sheet Metal Manual."
2. Joint Style: Butted with expansion space and 6-inch- wide, concealed backup plate.
3. Fabricate from the following materials:

a. Aluminum: 0.050 inch thick.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, substrates, and other conditions affecting performance of the Work.

1. Verify compliance with requirements for installation tolerances of substrates.
2. Verify that substrate is sound, dry, smooth, clean, sloped for drainage, and securely anchored.
3. Verify that air- or water-resistant barriers have been installed over substrate to prevent air infiltration or water penetration.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION OF UNDERLAYMENT

A. Synthetic Underlayment: Install synthetic underlayment, wrinkle free, in accordance with manufacturers' written instructions, and using adhesive where possible to minimize use of mechanical fasteners under sheet metal.

1. Lap horizontal joints not less than 4 inches.
2. Lap end joints not less than 12 inches.

3.3 INSTALLATION OF SHEET METAL FLASHING AND TRIM, GENERAL

A. Install sheet metal flashing and trim to comply with details indicated and recommendations of cited sheet metal standard that apply to installation characteristics required unless otherwise indicated on Drawings.

1. Install fasteners, protective coatings, separators, sealants, and other miscellaneous items as required to complete sheet metal flashing and trim system.
2. Install sheet metal flashing and trim true to line, levels, and slopes. Provide uniform, neat seams with minimum exposure of welds and sealant.
3. Anchor sheet metal flashing and trim and other components of the Work securely in place, with provisions for thermal and structural movement.
4. Install sheet metal flashing and trim to fit substrates and to result in watertight performance.
5. Install continuous cleats with fasteners spaced not more than 12 inches o.c.
6. Space individual cleats not more than 12 inches apart. Attach each cleat with at least two fasteners. Bend tabs over fasteners.
7. Install exposed sheet metal flashing and trim with limited oil-canning, and free of buckling and tool marks.
8. Do not field cut sheet metal flashing and trim by torch.
9. Do not use graphite pencils to mark metal surfaces.

B. Metal Protection: Where dissimilar metals contact each other, or where metal contacts pressure-treated wood or other corrosive substrates, protect against galvanic action or corrosion by painting contact surfaces with bituminous coating or by other permanent separation as recommended by sheet metal manufacturer or cited sheet metal standard.

1. Underlayment: Where installing sheet metal flashing and trim directly on cementitious or wood substrates, install underlayment and cover with slip sheet.

C. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim.

1. Space movement joints at maximum of 10 ft. with no joints within 24 inches of corner or intersection.
2. Form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with sealant concealed within joints.

3. Use lapped expansion joints only where indicated on Drawings.

D. Fasteners: Use fastener sizes that penetrate substrate not less than recommended by fastener manufacturer to achieve maximum pull-out resistance.

E. Conceal fasteners and expansion provisions where possible in exposed work and locate to minimize possibility of leakage. Cover and seal fasteners and anchors as required for a tight installation.

F. Seal joints as required for watertight construction.

1. Use sealant-filled joints unless otherwise indicated.

a. Embed hooked flanges of joint members not less than 1 inch into sealant.
b. Form joints to completely conceal sealant.
c. When ambient temperature at time of installation is between 40 and 70 deg F, set joint members for 50 percent movement each way.
d. Adjust setting proportionately for installation at higher ambient temperatures.

1) Do not install sealant-type joints at temperatures below 40 deg F.

2. Prepare joints and apply sealants to comply with requirements in Section 079200 "Joint Sealants."

3.4 INSTALLATION OF ROOF-DRAINAGE SHEET METAL FABRICATIONS

A. Install sheet metal roof-drainage items to produce complete roof-drainage system in accordance with cited sheet metal standard unless otherwise indicated. Coordinate installation of roof perimeter flashing with installation of roof-drainage system.

B. Hanging Gutters:

1. Join sections with rivetted and soldered joints.
2. Provide for thermal expansion.
3. Attach gutters at eave to firmly anchor them in position.
4. Provide end closures and seal watertight with sealant.
5. Slope to downspouts.
6. Fasten gutter spacers to front and back of gutter.
7. Anchor and loosely lock back edge of gutter to continuous cleat, eave or apron flashing.
8. Anchor back of gutter that extends onto roof deck with cleats spaced not more than 24 inches apart.
9. Anchor gutter with gutter brackets spaced not more than 24 inches apart to roof deck unless otherwise indicated, and loosely lock to front gutter bead.

C. Downspouts:

1. Join sections with 1-1/2-inch telescoping joints.
2. Provide hangers with fasteners designed to hold downspouts securely to walls.

3. Locate hangers at top and bottom and at approximately 60 inches o.c.
4. Provide elbows at base of downspout to direct water away from building.

3.5 INSTALLATION TOLERANCES

A. Shim and align sheet metal flashing and trim within installed tolerance of 1/4 inch in 20 ft. on slope and location lines indicated on Drawings and within 1/8-inch offset of adjoining faces and of alignment of matching profiles.

3.6 CLEANING

A. Clean off excess sealants.

3.7 PROTECTION

A. Remove temporary protective coverings and strippable films as sheet metal flashing and trim are installed unless otherwise indicated in manufacturer's written installation instructions.

B. On completion of sheet metal flashing and trim installation, remove unused materials and clean finished surfaces as recommended in writing by sheet metal flashing and trim manufacturer.

C. Maintain sheet metal flashing and trim in clean condition during construction.

D. Replace sheet metal flashing and trim that have been damaged or that have deteriorated beyond successful repair by finish touchup or similar minor repair procedures, as determined by Architect.

END OF SECTION

SECTION 08111

HOLLOW METAL DOORS AND FRAMES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Exterior standard steel doors and frames.

B. Related Requirements:

1.

1.2 DEFINITIONS

A. Minimum Thickness: Minimum thickness of base metal without coatings in accordance with NAAMM-HMMA 803 or ANSI/SDI A250.8.

1.3 COORDINATION

A. Coordinate anchorage installation for hollow-metal frames. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors. Deliver such items to Project site in time for installation.

B. Coordinate requirements for installation of door hardware, electrified door hardware, and access control and security systems.

1.4 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.5 ACTION SUBMITTALS

A. Product Data:

1. Exterior standard steel doors and frames.

B. Product Data Submittals: For each product.

1. Include construction details, material descriptions, core descriptions, and finishes.

C. Shop Drawings: Include the following:

1. Elevations of each door type.
2. Details of doors, including vertical- and horizontal-edge details and metal thicknesses.
3. Frame details for each frame type, including dimensioned profiles and metal thicknesses.
4. Locations of reinforcement and preparations for hardware.
5. Details of each different wall opening condition.
6. Details of anchorages, joints, field splices, and connections.
7. Details of accessories.

D. Product Schedule: For hollow-metal doors and frames, prepared by or under the supervision of supplier, using same reference numbers for details and openings as those on Drawings. Coordinate with final door hardware schedule.

1.6 INFORMATIONAL SUBMITTALS

A. Qualification Data: For door inspector.

1. Egress Door Inspector: Submit documentation of compliance with NFPA 101, Section 7.2.1.15.4.

B. Field quality-control reports.

1.7 CLOSEOUT SUBMITTALS

A. Record Documents: For fire-rated doors, list of door numbers and applicable room name and number to which door accesses.

1.8 QUALITY ASSURANCE

A. Egress Door Inspector Qualifications: Inspector for field quality-control inspections of egress door assemblies is to meet the qualifications set forth in NFPA 101, Section 7.2.1.15.4 and the following:

1. Door and Hardware Institute Fire and Egress Door Assembly Inspector (FDAI) certification.

1.9 DELIVERY, STORAGE, AND HANDLING

A. Deliver hollow-metal doors and frames palletized, packaged, or crated to provide protection during transit and Project-site storage. Do not use non-vented plastic.

B. Deliver welded frames with two removable spreader bars across bottom of frames, tack welded to jambs and mullions.

C. Store hollow-metal doors and frames vertically under cover at Project site with head up. Place on minimum 4-inch- high wood blocking. Provide minimum 1/4-inch space between each stacked door to permit air circulation.

PART 2 - PRODUCTS

2.1 HOLLOW METAL DOORS AND FRAMES

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. Ceco Door; AADG, Inc.; ASSA ABLOY
2. Curries, AADG, Inc.; ASSA ABLOY Group
3. Steelcraft; Allegion plc

2.2 PERFORMANCE REQUIREMENTS

A. Windborne-Debris Impact Resistance: Passes ASTM E1886 missile-impact and cyclic-pressure tests in accordance with ASTM E1996 for Wind Zone [1] [2] [3] [4] for [basic] [enhanced] protection.

1. Large-Missile Test: For glazed openings located within [30 feet] <Insert dimension> of grade.

B. Thermally Rated Door Assemblies: Provide door assemblies with U-factor of not more than 0.50 deg Btu/F x h x sq. ft. when tested in accordance with ASTM C1363 or ASTM E1423.

2.3 EXTERIOR STANDARD STEEL DOORS AND FRAMES

A. Construct hollow-metal doors and frames to comply with standards indicated for materials, fabrication, hardware locations, hardware reinforcement, tolerances, and clearances, and as specified.

B. Heavy-Duty Doors and Frames: ANSI/SDI A250.8, Level 2; ANSI/SDI A250.4, Level B.
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1. Doors:

a. Type: As indicated in the Door and Frame Schedule on Drawings.
b. Thickness: 1-3/4 inches.
c. Face: Metallic-coated steel sheet, minimum thickness of 0.042 inch, with minimum A60 coating.

d. Edge Construction: Model 1, Full Flush.
e. Edge Bevel: Provide manufacturer's standard beveled or square edges.
f. Top Edge Closures: Close top edges of doors with flush closures of same material as face sheets. Seal joints against water penetration.
g. Bottom Edges: Close bottom edges of doors with end closures or channels of same material as face sheets. Provide weep-hole openings in bottoms of exterior doors to permit moisture to escape.
h. Core: Manufacturer's standard.

2. Frames:

a. Materials: Metallic-coated steel sheet, minimum thickness of 0.053 inch, with minimum A60 coating.
b. Construction: Full profile welded.

3. Exposed Finish: Prime.

2.4 HOLLOW-METAL PANELS

A. Provide hollow-metal panels of same materials, construction, and finish as adjacent door assemblies.

2.5 FRAME ANCHORS

A. Jamb Anchors:

1. Type: Anchors of minimum size and type required by applicable door and frame standard, and suitable for performance level indicated.
2. Quantity: Minimum of three anchors per jamb, with one additional anchor for frames with no floor anchor. Provide one additional anchor for each 24 inches of frame height above 7 feet.
3. Post-installed Expansion Anchor: Minimum 3/8-inch- diameter bolts with expansion shields or inserts, with manufacturer's standard pipe spacer.

B. Floor Anchors: Provide floor anchors for each jamb and mullion that extends to floor.

C. Material: ASTM A879/A879M, Commercial Steel (CS), 04Z coating designation; mill phosphatized.

1. For anchors built into exterior walls, steel sheet complying with ASTM A1008/A1008M or ASTM A1011/A1011M; hot-dip galvanized in accordance with ASTM A153/A153M, Class B.

2.6 MATERIALS

A. Cold-Rolled Steel Sheet: ASTM A1008/A1008M, Commercial Steel (CS), Type B; suitable for exposed applications.

B. Inserts, Bolts, and Fasteners: Hot-dip galvanized in accordance with ASTM A153/A153M.

C. Power-Actuated Fasteners in Concrete: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with clips or other accessory devices for attaching hollow-metal frames of type indicated.

D. Mineral-Fiber Insulation: ASTM C665, Type I (blankets without membrane facing); consisting of fibers manufactured from slag or rock wool; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively; passing ASTM E136 for combustion characteristics.

2.7 FABRICATION

A. Door Astragals: Provide overlapping astragal on one leaf of pairs of doors where required by NFPA 80 for fire-performance rating or where indicated. Extend minimum 3/4 inch beyond edge of door on which astragal is mounted or as required to comply with published listing of qualified testing agency.

B. Hollow-Metal Frames: Fabricate in one piece except where handling and shipping limitations require multiple sections. Where frames are fabricated in sections, provide alignment plates or angles at each joint, fabricated of metal of same or greater thickness as frames.

1. Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners unless otherwise indicated.
2. Door Silencers: Except on weather-stripped frames, drill stops to receive door silencers as follows. Keep holes clear during construction.

    a. Single-Door Frames: Drill stop in strike jamb to receive three door silencers.
    b. Double-Door Frames: Drill stop in head jamb to receive two door silencers.

C. Hardware Preparation: Factory prepare hollow-metal doors and frames to receive templated mortised hardware, and electrical wiring; include cutouts, reinforcement, mortising, drilling, and tapping in accordance with ANSI/SDI A250.6, the Door Hardware Schedule on Drawings, and templates.

1. Reinforce doors and frames to receive non-templated, mortised, and surface-mounted door hardware.
2. Comply with BHMA A156.115 for preparing hollow-metal doors and frames for hardware.

2.8 STEEL FINISHES

A. Prime Finish: Clean, pretreat, and apply manufacturer's standard primer.

1. Shop Primer: Manufacturer's standard, fast-curing, lead- and chromate-free primer complying with ANSI/SDI A250.10; recommended by primer manufacturer

for substrate; compatible with substrate and field-applied coatings despite prolonged exposure.

PART 3 - EXECUTION

3.1 PREPARATION

A. Remove welded-in shipping spreaders installed at factory. Restore exposed finish by grinding, filling, and dressing, as required to make repaired area smooth, flush, and invisible on exposed faces. Touch up factory-applied finishes where spreaders are removed.

B. Drill and tap doors and frames to receive non-templated, mortised, and surface-mounted door hardware.

3.2 INSTALLATION

A. Install hollow-metal doors and frames plumb, rigid, properly aligned, and securely fastened in place. Comply with approved Shop Drawings and with manufacturer's written instructions.

B. Hollow-Metal Frames: Comply with ANSI/SDI A250.11.

1. Set frames accurately in position; plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is complete, remove temporary braces without damage to completed Work.

    a. Where frames are fabricated in sections, field splice at approved locations by welding face joint continuously; grind, fill, dress, and make splice smooth, flush, and invisible on exposed faces. Touch-up finishes.
    b. Install frames with removable stops located on secure side of opening.

2. Floor Anchors: Secure with post-installed expansion anchors.

    a. Floor anchors may be set with power-actuated fasteners instead of post-installed expansion anchors if so indicated and approved on Shop Drawings.

3. Solidly pack mineral-fiber insulation inside frames.
4. Masonry Walls: Coordinate installation of frames to allow for solidly filling space between frames and masonry with grout or mortar.
5. Installation Tolerances: Adjust hollow-metal frames to the following tolerances:

    a. Squareness: Plus or minus 1/16 inch, measured at door rabbet on a line 90 degrees from jamb perpendicular to frame head.
    b. Alignment: Plus or minus 1/16 inch, measured at jambs on a horizontal line parallel to plane of wall.

c. Twist: Plus or minus 1/16 inch, measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.
d. Plumbness: Plus or minus 1/16 inch, measured at jambs at floor.

C. Hollow-Metal Doors: Fit and adjust hollow-metal doors accurately in frames, within clearances specified below.

1. Non-Fire-Rated Steel Doors: Comply with ANSI/SDI A250.8.

3.3 FIELD QUALITY CONTROL

A. Inspection Agency: Engage a qualified inspector to perform inspections and to furnish reports to Architect.

B. Inspections:

1. Egress Door Inspections: Inspect each door equipped with panic hardware, each door equipped with fire exit hardware, each door located in an exit enclosure, each electrically controlled egress door, and each door equipped with special locking arrangements in accordance with NFPA 101, Section 7.2.1.15.

C. Repair or remove and replace installations where inspections indicate that they do not comply with specified requirements.

D. Reinspect repaired or replaced installations to determine if replaced or repaired door assembly installations comply with specified requirements.

3.4 REPAIR

A. Prime-Coat Touchup: Immediately after erection, sand smooth rusted or damaged areas of prime coat and apply touchup of compatible air-drying, rust-inhibitive primer.

B. Touchup Painting: Cleaning and touchup painting of abraded areas of paint are specified in painting Sections.

END OF SECTION

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SECTION 08710

DOOR HARDWARE

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Hinges.
2. Mortise locks.
3. Surface bolts.
4. Exit devices and auxiliary items.
5. Lock cylinders.
6. Coordinators.
7. Carry-open bars.
8. Astragals.
9. Surface closers.
10. Door gasketing.
11. Thresholds.
12. Metal protective trim units.

1.2 COORDINATION

A. Installation Templates: Distribute for doors, frames, and other work specified to be factory prepared. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing door hardware to comply with indicated requirements.

B. Security: Coordinate installation of door hardware, keying, and access control with Owner's security consultant.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1. Conference participants must include Installer's Architectural Hardware Consultant and Owner's security consultant.

B. Keying Conference: Conduct conference at Project site.

1. Conference participants must include Installer's Architectural Hardware Consultant and Owner's security consultant.

1.4 ACTION SUBMITTALS

A. Product Data:

1. Hinges.
2. Mortise locks.
3. Manual flush bolts.
4. Exit devices and auxiliary items.
5. Astragals.
6. Surface closers.
7. Door gasketing.
8. Thresholds.
9. Metal protective trim units.
10. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.

B. Product Data Submittals: For each product.

C. Door Hardware Schedule: Prepared by or under the supervision of Installer's Architectural Hardware Consultant. Coordinate door hardware schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.

1. Submittal Sequence: Submit door hardware schedule concurrent with submissions of product data, Samples, and Shop Drawings. Coordinate submission of door hardware schedule with scheduling requirements of other work to facilitate the fabrication of other work that is critical in Project construction schedule.
2. Format: Use same scheduling sequence and format and use same door numbers as in door hardware schedule in the Contract Documents.
3. Content: Include the following information:

    a. Identification number, location, hand, fire rating, size, and material of each door and frame.
    b. Locations of each door hardware set, cross-referenced to Drawings on floor plans and to door and frame schedule.
    c. Complete designations, including name and manufacturer, type, style, function, size, quantity, function, and finish of each door hardware product.
    d. Fastenings and other installation information.
    e. Explanation of abbreviations, symbols, and designations contained in door hardware schedule.
    f. Mounting locations for door hardware.
    g. List of related door devices specified in other Sections for each door and frame.

D. Keying Schedule: Prepared by or under the supervision of Installer's Architectural Hardware Consultant, detailing Owner's final keying instructions for locks. Include schematic keying diagram and index each key set to unique door designations that are coordinated with the Contract Documents.

1.5 INFORMATIONAL SUBMITTALS

A. Field quality-control reports.

B. Sample Warranty: For special warranty.

1.6 CLOSEOUT SUBMITTALS

A. Maintenance Data: For each type of door hardware to include in maintenance manuals.

B. Schedules: Final door hardware, keying schedule.

1.7 QUALITY ASSURANCE

A. Installer Qualifications: Supplier of products and an employer of workers trained and approved by product manufacturers and of an Architectural Hardware Consultant who is available during the course of the Work to consult Contractor, Architect, and Owner about door hardware and keying.

1. Scheduling Responsibility: Preparation of door hardware and keying schedule.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Inventory door hardware on receipt and provide secure lockup for door hardware delivered to Project site.

B. Tag each item or package separately with identification coordinated with the final door hardware schedule, and include installation instructions, templates, and necessary fasteners with each item or package.

C. Deliver keys to Owner by registered mail or overnight package service.

1.9 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace components of door hardware that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Structural failures, including excessive deflection, cracking, or breakage.
b. Faulty operation of doors and door hardware.
c. Deterioration of metals, metal finishes, and other materials beyond normal weathering and use.

2. Warranty Period: Three years from date of Substantial Completion unless otherwise indicated below:

a. Exit Devices: Two years from date of Substantial Completion.
b. Manual Closers: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 SOURCE LIMITATIONS

A. Obtain each type of door hardware from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

A. Means of Egress Doors: Latches do not require more than 15 lbf to release the latch. Locks do not require use of a key, tool, or special knowledge for operation.

B. Accessibility Requirements: For door hardware on doors in an accessible route, comply with Florida Building Code Accessibility Code, most current edition.

1. Provide operating devices that do not require tight grasping, pinching, or twisting of the wrist and that operate with a force of not more than 5 lbf.
2. Bevel raised thresholds with a slope of not more than 1:2. Provide thresholds not more than 1/2 inch high.
3. Adjust door closer sweep periods so that, from an open position of 90 degrees, the door will take at least 5 seconds to move to a position of 12 degrees from the latch.

2.3 HINGES

A. Hinges: ANSI/BHMA A156.1. Provide template-produced hinges for hinges installed on hollow-metal doors and hollow-metal frames.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Baldwin; part of the Spectrum Brands Hardware and Home Improvement Group (HHI)
b. Lawrence Hardware Inc.
c. McKinney Products Company; ASSA ABLOY Accessories and Door Controls Group, Inc.; ASSA ABLOY
d. STANLEY; dormakaba USA, Inc.

2.4 MECHANICAL LOCKS AND LATCHES

A. Lock Functions: As indicated in door hardware schedule.

B. Lock Throw: Comply with testing requirements for length of bolts required for labeled fire doors, and as follows:

1. Mortise Locks: Minimum 3/4-inch latchbolt throw.

C. Lock Backset: 2-3/4 inches unless otherwise indicated.

D. Lock Trim:

1. Levers: Cast.
2. Escutcheons (Roses): Cast.
3. Dummy Trim: Match lever lock trim and escutcheons.

E. Strikes: Provide manufacturer's standard strike for each lock bolt or latchbolt complying with requirements indicated for applicable lock or latch and with strike box and curved lip extended to protect frame; finished to match lock or latch.

F. Mortise Locks: ANSI/BHMA A156.13, Operational Grade 1; stamped steel case with steel or brass parts; Series 1000.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Allegion plc
b. Corbin Russwin, Inc.; an ASSA ABLOY Group company
c. dormakaba USA Inc.
d. SARGENT Manufacturing Company; ASSA ABLOY

2.5 SURFACE BOLTS

A. Surface Bolts: ANSI/BHMA A156.16.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Don-Jo Mfg., Inc
b. Hiawatha, Inc; a division of the Activar Construction Products Group
c. Trimco

2.6 EXIT DEVICES AND AUXILIARY ITEMS

A. Exit Devices and Auxiliary Items: ANSI/BHMA A156.3.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. C.R. Laurence Co., Inc.; CRH Americas, Inc.
b. Corbin Russwin, Inc.; an ASSA ABLOY Group company
c. dormakaba USA Inc.
d. SARGENT Manufacturing Company; ASSA ABLOY
e. STANLEY; dormakaba USA, Inc.

2.7 LOCK CYLINDERS

A. Lock Cylinders: Tumbler type, constructed from brass or bronze, stainless steel, or nickel silver. Provide cylinder from same manufacturer of locking devices.

B. Standard Lock Cylinders: ANSI/BHMA A156.5, Grade 1 permanent cores; face finished to match lockset.

1. Core Type: Interchangeable

C. Construction Master Keys: Provide cylinders with feature that permits voiding of construction keys without cylinder removal. Provide 10 construction master keys.

D. Construction Cores: Provide construction cores that are replaceable by permanent cores. Provide 10 construction master keys.

2.8 KEYING

A. Keying System: Factory registered, complying with guidelines in ANSI/BHMA A156.28, appendix. Provide one extra key blank for each lock. Incorporate decisions made in keying conference.

1. Existing System:

a. Master key or grand master key locks to Owner's existing system.
b. Re-key Owner's existing master key system into new keying system.

2. Keyed Alike: Key all cylinders to same change key.

B. Keys: Nickel silver

1. Stamping: Permanently inscribe each key with a visual key control number and include the following notation:

a. Notation: "DO NOT DUPLICATE."

2.9 ACCESSORIES FOR PAIRS OF DOORS

A. Astragals: ANSI/BHMA A156.22.

2.10 SURFACE CLOSERS

A. Surface Closers: ANSI/BHMA A156.4; rack-and-pinion hydraulic type with adjustable sweep and latch speeds controlled by key-operated valves and forged-steel main arm. Comply with manufacturer's written instructions for size of door closers depending on size of door, exposure to weather, and anticipated frequency of use. Provide factory-sized closers, adjustable to meet field conditions and requirements for opening force.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

    a. Corbin Russwin, Inc.; an ASSA ABLOY Group company
    b. dormakaba USA Inc.
    c. Hager Companies
    d. Rixson Specialty Door Controls; ASSA ABLOY
    e. SARGENT Manufacturing Company; ASSA ABLOY
    f. STANLEY; dormakaba USA, Inc.

2.11 DOOR GASKETING

A. Door Gasketing: ANSI/BHMA A156.22; with resilient or flexible seal strips that are easily replaceable and readily available from stocks maintained by manufacturer.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

    a. National Guard Products, Inc
    b. Pemko Manufacturing Company Inc.; ASSA ABLOY Accessories and Door Controls Group, Inc.; ASSA ABLOY

B. Maximum Air Leakage: When tested in accordance with ASTM E283/E283M with tested pressure differential of 0.3 inch wg, as follows:

1. Gasketing on Single Doors: 0.3 cfm/sq. ft. of door opening.
2. Gasketing on Double Doors: 0.50 cfm per ft. of door opening.

2.12 THRESHOLDS

A. Thresholds: ANSI/BHMA A156.21; fabricated to full width of opening indicated.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

    a. Hager Companies
    b. National Guard Products, Inc
    c. Pemko Manufacturing Company Inc.; ASSA ABLOY Accessories and Door Controls Group, Inc.; ASSA ABLOY
    d. Rixson Specialty Door Controls; ASSA ABLOY

2.13 METAL PROTECTIVE TRIM UNITS

A. Metal Protective Trim Units: ANSI/BHMA A156.6; fabricated from 0.050-inch- thick stainless steel; with manufacturer's standard machine or self-tapping screw fasteners.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Don-Jo Mfg., Inc
b. Hager Companies
c. Rockwood Manufacturing Company; ASSA ABLOY Accessories and Door Controls Group, Inc.; ASSA ABLOY
d. Trimco

2.14 FABRICATION

A. Manufacturer's Nameplate: Do not provide products that have manufacturer's name or trade name displayed in a visible location except in conjunction with required fire-rating labels and as otherwise approved by Architect.

1. Manufacturer's identification is permitted on rim of lock cylinders only.

B. Base Metals: Produce door hardware units of base metal indicated, fabricated by forming method indicated, using manufacturer's standard metal alloy, composition, temper, and hardness. Furnish metals of a quality equal to or greater than that of specified door hardware units and ANSI/BHMA A156.18.

C. Fasteners: Provide door hardware manufactured to comply with published templates prepared for machine, wood, and sheet metal screws. Provide screws that comply with commercially recognized industry standards for application intended; however, aluminum fasteners are not permitted. Provide Phillips flat-head screws with finished heads to match surface of door hardware unless otherwise indicated.

1. Concealed Fasteners: For door hardware units that are exposed when door is closed, except for units already specified with concealed fasteners. Do not use through bolts for installation where bolt head or nut on opposite face is exposed unless it is the only means of securely attaching the door hardware. Where through bolts are used on hollow door and frame construction, provide sleeves for each through bolt.
2. Spacers or Sex Bolts: For through bolting of hollow-metal doors.
3. Gasketing Fasteners: Provide noncorrosive fasteners for exterior applications and elsewhere as indicated.

2.15 FINISHES

A. Provide finishes complying with ANSI/BHMA A156.18 as indicated in door hardware schedule.

B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

C. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine doors and frames, with Installer present, for compliance with requirements for installation tolerances, labeled fire-rated door assembly construction, wall and floor construction, and other conditions affecting performance of the Work.

B. Examine roughing-in for electrical power systems to verify actual locations of wiring connections before electrified door hardware installation.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Steel Doors and Frames: For surface-applied door hardware, drill and tap doors and frames in accordance with ANSI/SDI A250.6.

B. Wood Doors: Comply with door and hardware manufacturers' written instructions.

3.3 INSTALLATION

A. Mounting Heights: Mount door hardware units at heights to comply with the following unless otherwise indicated or required to comply with governing regulations.

1. Standard Steel Doors and Frames: ANSI/SDI A250.8.

B. Install each door hardware item to comply with manufacturer's written instructions. Where cutting and fitting are required to install door hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation of surface protective trim units with finishing work. Do not install surface-mounted items until finishes have been completed on substrates involved.

1. Set units level, plumb, and true to line and location. Adjust and reinforce attachment substrates as necessary for proper installation and operation.
2. Drill and countersink units that are not factory prepared for anchorage fasteners. Space fasteners and anchors in accordance with industry standards.

C. Hinges: Install types and in quantities indicated in door hardware schedule, but not fewer than the number recommended by manufacturer for application indicated or one hinge for every 30 inches of door height, whichever is more stringent, unless other equivalent means of support for door, such as spring hinges or pivots, are provided.

D. Lock Cylinders: Install construction cores to secure building and areas during construction period.

1. Replace construction cores with permanent cores as directed by Owner.
2. Furnish permanent cores to Owner for installation.

E. Thresholds: Set thresholds for exterior doors and other doors indicated in full bed of sealant complying with requirements specified in Section 079200 "Joint Sealants."

F. Perimeter Gasketing: Apply to head and jamb, forming seal between door and frame.

1. Do not notch perimeter gasketing to install other surface-applied hardware.

G. Meeting Stile Gasketing: Fasten to meeting stiles, forming seal when doors are closed.

H. Door Bottoms: Apply to bottom of door, forming seal with threshold when door is closed.

3.4 FIELD QUALITY CONTROL

A. Independent Architectural Hardware Consultant: Engage a qualified independent Architectural Hardware Consultant to perform inspections and to prepare inspection reports.

1. Independent Architectural Hardware Consultant will inspect door hardware and state in each report whether installed work complies with or deviates from requirements, including whether door hardware is properly installed and adjusted.

3.5 ADJUSTING

A. Initial Adjustment: Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate as intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.

1. Door Closers: Adjust sweep period to comply with accessibility requirements and requirements of authorities having jurisdiction.
2. Spring Hinges: Adjust to achieve positive latching when door is allowed to close freely from an open position of 70 degrees and so that closing time complies with accessibility requirements of authorities having jurisdiction.
3. Electric Strikes: Adjust horizontal and vertical alignment of keeper to properly engage lock bolt.

B. Occupancy Adjustment: Approximately six months after date of Substantial Completion, Installer's Architectural Hardware Consultant is to examine and readjust each item of door hardware, including adjusting operating forces, as necessary to ensure function of doors, door hardware, and electrified door hardware.

3.6 CLEANING AND PROTECTION

A. Clean adjacent surfaces soiled by door hardware installation.

B. Clean operating items as necessary to restore proper function and finish.

C. Provide final protection and maintain conditions that ensure that door hardware is without damage or deterioration at time of Substantial Completion.

3.7 MAINTENANCE SERVICE

A. Maintenance Tools and Instructions: Furnish a complete set of specialized tools and maintenance instructions for Owner's continued adjustment, maintenance, and removal and replacement of door hardware.

B. Maintenance Service: Beginning at Substantial Completion, maintenance service is to include 12 months' full maintenance by skilled employees of door hardware Installer. Include quarterly preventive maintenance, repair or replacement of worn or defective components, lubrication, cleaning, and adjusting as required for proper door and door hardware operation. Parts and supplies are to be manufacturer's authorized replacement parts and supplies.

3.8 DEMONSTRATION

A. Train Owner's maintenance personnel to adjust, operate, and maintain door hardware.

END OF SECTION

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SECTION 09290

GYPSUM BOARD

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Interior gypsum board.

1.2 ACTION SUBMITTALS

A. Product Data: For the following:

1. Gypsum board, Type X.

1.3 DELIVERY, STORAGE AND HANDLING

A. Store materials inside under cover and keep them dry and protected against weather, condensation, direct sunlight, construction traffic, and other potential causes of damage. Stack panels flat and supported on risers on a flat platform to prevent sagging.

1.4 FIELD CONDITIONS

A. Environmental Limitations: Comply with ASTM C840 requirements or gypsum board manufacturer's written instructions, whichever are more stringent.

B. Do not install paper-faced gypsum panels until installation areas are enclosed and conditioned.

C. Do not install panels that are wet, moisture damaged, and mold damaged.

1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

PART 2 - PRODUCTS

2.1 SOURCE LIMITATIONS

A. Obtain each type of gypsum panel and joint finishing material from single source with resources to provide products of consistent quality in appearance and physical properties.

2.2 PERFORMANCE REQUIREMENTS

A. Fire-Resistance-Rated Assemblies: For fire-resistance-rated assemblies, provide materials and construction identical to those tested in assembly indicated in accordance with ASTM E119 by an independent testing agency.

B. Size: Provide maximum lengths and widths available that will minimize joints in each area and that correspond with support system indicated.

2.3 INTERIOR GYPSUM BOARD

A. Gypsum Board, Type X: ASTM C1396/C1396M.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

    a. American Gypsum
    b. CertainTeed; SAINT-GOBAIN
    c. Georgia-Pacific Gypsum LLC
    d. Gold Bond Building Products, LLC provided by National Gypsum Company
    e. USG Corporation

2. Thickness: 5/8 inch.
3. Long Edges: Tapered.

2.4 TRIM ACCESSORIES

A. Interior Trim: ASTM C1047.

1. Material: Galvanized or aluminum-coated steel sheet or rolled zinc.
2. Shapes:

    a. U-Bead: J-shaped; exposed short flange does not receive joint compound.

2.5 JOINT TREATMENT MATERIALS

A. General: Comply with ASTM C475/C475M.

B. Joint Tape:

1. Interior Gypsum Board: Paper.

C. Joint Compound for Interior Gypsum Board: For each coat, use formulation that is compatible with other compounds applied on previous or for successive coats.

1. Prefilling: At open joints and damaged surface areas, use setting-type taping compound.
2. Embedding and First Coat: For embedding tape and first coat on joints, fasteners, and trim flanges, use drying-type, all-purpose compound.

2.6 AUXILIARY MATERIALS

A. Provide auxiliary materials that comply with referenced installation standards and manufacturer's written instructions.

B. Laminating Adhesive: Adhesive or joint compound recommended for directly adhering gypsum panels to continuous substrate.

C. Steel Drill Screws: ASTM C1002 unless otherwise indicated.

1. Use screws complying with ASTM C954 for fastening panels to steel members from 0.033 to 0.112 inch thick.

D. Sound-Attenuation Blankets: ASTM C665, Type I (blankets without membrane facing) produced by combining thermosetting resins with mineral fibers manufactured from glass, slag wool, or rock wool.

1. Fire-Resistance-Rated Assemblies: Comply with mineral-fiber requirements of assembly.

E. Acoustical Sealant: As specified in Section 079219 "Acoustical Joint Sealants."

F. Thermal Insulation: As specified in Section 072100 "Thermal Insulation."

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas and substrates including welded hollow-metal frames and support framing, with Installer present, for compliance with requirements and other conditions affecting performance of the Work.

B. Examine panels before installation. Reject panels that are wet, moisture damaged, and mold damaged.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION AND FINISHING OF PANELS, GENERAL

A. Comply with ASTM C840.

B. Install ceiling panels across framing to minimize the number of abutting end joints and to avoid abutting end joints in central area of each ceiling. Stagger abutting end joints of adjacent panels not less than one framing member.

C. Install panels with face side out. Butt panels together for a light contact at edges and ends with not more than 1/16 inch of open space between panels. Do not force into place.

D. Locate edge and end joints over supports, except in ceiling applications where intermediate supports or gypsum board back-blocking is provided behind end joints. Do not place tapered edges against cut edges or ends. Stagger vertical joints on opposite sides of partitions. Do not make joints other than control joints at corners of framed openings.

E. Cover both faces of support framing with gypsum panels in concealed spaces (above ceilings, etc.), except in chases braced internally.

1. Unless concealed application is indicated or required for sound, fire, air, or smoke ratings, coverage may be accomplished with scraps of not less than 8 sq. ft. in area.
2. Fit gypsum panels around ducts, pipes, and conduits.
3. Where partitions intersect structural members projecting below underside of floor/roof slabs and decks, cut gypsum panels to fit profile formed by structural members; allow 1/4- to 3/8-inch wide joints to install sealant.

F. Wood Framing: Install gypsum panels over wood framing, with floating internal corner construction. Do not attach gypsum panels across the flat grain of wide-dimension lumber, including floor joists and headers. Float gypsum panels over these members or provide control joints to counteract wood shrinkage.

3.3 INSTALLATION OF INTERIOR GYPSUM BOARD

A. Install interior gypsum board in the following locations:

1. Type X: As indicated on Drawings.

B. Single-Layer Application:

1. On ceilings, apply gypsum panels before wall/partition board application to greatest extent possible and at right angles to framing unless otherwise indicated.
2. On partitions/walls, apply gypsum panels [vertically (parallel to framing)] [horizontally (perpendicular to framing)] unless otherwise indicated or required by fire-resistance-rated assembly, and minimize end joints.

a. Stagger abutting end joints not less than one framing member in alternate courses of panels.

3.4 FINISHING OF GYPSUM BOARD

A. General: Treat gypsum board joints, interior angles, edge trim, control joints, penetrations, fastener heads, surface defects, and elsewhere as required to prepare gypsum board surfaces for decoration. Promptly remove residual joint compound from adjacent surfaces.

B. Apply joint tape over gypsum board joints, except for trim products specifically indicated as not intended to receive tape.

C. Gypsum Board Finish Levels: Finish panels to levels indicated below and in accordance with ASTM C840:

1. Level 1: Ceiling plenum areas, concealed areas, and where indicated.
2. Level 4: At panel surfaces that will be exposed to view unless otherwise indicated.

   a. Primer and its application to surfaces are specified in Section 099123 "Interior Painting."
   b. Primer and its application to surfaces are specified in Section 099123 "Interior Painting."

3.5 PROTECTION

A. Protect adjacent surfaces from drywall compound and promptly remove from floors and other non-drywall surfaces. Repair surfaces stained, marred, or otherwise damaged during drywall application.

B. Protect installed products from damage from weather, condensation, direct sunlight, construction, and other causes during remainder of the construction period.

C. Remove and replace panels that are wet, moisture damaged, and mold damaged.

1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

END OF SECTION

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SECTION 09651

RESILIENT BASE AND ACCESSORIES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Vinyl base.
2. Rubber molding accessories.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Samples for Verification: For each type of product indicated and for each color, texture, and pattern required in manufacturer's standard-size Samples, but not less than 12 inches long.

C. Product Schedule: For resilient base and accessory products. Use same designations indicated on Drawings.

1.3 QUALITY ASSURANCE

A. Mockups: Build mockups to verify selections made under Sample submittals, to demonstrate aesthetic effects, and to set quality standards for materials and execution.

1. Coordinate mockups in this Section with mockups specified in other Sections.
2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
3. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Store resilient products and installation materials in dry spaces protected from the weather, with ambient temperatures maintained within range recommended by manufacturer, but not less than 50 deg F or more than 90 deg F.

1.5 FIELD CONDITIONS

A. Maintain ambient temperatures within range recommended by manufacturer, but not less than 70 deg F or more than 95 deg F, in spaces to receive resilient products during the following periods:

1. 48 hours before installation.
2. During installation.
3. 48 hours after installation.

B. After installation and until Substantial Completion, maintain ambient temperatures within range recommended by manufacturer, but not less than 55 deg F or more than 95 deg F.

C. Install resilient products after other finishing operations, including painting, have been completed.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS
2.2 VINYL BASE

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Flexco Corporation
2. Johnsonite; a Tarkett company
3. Roppe Corporation; Roppe Holding Company

B. Product Standard: ASTM F1861, Type TV (vinyl, thermoplastic).

1. Group: I (solid, homogeneous).
2. Style and Location:

a. Style B, Cove

C. Minimum Thickness: 0.125 inch.

D. Height: As indicated on Drawings

E. Lengths: Coils in manufacturer's standard length.

F. Outside Corners: Job formed or preformed

G. Inside Corners: Job formed or preformed.

H. Colors and Patterns: Match Architect's sample.

2.3 INSTALLATION MATERIALS

A. Trowelable Leveling and Patching Compounds: Latex-modified, portland-cement-based or blended hydraulic-cement-based formulation provided or approved by resilient-product manufacturer for applications indicated.

B. Adhesives: Water-resistant type recommended by resilient-product manufacturer for resilient products and substrate conditions indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, with Installer present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.

1. Verify that finishes of substrates comply with tolerances and other requirements specified in other Sections and that substrates are free of cracks, ridges, depressions, scale, and foreign deposits that might interfere with adhesion of resilient products.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

1. Installation of resilient products indicates acceptance of surfaces and conditions.

3.2 PREPARATION

A. Prepare substrates according to manufacturer's written instructions to ensure adhesion of resilient products.

B. Fill cracks, holes, and depressions in substrates with trowelable leveling and patching compound; remove bumps and ridges to produce a uniform and smooth substrate.

C. Do not install resilient products until materials are the same temperature as space where they are to be installed.

1. At least 48 hours in advance of installation, move resilient products and installation materials into spaces where they will be installed.

D. Immediately before installation, sweep and vacuum clean substrates to be covered by resilient products.

3.3 RESILIENT BASE INSTALLATION

A. Comply with manufacturer's written instructions for installing resilient base.

B. Apply resilient base to walls and other permanent fixtures in rooms and areas where base is required.

C. Install resilient base in lengths as long as practical without gaps at seams and with tops of adjacent pieces aligned.

D. Tightly adhere resilient base to substrate throughout length of each piece, with base in continuous contact with horizontal and vertical substrates.

E. Do not stretch resilient base during installation.

F. On masonry surfaces or other similar irregular substrates, fill voids along top edge of resilient base with manufacturer's recommended adhesive filler material.

G. Preformed Corners: Install preformed corners before installing straight pieces.

H. Job-Formed Corners:

1. Outside Corners: Use straight pieces of maximum lengths possible and form with returns not less than 3 inches in length.

   a. Form without producing discoloration (whitening) at bends.

2. Inside Corners: Use straight pieces of maximum lengths possible and form with returns not less than 3 inches in length.

   a. Miter or cope corners to minimize open joints.

3.4 CLEANING AND PROTECTION

A. Comply with manufacturer's written instructions for cleaning and protecting resilient products.

B. Perform the following operations immediately after completing resilient-product installation:

1. Remove adhesive and other blemishes from surfaces.
2. Sweep and vacuum horizontal surfaces thoroughly.
3. Damp-mop horizontal surfaces to remove marks and soil.

C. Protect resilient products from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period.

D. Cover resilient products subject to wear and foot traffic until Substantial Completion.

END OF SECTION

SECTION 09911

EXTERIOR PAINTING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Primers.
2. Finish coatings.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include preparation requirements and application instructions.
2. Indicate VOC content.

B. Samples for Verification: For each type of paint system and each color and gloss of topcoat.

1. Submit Samples on rigid backing, 8 inches square.
2. Apply coats on Samples in steps to show each coat required for system.
3. Label each coat of each Sample.
4. Label each Sample for location and application area.

C. Product Schedule: Use same designations indicated on Drawings and in the Exterior Painting Schedule to cross-reference paint systems specified in this Section. Include color designations.

1.3 DELIVERY, STORAGE, AND HANDLING

A. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F.

1. Maintain containers in clean condition, free of foreign materials and residue.
2. Remove rags and waste from storage areas daily.

1.4 FIELD CONDITIONS

A. Apply paints only when temperature of surfaces to be painted and ambient air temperatures are between 50 and 95 deg F.

B. Do not apply paints in snow, rain, fog, or mist; when relative humidity exceeds 85 percent; at temperatures less than 5 deg F above the dew point; or to damp or wet surfaces.

PART 2 - PRODUCTS

2.1 PRIMERS

A. Alkyd Metal Primer: Corrosion-resistant, solvent-based, alkyd primer formulated for use on prepared ferrous metals subject to industrial and light marine environments.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

   a. Benjamin Moore & Co.
   b. PPG Paints; PPG Industries, Inc.
   c. Sherwin-Williams Company (The)

2.2 FINISH COATINGS

A. Exterior Alkyd Enamel, Semigloss: Solvent-based, pigmented, alkyd enamel formulated for mold, microbial, and water resistance and for use on exterior, primed, wood and metal surfaces.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

   a. Behr Paint Company; Behr Process Corporation
   b. PPG Paints; PPG Industries, Inc.
   c. Sherwin-Williams Company (The)

2. Gloss Level: Manufacturer's standard semigloss finish.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.

B. Verify suitability of substrates, including surface conditions and compatibility, with finishes and primers.

C. Proceed with coating application only after unsatisfactory conditions have been corrected.

1. Application of coating indicates acceptance of surfaces and conditions.

3.2 PREPARATION

A. Comply with manufacturer's written instructions applicable to substrates and paint systems indicated.

B. Remove hardware, covers, plates, and similar items already in place that are removable and are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.

1. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection.

C. Clean substrates of substances that could impair bond of paints, including dust, dirt, oil, grease, and incompatible paints and encapsulants.

1. Remove incompatible primers and reprime substrate with compatible primers or apply tie coat as required to produce paint systems specified in this Section.

D. Steel Substrates: Remove rust, loose mill scale, and shop primer if any. Clean using methods recommended in writing by paint manufacturer.

1. SSPC-SP 3.
2. SSPC-SP 7/NACE No. 4.
3. SSPC-SP 11.

E. Shop-Primed Steel Substrates: Clean field welds, bolted connections, and areas where shop paint is abraded. Paint exposed areas with the same material as used for shop priming to comply with SSPC-PA 1 for touching up shop-primed surfaces.

F. Galvanized-Metal Substrates: Remove grease and oil residue from galvanized sheet metal by mechanical methods to produce clean, lightly etched surfaces that promote adhesion of subsequently applied paints.

3.3 INSTALLATION

A. Apply paints in accordance with manufacturer's written instructions.

1. Use applicators and techniques suited for paint and substrate indicated.
2. Paint surfaces behind movable items same as similar exposed surfaces. Before final installation, paint surfaces behind permanently fixed items with prime coat only.
3. Paint both sides and edges of exterior doors and entire exposed surface of exterior door frames.

4. Paint entire exposed surface of window frames and sashes.
5. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.
6. Primers specified in the Exterior Painting Schedule may be omitted on items that are factory primed or factory finished if compatible with intermediate and topcoat coatings and acceptable to intermediate and topcoat paint manufacturers.

B. Tint undercoats same color as topcoat, but tint each undercoat a lighter shade to facilitate identification of each coat if multiple coats of same material are to be applied. Provide sufficient difference in shade of undercoats to distinguish each separate coat.

C. If undercoats or other conditions show through topcoat, apply additional coats until cured film has a uniform paint finish, color, and appearance.

D. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.

3.4 FIELD QUALITY CONTROL

A. Dry Film Thickness Testing: Owner may engage the services of a qualified testing and inspecting agency to inspect and test paint for dry film thickness.

1. Contractor shall touch up and restore painted surfaces damaged by testing.
2. If test results show that dry film thickness of applied paint does not comply with paint manufacturer's written instructions, Contractor shall pay for testing and apply additional coats as needed to provide dry film thickness that complies with paint manufacturer's written instructions.

3.5 CLEANING AND PROTECTION

A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.

1. Do not clean equipment with free-draining water and prevent solvents, thinners, cleaners, and other contaminants from entering into waterways, sanitary and storm drain systems, and ground.
2. Dispose of contaminants in accordance with requirements of authorities having jurisdiction.
3. Allow empty paint cans to dry before disposal.
4. Collect waste paint by type and deliver to recycling or collection facility.

B. After completing paint application, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.

C. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.

D. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

3.6 EXTERIOR PAINTING SCHEDULE

A. Steel and Iron Substrates:

1. Alkyd System:

a. Prime Coat: Alkyd metal primer or Shop primer specified in Section in which substrate is specified
b. Intermediate Coat: Matching topcoat.
c. Topcoat: Exterior alkyd enamel, semigloss.

B. Galvanized-Metal Substrates:

1. Water-Based, Light Industrial Coating System:

a. Prime Coat: Epoxy metal primer
b. Intermediate Coat: Matching topcoat.
c. Topcoat: Exterior, water-based, light industrial coating, semigloss.

END OF SECTION

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SECTION 09912

INTERIOR PAINTING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Primers.
2. Water-based finish coatings.
3. Solvent-based finish coatings.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product. Include preparation requirements and application instructions.

1. Include preparation requirements and application instructions.
2. Indicate VOC content.

B. Samples for Verification: For each type of paint system and each color and gloss of topcoat.

1. Submit Samples on rigid backing, 8 inches square.
2. Apply coats on Samples in steps to show each coat required for system.
3. Label each coat of each Sample.
4. Label each Sample for location and application area.

C. Product Schedule: Use same designations indicated on Drawings and in the Interior Painting Schedule to cross-reference paint systems specified in this Section. Include color designations.

1.3 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Paint Products: 5 percent, but not less than 1 gal. of each material and color applied.

1.4 QUALITY ASSURANCE

A. Mockups: Apply mockups of each paint system indicated and each color and finish selected to verify preliminary selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.

1. Architect will select one surface to represent surfaces and conditions for application of each paint system.

   a. Vertical and Horizontal Surfaces: Provide samples of at least 100 sq. ft..
   b. Other Items: Architect will designate items or areas required.

2. Final approval of color selections will be based on mockups.

   a. If preliminary color selections are not approved, apply additional mockups of additional colors selected by Architect at no added cost to Owner.

3. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
4. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F.

1. Maintain containers in clean condition, free of foreign materials and residue.
2. Remove rags and waste from storage areas daily.

1.6 FIELD CONDITIONS

A. Apply paints only when temperature of surfaces to be painted and ambient air temperatures are between 50 and 95 deg F.

B. Do not apply paints when relative humidity exceeds 85 percent; at temperatures of less than 5 deg F above the dew point; or to damp or wet surfaces.

PART 2 - PRODUCTS

2.1 PRIMERS

A. Interior/Exterior Latex Block Filler: Water-based, high-solids, emulsion coating formulated to bridge and fill porous surfaces of exterior concrete masonry units in preparation for specified subsequent coatings.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

    a. Benjamin Moore & Co.
    b. PPG Paints; PPG Industries, Inc.
    c. Sherwin-Williams Company (The)

B. Water-Based Galvanized-Metal Primer: Corrosion-resistant, acrylic primer; formulated for use on cleaned/etched, exterior, galvanized metal to prepare it for subsequent water-based coatings.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

    a. Benjamin Moore & Co.
    b. PPG Paints; PPG Industries, Inc.
    c. Sherwin-Williams Company (The)

2.2 WATER-BASED FINISH COATS

A. Interior, Latex, Semigloss: Pigmented, water-based paint for use on primed wood and metals.

1. Manufacturers: Subject to compliance with requirements available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

    a. Benjamin Moore & Co.
    b. PPG Paints; PPG Industries, Inc.
    c. Sherwin-Williams Company (The)

2. Gloss and Sheen Level: Manufacturer's standard semigloss finish

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.

B. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows:

1. Concrete: 12 percent.
2. Masonry (Clay and CMUs): 12 percent.

C. Verify suitability of substrates, including surface conditions and compatibility, with existing finishes and primers.

D. Proceed with coating application only after unsatisfactory conditions have been corrected.

1. Application of coating indicates acceptance of surfaces and conditions.

3.2 PREPARATION

A. Comply with manufacturer's written instructions and recommendations applicable to substrates and paint systems indicated.

B. Remove hardware, covers, plates, and similar items already in place that are removable and are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.

1. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection if any.

C. Clean substrates of substances that could impair bond of paints, including dust, dirt, oil, grease, and incompatible paints and encapsulants.

1. Remove incompatible primers and reprime substrate with compatible primers or apply tie coat as required to produce paint systems indicated.

D. Concrete Substrates: Remove release agents, curing compounds, efflorescence, and chalk. Do not paint surfaces if moisture content or alkalinity of surfaces to be painted exceeds that permitted in manufacturer's written instructions.

E. Masonry Substrates: Remove efflorescence and chalk. Do not paint surfaces if moisture content or alkalinity of surfaces or mortar joints exceeds that permitted in manufacturer's written instructions.

F. Steel Substrates: Remove rust, loose mill scale, and shop primer, if any. Clean using methods recommended in writing by paint manufacturer**.**

G. Shop-Primed Steel Substrates: Clean field welds, bolted connections, and areas where shop paint is abraded. Paint exposed areas with the same material as used for shop priming to comply with SSPC-PA 1 for touching up shop-primed surfaces.

H. Galvanized-Metal Substrates: Remove grease and oil residue from galvanized sheet metal by mechanical methods to produce clean, lightly etched surfaces that promote adhesion of subsequently applied paints.

I. Aluminum Substrates: Remove loose surface oxidation.

3.3 INSTALLATION

A. Apply paints according to manufacturer's written instructions.

1. Use applicators and techniques suited for paint and substrate indicated.
2. Paint surfaces behind movable equipment and furniture same as similar exposed surfaces. Before final installation, paint surfaces behind permanently fixed equipment or furniture with prime coat only.
3. Paint front and backsides of access panels, removable or hinged covers, and similar hinged items to match exposed surfaces.
4. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.
5. Primers specified in painting schedules may be omitted on items that are factory primed or factory finished if acceptable to topcoat manufacturers.

B. Tint each undercoat a lighter shade to facilitate identification of each coat if multiple coats of same material are to be applied. Tint undercoats to match color of topcoat, but provide sufficient difference in shade of undercoats to distinguish each separate coat.

C. If undercoats or other conditions show through topcoat, apply additional coats until cured film has a uniform paint finish, color, and appearance.

D. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.

1. Paint portions of internal surfaces of metal ducts, without liner, behind air inlets and outlets that are visible from occupied spaces.

3.4 FIELD QUALITY CONTROL

A. Dry-Film Thickness Testing: Owner may engage the services of a qualified testing and inspecting agency to inspect and test paint for dry-film thickness.

1. Contractor shall touch up and restore painted surfaces damaged by testing.
2. If test results show that dry-film thickness of applied paint does not comply with paint manufacturer's written recommendations, Contractor shall pay for testing and apply additional coats as needed to provide dry-film thickness that complies with paint manufacturer's written recommendations.

3.5 CLEANING AND PROTECTION

A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.

1. Do not clean equipment with free-draining water and prevent solvents, thinners, cleaners, and other contaminants from entering into waterways, sanitary and storm drain systems, and ground.

2. Dispose of contaminants in accordance with requirements of authorities having jurisdiction.
3. Allow empty paint cans to dry before disposal.
4. Collect waste paint by type and deliver to recycling or collection facility.

B. After completing paint application, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.

C. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.

D. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

3.6 INTERIOR PAINTING SCHEDULE

A. Concrete Substrates, Nontraffic Surfaces:

1. Institutional Low-Odor/VOC Latex System:

a. Prime Coat: Interior, institutional low-odor/VOC primer sealer.
b. Intermediate Coat: Matching topcoat.
c. Topcoat: Interior latex, institutional low odor/VOC, flat.

B. Concrete Substrates, Traffic Surfaces:

1. Water-Based Concrete Floor Sealer System:

a. First Coat: Matching topcoat.
b. Topcoat: Water-based concrete floor sealer.

C. CMU Substrates:

1. Latex System:

a. Block Filler: Interior/exterior latex block filler.
b. Intermediate Coat: Matching topcoat.
c. Topcoat: Interior, latex, low sheen.

D. Steel Substrates:

1. Latex System, Alkyd Primer:

a. Prime Coat: Alkyd quick-dry primer for metal.
b. Intermediate Coat: Matching topcoat.
c. Topcoat: Interior, latex, semigloss.

2. Latex over Shop-Applied Quick-Drying Shop Primer System:

a. Prime Coat: Quick-dry primer for shop application.
b. Intermediate Coat: Matching topcoat.
c. Topcoat: Interior, latex, semigloss.

END OF SECTION

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SECTION 09965

ELASTOMERIC COATINGS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Elastomeric coatings.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Indicate VOC content.

B. Samples for Initial Selection: For each type of elastomeric coating.

C. Samples for Verification: For each type of elastomeric coating indicated and in each color and gloss.

1. Submit Samples on same type of substrate as that to receive application, 8 inches square.
2. Apply coats on Samples in steps to show each separate coat, including primers and block fillers as applicable.
3. Label each coat of each Sample.
4. Label each Sample for location and application area.

D. Product List: Cross-reference to paint system and locations of application areas. Use same designations indicated on Drawings and in schedules. Include color designations.

1.3 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials, from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Quantity: Furnish an additional 5 percent but not less than 1 gal. of each material, color, and texture applied.

1.4 MOCKUPS

A. Apply mockups of each paint system indicated and each color and finish selected to verify preliminary selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.

1. Architect will select one surface to represent surfaces and conditions for application of each paint system.

   a. Vertical and Horizontal Surfaces: Provide samples of at least 100 sq. ft.
   b. Other Items: Architect will designate items or areas required.

2. Final approval of color selections will be based on mockups.

   a. If preliminary color selections are not approved, apply additional mockups of additional colors selected by Architect at no added cost to Owner.

3. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
4. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F.

1. Maintain containers in clean condition, free of foreign materials and residue.
2. Remove rags and waste from storage areas daily.

1.6 FIELD CONDITIONS

A. Apply coatings only when temperature of surfaces to be coated and ambient air temperatures are between 50 and 90 deg F unless otherwise permitted by manufacturer's written instructions.

B. Do not apply coatings in snow, rain, fog, or mist; when relative humidity exceeds 85 percent; at temperatures less than 5 deg F above the dew point; or to damp or wet surfaces.

C. Allow wet surfaces to dry thoroughly and attain temperature and conditions specified before starting or continuing coating operation.

1.7 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace elastomeric coatings that fail within specified warranty period.

1. Failures include, but are not limited to, the following:

    a. Water penetration through the coating.
    b. Deterioration of coating beyond normal weathering.

2. Warranty Period: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 ELASTOMERIC COATINGS

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

    1. Benjamin Moore & Co.
    2. PPG Paints; PPG Industries, Inc.
    3. Sherwin-Williams Company

B. Products: Subject to compliance with requirements, provide product listed in the Elastomeric Coating Schedule for the paint category indicated.

C. Moisture-Vapor Transmission: Minimum 34 perms, based on testing in accordance with ASTM D1653.

D. Material Compatibility:

    1. Materials for use within each paint system are compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
    2. For each coat in a paint system, products are recommended in writing by manufacturers of topcoat for use in paint system and on substrate indicated.

E. VOC Content: For field applications, paints and coatings shall comply with VOC content limits of authorities having jurisdiction and the following VOC content limits:

    1. Flat Paints and Coatings: 50 g/L.

F. Colors: As indicated on the drawings.

G. Crack Fillers: Elastomeric coating manufacturer's recommended, factory-formulated crack fillers or sealants, including crack filler primers, compatible with substrate and other materials indicated.

H. Primer: Elastomeric coating manufacturer's recommended, factory-formulated, alkali-resistant primer compatible with substrate and other materials indicated.

I. Concrete Unit Masonry Block Filler: Elastomeric coating manufacturer's recommended, factory-formulated, high-performance latex block filler compatible with substrate and other materials indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Applicator present, for compliance with manufacturer's requirements for maximum moisture content, alkalinity, and other conditions affecting performance of work.

B. Begin coating only when moisture content of substrate is 12 percent or less when measured with an electronic moisture meter.

C. Begin coating no sooner than 28 days after substrate is constructed and is visually dry on both sides.

D. Verify that substrate is within the range of alkalinity recommended by manufacturer.

E. Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers.

F. Begin coating application only after unsatisfactory conditions have been corrected and surfaces are dry.

3.2 PREPARATION

A. Comply with manufacturer's written instructions applicable to substrates and coating systems indicated.

B. Remove hardware and hardware accessories, plates, machined surfaces, light fixtures, and similar items already installed that are not to be coated. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and coating.

1. After completing coating operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection if any.

C. Clean substrates of substances that could impair bond of coatings, including dirt, oil, grease, and incompatible paints and encapsulants. Do not coat surfaces if moisture content or alkalinity of surfaces to be coated exceeds that permitted in manufacturer's written instructions.

1. Remove incompatible primers and reprime substrate with compatible primers as required to produce coating systems indicated.
2. Perform cleaning and coating application so dust and other contaminants from cleaning process will not fall on wet, newly coated surfaces.

D. Crack Repair: Fill cracks in accordance with manufacturer's written instructions before coating surfaces.

3.3 APPLICATION OF ELASTOMERIC COATINGS

A. Apply elastomeric coatings in accordance with manufacturer's written instructions.

1. Use equipment and techniques best suited for substrate and type of material being applied.
2. Coat surfaces behind movable items the same as similar exposed surfaces.
3. Apply each coat separately in accordance with manufacturer's written instructions.

B. Primers: Apply at a rate to ensure complete coverage.

C. Block Fillers: Apply at a rate to ensure complete coverage with pores filled.

D. Elastomeric Finish Coat(s): Manufacturer's recommended number of coats and total dry film thickness for condition of substrate.

E. Tint each undercoat a lighter shade to facilitate identification of each coat if multiple coats of same material are to be applied. Tint undercoats similar to color of topcoat, but provide sufficient difference in shade of undercoats to distinguish each separate coat.

F. If undercoats or other conditions show through topcoat, apply additional coats until cured film has a uniform finish, color, and appearance.

G. Apply coatings to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.

H. Apply coatings to prepared surfaces as soon as practicable after preparation and before subsequent surface soiling or deterioration.

I. Spray Application: Use spray equipment for application only when permitted by authorities having jurisdiction. Wherever spray application is used, do not double back with spray equipment to build up film thickness of two coats in one pass.

3.4 FIELD QUALITY CONTROL

A. Testing of Paint Materials: Owner reserves the right to invoke the following testing procedures:

1. Owner will engage the services of a qualified testing agency to sample materials being used. Samples of material delivered to Project site will be taken, identified, sealed, and certified in presence of Contractor.
2. Testing agency will perform tests for compliance of materials with product requirements.

3. Owner may direct Contractor to stop coating application if test results show materials being used do not comply with requirements. Remove noncomplying materials from Project site, pay for testing, and recoat surfaces that were coated with rejected materials. Remove rejected materials from previously coated surfaces if, on recoating with complying materials, the two coatings are incompatible.

B. Field Testing and Inspection: Owner reserves the right to engage the services of a qualified testing agency to verify installed thickness of elastomeric coatings.

3.5 CLEANING AND PROTECTION

A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.

B. After completing coating application, clean spattered surfaces. Remove spattered coatings by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.

C. Protect work of other trades against damage from coating application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.

D. At completion of construction activities, touch up and restore damaged or defaced coated surfaces.

3.6 ELASTOMERIC COATING SCHEDULE

A. Concrete Unit Masonry Substrates:

1. Elastomeric Coating System:

a. Prime Coat: As recommended in writing by topcoat manufacturer.
b. Block Filler: As recommended in writing by topcoat manufacturer.
c. Intermediate Coat: As recommended in writing by topcoat manufacturer.
d. Topcoat: Elastomeric, pigmented, exterior, water-based, flat coating.

1) Sherwin Williams Conflex Sherlastic used as a basis for design.

END OF SECTION

SECTION 10441

FIRE EXTINGUSHERS

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes portable, hand-carried fire extinguishers and mounting brackets for fire extinguishers.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product. Include rating and classification, material descriptions, dimensions of individual components and profiles, and finishes for fire extinguisher and mounting brackets.

1.3 INFORMATIONAL SUBMITTALS

A. Warranty: Sample of special warranty.

1.4 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For fire extinguishers to include in maintenance manuals.

1.5 COORDINATION

A. Coordinate type and capacity of fire extinguishers with fire-protection cabinets to ensure fit and function.

1.6 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace fire extinguishers that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

    a. Failure of hydrostatic test according to NFPA 10 when testing interval required by NFPA 10 is within the warranty period.
    b. Faulty operation of valves or release levers.

2. Warranty Period: Six years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. NFPA Compliance: Fabricate and label fire extinguishers to comply with NFPA 10, "Portable Fire Extinguishers."

B. Fire Extinguishers: Listed and labeled for type, rating, and classification by an independent testing agency acceptable to authorities having jurisdiction.

1. Provide fire extinguishers approved, listed, and labeled by FM Global.

2.2 PORTABLE, HAND-CARRIED FIRE EXTINGUISHERS

A. Fire Extinguishers: Type, size, and capacity for each mounting bracket indicated.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

   a. Babcock-Davis
   b. Guardian Fire Equipment, Inc
   c. Larsen's Manufacturing Company

2. Source Limitations: Obtain fire extinguishers, fire-protection cabinets, and accessories, from single source from single manufacturer.
3. Valves: Manufacturer's standard.
4. Handles and Levers: Manufacturer's standard.
5. Instruction Labels: Include pictorial marking system complying with NFPA 10, Appendix B, and bar coding for documenting fire-extinguisher location, inspections, maintenance, and recharging.

B. Multipurpose Dry-Chemical Type in Steel Container F.E.: UL-rated 3-A:40-B:C, 5-lb nominal capacity, with monoammonium phosphate-based dry chemical in enameled-steel container.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine fire extinguishers for proper charging and tagging.

1. Remove and replace damaged, defective, or undercharged fire extinguishers.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. General: Install fire extinguishers and mounting brackets in locations indicated and in compliance with requirements of authorities having jurisdiction.

B. Mounting Brackets: Fasten mounting brackets to surfaces, square and plumb, at locations indicated.

1. Mounting Height: Top of fire extinguisher to be at 42 inches above finished floor.

END OF SECTION

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SECTION 10731

AWNINGS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Fixed awnings.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include styles, material descriptions, construction details, fabrication details, dimensions of individual components and profiles, hardware, fittings, mounting accessories, features, and finishes for awnings.

1.3 Delegated Design/Shop Drawings

A. Contractor will be responsible for providing the Aluminum Awning design based upon the schematic locations indicated on the drawing. Contractor's vendor shall provide engineered, sealed, and signed drawings (State of Florida) for the design. Provide the design drawings as a shop drawing submittal for coordination with the Architect's in-house Structural Engineer to confirm loading for the CMU wall connections.

1. Include plans, elevations, sections, mounting heights, and attachment details.
2. Detail fabrication and assembly of awnings.
3. Show locations for blocking, reinforcement, and supplementary structural support.

B. Product Schedule: For awnings. Use same designations indicated on Drawings.

1.4 INFORMATIONAL SUBMITTALS

A. Sample Warranty: For special warranty.

1.5 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For awnings to include in operation and maintenance manuals.

1.6 QUALITY ASSURANCE

A. Fabricator Qualifications: Shop that employs skilled workers who custom fabricate products similar to those required for this Project and whose products have a record of successful in-service performance.

B. Installer Qualifications: Fabricator of products.

C. Welding Qualifications: Qualify procedures and personnel according to the following:

1. AWS D1.2/D1.2M, "Structural Welding Code - Aluminum."

1.7 WARRANTY

A. Special Warranty: Manufacturer and fabricator agree to repair or replace components of awnings that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Structural failures including framework.
b. Deterioration of metals, metal finishes, and other materials beyond normal weathering.

2. Awning Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes.

1. Temperature Change: 120 deg F, ambient; 180 deg F, material surfaces.

2.2 AWNING FRAME AND ACCESSORY MATERIALS

A. Aluminum: Alloy and temper recommended by awning manufacturer for type of use and finish indicated and with not less than the strength and durability properties of alloy and temper required by structural loads.

1. Aluminum Plate and Sheet: ASTM B209.
2. Aluminum Extrusions: ASTM B221.
3. Extruded Structural Pipe and Round Tubing: ASTM B429/B429M, standard weight (Schedule 40).
4. Drawn Seamless Tubing: ASTM B210.

B. Anchors, Fasteners, Fittings, Hardware, and Installation Accessories: Complying with performance requirements indicated and suitable for exposure conditions, supporting structure, anchoring substrates, and installation methods indicated. Corrosion-resistant or noncorrodible units; weather-resistant, tamperproof, vandal- and theft-resistant, compatible, non-staining materials. Provide as required for awning assembly, mounting, and secure attachment. Number as needed to comply with performance requirements and to maintain uniform appearance; evenly spaced. Where exposed to view, provide finish and color as selected by Architect from manufacturer's full range.

1. Lag Bolts: ASME B18.2.1.
2. Zinc-Coated High-Strength Bolts, Nuts, and Washers: ASTM F3125/F3125M,Grade A325, Type 1, heavy-hex steel structural bolts; ASTM A563, Grade DH, heavy-hex carbon-steel nuts; and ASTM F436/F436M, Type 1, hardened carbon-steel washers, zinc coated.

C. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D1187.

2.3 FIXED AWNINGS

A. Aluminum Finish: Baked-enamel or powder-coat finish complying with finish manufacturer's written instructions for surface preparation including pretreatment, application, baking, and minimum dry film thickness.

1. Color: As selected by Architect from manufacturer's full range.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for supporting members, blocking, inserts, installation tolerances, operational clearances, accurate locations of connections to building electrical system, and other conditions affecting performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. General: Install awnings at locations and in position indicated, securely connected to supports, free of rack, and in proper relation to adjacent construction. Use mounting methods of types described and in compliance with Shop Drawings and fabricator's written instructions.

B. Install awnings after other finishing operations, including joint sealing and painting, have been completed.

C. Slip fit frame connections accurately together to form hairline joints, and tighten to secure.

D. Weld frame connections that are not to be left as exposed joints but cannot be shop welded because of shipping size limitations.

1. Field Welding: Comply with the following requirements:

a. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
b. Obtain fusion without undercut or overlap.
c. Remove welding flux immediately.
d. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.

E. Anchoring to In-Place Construction: Use anchors, fasteners, fittings, hardware, and installation accessories where necessary for securing awnings to structural support and for properly transferring load to in-place construction.

F. Corrosion Protection: Coat concealed surfaces of aluminum that come in contact with grout, concrete, masonry, wood, or dissimilar metals with a heavy coat of bituminous paint.

G. Coordinate awning installation with flashing and joint-sealant installation so these materials are installed in sequence and in a manner that prevents exterior moisture from passing through completed exterior wall and roof assemblies.

3.3 CLEANING AND PROTECTION

A. Touch up factory-applied finishes to restore damaged or soiled areas.

END OF SECTION

SECTION 13030
COMPUTER, HARDWARE, SOFTWARE CONTROL BLOCK DESCRIPTIONS

PART 1 - GENERAL

1.01 SCOPE

A. This section provides functional descriptions of the SCADA system, hardware and programable logic controllers (PLC) and computers and computer software requirements for the Process and Instrumentation and Control System (PICS) as indicated in specifications and on the drawings. These descriptions are intended to provide an overview of the operating concept of the plant process equipment rather than describing in detail every operating feature, I/O point, or required set-point.

1. NOTE: The terms Remote Terminal Unit “RTU” and Process Logic Controller “PLC” will be used interchangeably.

B. The Supplier of the PLC (as identified in Section 13100, Programmable Logic Controllers) shall provide all PLC and Human Machine Interface (HMI) programming, and graphic configuration as required for completely functional system in accordance with the contract documents.

1. Programming: The Process and Instrumentation Controls System (PICS) Supplier shall configure and program all hardware and network and communications devices required for an operating system plus any testing software required for the factory test.

2. Control Hierarchy: Several levels and modes of operational control will exist for the system. Operators will have the ability to monitor and control equipment via local manual controls at the equipment, or via the local PLC Operator Interface Terminal (OIT) and through the SCADA computers. The selection of these operational modes will be made available through the use of hardwired and/or software selector switches.

a. <u>Manual Control(Local).</u> Hardwired local switches Local–Off-Remote (LOR) (or as shown on plans and noted in detailed loop descriptions) provide selection of Local Manual control, or Remote Manual control (via PLCOIT or via SCADA) control of the equipment. All equipment equipped with Local Manual LOCAL/OFF/REMOTE(LOR) switches in LOCAL will override all Remote PLC and SCADA control. This mode is intended primarily for maintenance functions and is not intended for normal process control operation. When the local switch is in REMOTE, the device is under computer (PLC and / or SCADA) control.

b. Computer Control. When the equipment LOR switch is placed in the REMOTE position, equipment will be controlled by the PLC in either the REMOTE AUTO or REMOTE MANUAL mode (via a software switch on the PLCOIT or SCADA screen).

c. REMOTE MANUAL – The Operator can remotely control equipment through software Start/Stop commands and where applicable, speed control using software switching on the PLCOIT or via SCADA screen. The Start/Stop Command shall be wired as one discrete output and programmed as maintained RUN command.

d. REMOTE AUTO – Control is accomplished via PLC or SCADA automatic control logic strategy.

e. While in the REMOTE AUTO mode, SCADA and PLCOIT MANUAL commands are not executed by the PLC control logic.

C. Programming of control logic and configuration of the CONTROL SYSTEM with process graphical screens - human machine interface (HMI) software is part of the Work and shall be the responsibility of the PICS Supplier.

PART 2 - PRODUCTS

2.01 GENERAL

A. SCADA HARDWARE

1. Integrate with existing computers.

B. SCADA SOFTWARE

1. General Requirements

a. The existing SCADA software shall be configured as directed by the Owner.

PART 3 - EXECUTION

3.01 PLC PROGRAMMING FUNCTIONAL REQUIREMENTS

A. The following paragraphs describe general configuration tasks that are required for the system PLC(s). These tasks shall be programmed in the applicable PLC. Each PLC may have multiple instances of each of these tasks, or may have no instances of some or all of these tasks. The input/output lists (located in these documents as specified in the Instrumentation and Control System section) and detailed equipment control descriptions (included herein) should be referenced to determine the requirements for each PLC.

B. PLC or HMI requirements detailed here will not be repeated in the individual control loop descriptions, but are required.

C. The following paragraphs cover functional requirements of the software, which are generic and may or may not be related to any specific control loop. The requirements apply to both the local OITs and SCADA computers. Control functionality will be identical for all sites.

D. Abbreviations: The following abbreviations are used in the control descriptions:

1.	AM	Auto-Manual
2.	HOA	Hand-Off-Auto
3.	LR	Local-Remote
4.	LOR	Local-Off-Remote
5.	ES	Emergency Stop
6.	OC	Open-Close
7.	OSC	Open-Stop-Close
8.	OO	On-Off
9.	PV	Process Variable
10.	SP	Set Point (variable)

E. Available Process Values: All generated process alarm, equipment status, and process variable values associated with a particular PLC shall be available at its OIT and also on SCADA HMI including remote displays (PCWS). Refer to HMI specification for additional requirements.

F. Flow Totalized Values: Flow values shall be integrated, totalized, and stored in the PLC registers so the values displayed on the PCP OIT and SCADA computers will be identical.

1. For each flow meter whose analog “flow” signal is monitored by a PLC or for any calculated flow signal utilized for process control and monitoring, internal flow totalization shall be accumulated by the respective PLC. The flow totalization routine shall utilize floating point variables to accomplish the flow integration.

2. Two (2) flow totals shall be accumulated and accessible from the PLC. The current 24-hour period total, the previous 24-hour period total shall be calculated and stored. The 24-hour total shall reset at midnight.

3. The flow total values shall be displayed on the OIT.

G. System Failure: Failure of a PLC shall result in safe shutdown of associated process equipment. Interposing relays shall be provided where required to assure that equipment will revert to its fail-safe condition. Failure of any PLC or its communication shall be alarmed.

H. Rack/Module Configuration: The rack and module definitions for each PLC, as well as the PLC communications configuration shall be completely configured to allow proper addressing of all field connected I/O points. This shall include configuration of any remote input/output (RIO) racks.

I. PLC Database Definition: The PLC database will include both field I/O points and internally generated points required for programming. All field I/O points and internal programming points shall be fully defined according to database naming conventions approved by ENGINEER and OWNER. As a minimum, each database point shall be provided with a tag name, engineering unit, alarm parameters, and description. Internally generated points (calculations) and set-point variables shall be provided as required whether specified in the control descriptions or not. All process and timer set points shall be Operator adjustable from the OIT.

J. Analog Scaling: Each analog input and output will be appropriately scaled in engineering units for use in internal PLC programming and monitoring by the PLC OIT and remote SCADA computers.

K. Equipment Runtimes: For each equipment item whose "run" status is monitored by a PLC, an internal equipment runtime shall be accumulated by the respective PLC. The runtime procedure will monitor the status of the equipment "run" contact and, when the equipment is running, increment a software timer that maintains equipment runtime to within a one-minute resolution. The timer shall stop incrementing, but not reset, when the "run" contact indicates that the equipment is not running. The timer value shall increment an hour counter that maintains a floating point value representing the equipment run time in hours and tenths of hours. The counter value shall be available for display on the PLC OIT and SCADA computer. A manual reset of the runtime value shall be available at the PLC OIT for personnel at the supervisor level and above.

L. Equipment Starts: For each equipment item whose "run" status is monitored by a PLC, an internal equipment number of ‘Starts’ shall be accumulated by the respective PLC. The runtime procedure will monitor the status of the equipment "run" contact and, when the equipment is running, increment a software counter that maintains equipment ‘starts’. The counter value shall be available for display on the OIT and SCADA computer. A manual reset of the value shall be available at the HMI for personnel at the supervisor level and above.

M. Change-of-State Alarms: While equipment is controllable from the PLC (IN REMOTE), discrete output commands shall be compared to their respective process feedback status signal (where available) to verify proper execution. If the feedback status does not match the most recent output command (after

an adjustable time delay), an alarm message shall be displayed on the HMI computer and transmitted to SCADA. The alarm shall remain energized until the proper discrete condition is sensed and until the operator resets the alarm.

N. Equipment Availability: In general, equipment with PLC control has been provided with a local HOA, HOR, LR, or LOR selector switch that transfers control to the PLC. The PLC shall monitor the position of this local selector switch to determine if the equipment is available for PLC control. If more than one 'switch' or availability condition exists, the 'switches' shall be series hard-wired such that a single signal shall indicate that the equipment is available for PLC control. If the equipment is not available, the PLC program shall not attempt to implement remote manual or automatic status changes for the equipment. The PLC program may, however, need to implement special routines if equipment unavailability affects a sequence (as described in the detailed equipment descriptions).

1. Upon:

   a. Transmitter Failure: Analog signal less than 2 mA or greater than 22 mA.
   b. Pump/Motor Failure: The PLC shall automatically remove its Call-to-Run and if applicable, set its analog set-point value to a minimum value.
   c. An alarm shall be generated on any failure.

O. Maintained/Momentary Outputs: The need for maintained or momentary control outputs shall be determined from the input/output listing and the electrical schematics. In general, equipment with only one PLC control output point indicated in the I/O list shall be programmed for a maintained control output. Equipment with two (or more) control outputs shall be programmed for momentary outputs as required. Provisions shall be made, in either case, to remove the active state (start, open, forward, initiate, etc.) control output when an equipment failure is sensed or when the equipment transitions from available to unavailable (local switch change).

P. Power Failure: A utility power failure is detected by the PLC UPS running from battery power.

1. Upon detection of utility power failure:

   a. A power failure alarm is generated.

2. All PLC controlled equipment is turned off until main power has been restored for 30 seconds.

3. Upon power restoration for 30 seconds:

   a. A power restored alarm is generated.
   b. Devices will remain in their current configuration. Note that an equipment REMOTE AUTO / REMOTE MANUAL mode may

be altered during the power outage if designated in the detailed control strategy.

c. All devices will require Operator intervention (via PLC OITor SCADA) to restart the equipment when not in REMOTE AUTO mode.

d. All devices over 20 HP shall be stagger-started according to control strategy details.

e. Control strategy details shall provide additional (if required) actions to occur upon power restoration.

Q. Manual/Auto Bumpless Transfer: Unless otherwise indicated in the equipment control descriptions, equipment changes from automatic to manual control shall be bumpless. Equipment running or stopped in automatic mode shall remain running or stopped when manual mode is selected.

R. PLC Peer to Peer Ethernet Communications: Each PLC shall monitor peer-peer PLC communications required for process control of an equipment system distributed among multiple PLCs. Communications failures shall be detected, alarmed, and acted upon in accordance with detailed strategy requirements.

S. PLC Low Battery: An alarm shall be generated on PLC low memory low battery detection.

T. PLC Generated Alarms: Alarms from each PLC shall be logged into the PLC OIT alarm log table and displayed as described below. This requirement will not be restated in the individual control loop descriptions.

U. Instrument Calibration: Provide the ability to place all field instruments in a CALIBRATE mode at the SCADA system or OIT. The PLC will hold last value of the field instrument to allow the plant to operate.

V. PLC Out of Service mode: An alarm shall be generated on SCADA system when the PLC is taken out of service.

3.02 OIT FUNCTIONAL REQUIREMENTS

A. The following paragraphs describe general configuration tasks that are required for the OIT and related software.

1. Database: The system database, including field I/O and internal points shall be established according to the database point naming conventions approved by OWNER. Database generation for field I/O shall include all required coordination with PLC level addresses. All calculated totals, averages, daily totals, etc. calculated by the PLC in Section 3-1 shall be displayed on the OIT.

2. Alarms: Complete system alarming shall be configured. This shall include configuration of graphical alarm displays, and configuration of

audible alarms as available. All process or system alarms shall appear on a dedicated alarm summary screen.

a. For LOW or LOW-LOW analog or discrete alarms which do not apply if the associated equipment is not operating, provisions shall be made to prevent generation of these alarms. This shall include alarms such as low amperage alarms for pumps that are not running. This may also include low flows or pressures when associated pumps are not operating (this will only apply if periodic operation of the equipment is considered normal).

b. All alarms/events shall be time stamped when displayed or printed. Unacknowledged alarms shall not automatically clear from the alarm summary if they return to normal before being acknowledged.

B. Manual Entry of Data: The OIT shall allow manual entry data of all ENGINEER and OWNER designated set-points, and process control variables. These variables shall be password protected as indicated in the control descriptions.

3.03 EQUIPMENT CONTROL AND CONTROL MODE OVERVIEW

A. The following paragraphs explain the general format and control modes that are used in the detailed equipment descriptions. These paragraphs apply to the attached, project specific, equipment control descriptions included herein.

B. Descriptions for control are included in the detailed equipment control descriptions. They are provided primarily for overview information and guidance to show intent for the PICS Supplier. The PICS Supplier are responsible for all detailed programming requirements for safe and proper operation of the equipment provided by them under all conditions.

1. PICS Supplier and ultimately the CONTRACTOR shall be responsible for all coordination issues between their systems to insure they work together in a seamless operation.

3.04 DETAILED EQUIPMENT CONTROL DESCRIPTIONS

A. The following paragraphs describe functional requirements for various software control blocks in the control system. These descriptions are intended to provide an overview of the operational concept for the facilities, rather than describing in detail every operating feature, requirement, or interlock. The programmer is to provide a functioning system, including failure recovery, whether completely or explicitly stated in the control descriptions.

B. Introduction: The purpose of the control strategy is to provide a detailed description of the control, monitoring and alarm functional requirements associated with each process loop for the plant control system (PCS) to operate all the processes associated for the operation of the facility.

C. The process loop number is determined by the ISA tag name. Table 1 provides a cross-reference between the process loop and the associated control strategy.

Each control strategy is divided into sections:

1. Overview**:**

   This section provides a basic performance description as an introductory guide.

2. Monitoring and Control:

   This section provides required equipment operation status, current process variable measurements, totaling process variable measurements, and active equipment control mode status that are to be monitored ('Monitor' does not include alarms):

   a. Equipment operation status includes OPEN or CLOSED position; ON or OFF; and LOW, HIGH or OFF. (OFF is also referred to 'READY' in the electrical schematics wiring diagrams.)
   b. Current process variable measurements include level, pressure,
   c. Totaling process variable measurements include daily, monthly, and annual total measurements; as well as, equipment (pumps) cumulative runtimes for daily, weekly, monthly and yearly runtimes.
   d. Active equipment control mode status includes REMOTE selected in the field; MANUAL or AUTO selected from the control system interface; PID controller's set point and output; operator entered parameters for control algorithms (such as dosage, timers, etc.); current sequence steps.
   e. Local (Manual) Display/Control:For equipment and valves that have Local Control Stations (LCS),Local Control Panels (LCP) or Motor Control Panels (MCPs), the Local/Off/Remote (L/O/R) hand switches dictates where the equipment or valves are controlled. In LOCAL Mode, the control is from the LCS, LCP or MCP via Open/Close pushbuttons or Start/Stop pushbuttons and also speed potentiometers.

3. Remote Control:

   a. Manual - In this mode the LCS or LCP must be in REMOTE Mode REMOTE MANUAL Mode – control is forwarded to the OIT. Equipment and valves do not operate automatically but must be "pulsed" open/close (for valves and slide gates) or equipment started/stopped manually. Typical POP-UP graphic templates shall be utilized for all valves, slide gates, pumps, equipment, etc.

b. Auto - Same as Remote Manual Control except: In REMOTE AUTO Mode – control of equipment and valves are controlled automatically from the PLC as defined below:

i. Control: This section provides required modes of equipment operation, mathematical algorithms, proportional-integral-derivative (PID) controller, and sequencing steps. This section assumes the equipment is placed in AUTO or REMOTE (from the field). If the equipment is not in REMOTE then the described controls are disabled and the equipment is not available for the OIT. The OIT shall alert the operator defining the problem area or piece of equipment Not-In-Auto Mode or that is not functioning properly.

4. Transfer:

This section provides the functional requirements of transferring from one control mode to another control mode. For example, bumpless transfer is the ability to seamlessly go from one mode to another mode without interrupting the equipment operation.

a. Active equipment control mode status includes AUTO or REMOTE selected in the field; MANUAL or AUTO selected from the control system interface; PID controller's set point and output; operator entered parameters for control algorithms (such as dosage, timers, etc.); current sequence steps.

5. Interlock:

This section provides required control interaction between two or more devices and override functions to protect equipment and process performance under normal operations. It also provides the necessary action to be taken if E-STOP is activated. 'Interlocks' do not include override actions caused by field generated alarms, equipment or instrument failure, and total plant or area power outage.

6. Alarms:

a. Alarm: This section provides required annunciation, control action and priority of field generated alarms, logic generated alarms, and logic generated warnings. Logic generated alarms and warnings are identified in the control strategy. These alarms include:

b. OOR Analog Input: For all analog inputs, issue an Out of Range (OOR) alarm if an analog input is outside of the 4 to 20 mA range for 30 seconds.

c. FAIL-to-CLOSE: If a CLOSE command is issued and there is no CLOSE status feedback to indicate valve has reached full

closed position within 45 seconds or the CLOSE status is not present while valve is commanded to CLOSED position, then issue a FAIL-to-CLOSE alarm.

d. FAIL-to-OPEN: If an OPEN command is issued and there is no OPEN status feedback to indicate valve has reached full open position within 45 seconds or the OPEN status is not present while valve is commanded to OPEN position, then issue a FAIL-to-OPEN alarm.

e. FAIL-to-RUN: If a START command is issued and there is no ON status feedback to indicate device has started within 45 seconds or the ON status is not present while device is running, then issue a FAIL-to-RUN alarm.

f. FAIL-to-STOP: If a STOP command is issued and there is still an ON status feedback after 45 seconds from issuing a STOP command, then issue a FAIL-to-STOP alarm.

g. FEEDBACK FAILURE: A PID controller modulates a valve position or pump speed to maintain a process set point under AUTO mode and the controller's feedback used to determine off set from set point is ± 5% from the set point for 45 seconds then issue a FEEDBACK FAILURE alarm.

h. FORCE OVERRIDE: A failure condition occurs that requires the control logic to override a calculated value used for controlling a device such as valve position or pump speed, etc.

i. NO STANDBY AVAILABLE: The control strategy has a 'duty' and 'standby' or Lead/Lag service operation under AUTO mode and there is only one pump available for AUTO control then issue a NO STANDBY AVAILABLE warning.

j. TRACKING FAILURE: A variable speed device or modulating valve is commanded to a speed or position percentage and the feedback from the drive tachometer or actuator positioner is ± 5% from the commanded speed or position for 45 seconds then issue a TRACKING FAILURE alarm.

k. POWER OUTAGE FORCED STOP: The equipment was running under PLC control in MANUAL mode prior to loss of power and due to the power outage, the equipment was stopped. Issue a POWER OUTAGE FORCED STOP alarm upon this condition.

7. Fault Mode: This section provides the functional control requirements in the event that there is an equipment or instrument failure. An equipment failure is defined as the inability to control or monitor a device placed under REMOTE control due to an alarm condition. An instrument failure is defined as the inability to monitor a device due to an alarm condition.

8. Power Outage: This section provides functional control requirements in the event of a loss of power and the functional control requirements

upon power restoration. This section assumes a power outage to be detected by the transfer of normal to generator power for all processes.

D. HMI Generated Alarms**:** In addition, alarm priority levels are assigned a number from 1 to 4. The numbers are categorized by the urgency of the alarm condition and are as follows:

PRIORITY	DESCRIPTION
1	Human safety in Danger/Chemical Spill Potential/Toxic Gas Leak.
2	Equipment or system failure; or interlock to shutdown equipment to prevent mechanical damage.
3	Control override to prevent jeopardizing process performance or possible mechanical damage.
4	Warning of potential problem effecting process performance or possible mechanical damage.

E. Introduction to Control Description:

The purpose of the control strategy is to provide a general description of the control, monitoring and alarm functional requirements associated with each process loop for the Plant's control system (PCS) to operate the following processes:

1. Existing Process Equipment

a. General

i. The influent pump station control panels and drives are furnished by others. The PCS supplier will monitor all status and alarms of the pumping system, create a graphic, trending, and historical database.

b. Control Strategy

i. The existing pumping and aeration rotor and gate control strategies shall be unaffected except the motor starting and speed control devices will be relocated to a proposed electrical building. The pseudo-operations shall be duplicated in the proposed PLC-E1 except signals from field devices in the existing plant shall remain and re-messaged to PLC-E1.

2. Proposed Process Equipment

a. General

i. This project includes the addition of two (2) aeration rotors and two (2) sludge mixing blowers. The control strategies shall be as follows:

ii. Aeration Rotors

I. Include the automatic control and speed of each rotor as directed by the Owner

iii. Sludge Mixing Blowers

I. The variable speed blowers shall be controlled by the PCS system based on operator setpoints. The sequence of operation is as follows:

a) The plant operator the local HOR in the Remote position.
b) The plant operator set the desired speed of each blower.
c) The plant operator will set the local drives in remote control.
d) The operator will start and stop, adjust speed as needed.

II. Interlocks

a) Any blower shall not run if local HOR switch is in the OFF position.

III. Graphics

a) A full graphic is required for full control of the truck loading pumps.

3. Electrical/Generator Systems

a. The PCS shall monitor the normal and emergency position of the automatic switches and the auto position of the generator controls. The fuel tank level will be monitored, including the leak detection systems. The volts and amps of the main breaker and main distribution panels will be displayed on the plant graphics.

END OF SECTION

SECTION 13060
FIBER OPTIC CABLING

PART 1 - GENERAL

A. DESCRIPTION

1. Scope:

   a. CONTRACTOR shall provide all labor, materials, equipment and incidentals as shown, specified and required to furnish and install fiber optic cabling, including fiber testing procedures, accessories and splicing requirements.

B. REFERENCES

1. Standards referenced in this Section are listed below:

   a. ASTM D 1248, Specification for Polyethylene Plastics Molding and Extrusion Materials.
   b. ASTM D 1603, Test Method for Carbon Black in Olefin Plastics.
   c. ASTM D 1765, Classification System for Carbon Blacks used in Rubber Products.
   d. ASTM D 3349, Test Method for Absorption Coefficient of Ethylene Polymer Material Pigmented with Carbon Black.

C. SUBMITTALS

1. Shop Drawings: Submit the following:

   a. Cut sheets and catalog literature for proposed fiber optic cable, and fiber optic cable accessories (terminations).
   b. Manufacturer specifications and data, which clearly and unambiguously shows that the fiber optic cable meets all the requirements specified herein.
   c. Samples of the proposed cable.
   d. Physical dimension drawings of all fiber optic accessories.
   e. Proposed fiber identification sequence and labeling.
   f. Provide a Recommended Spare Parts List (RSPL).

D. MAINTENANCE

1. Provide off-line maintenance aids and on-line diagnostics to check the performance of the communication links and interfaces of devices on the data highway.

2. Provide a list of recommended special tools for fiber installation, testing or maintenance.

3. One hand-held optical light source with ATT-compliant SC adapters, Siecor (Corning) Model OS-100S test set, or equal.

4. 4. One hand-held optical power meter with ATT-compliant SC adapters, Siecor (Corning) Model OM-100S, or equal.

PART 2 - PRODUCTS

A. FIBER OPTIC CABLE SUMMARY SPECIFICATIONS

1. The fiber optic cable shall meet the following summary specifications:

   a. Fiber Type: Multimode
   b. Fiber Count: 6
   c. Cable Weight: 49 lbs/1000 ft
   d. Buffer Type: Tight Buffered.
   e. Cable Fill: Gel-Free .
   f. Maximum Pulling Load: 600 lbs (2700 N).
   g. Operating Temperature Range: -40°C to +70°C.
   h. Parallel Plate Crush Resistance: 1,800 N/cm.
   i. Packaging: Spools/reels, protected from shipment.
   j. Outdoor
   k. Connectors; SC

2. Fibers within the cable shall be color-coded so that each fiber may be individually identified. The color sequence suggested is as follows: blue, orange, green, brown, slate, white, red, black, yellow and violet. Dashed versions of the same colors may be used to continue the sequence, depending on the cable structure and fiber count.

3. The outer jackets of the cable shall be continuous, free from holes, splits, blisters or inclusions. The same requirement holds for any inner jackets within a given cable structure as well as for fiber coatings.

4. Materials used for fiber optic cable shall present no environmental or toxicological hazards as defined by current industry standards and shall comply with OSHA and EPA standards or applicable federal or state laws or regulations.

5. The color of the polyethylene outer jacket material shall be black in accordance with ASTM D 1248, and contain a suitable antioxidant substance. The carbon black used shall be furnace-type conforming to designation N 110 in accordance with the requirements of ASTM D 1765. The carbon black content in the jacket material when measured in accordance with the requirements of ASTM D 1603 shall be 2.6 percent ±0.25 percent by weight. The light absorption coefficient of the jacket material shall be at least 400 when measured at a wavelength of 375 nm in accordance with the requirements of ASTM D 3349.

a. Outer polyethylene jacket materials shall meet tensile strength and elongation minimum requirements for unaged and aged samples as follows:

i. Tensile Strength at Break: 2800 psi (Unaged), 2100 psi (Aged).

ii. Elongation at Rupture: 400 percent (Unaged), 375 percent (Aged).

6. The cable jacket shrinkage test measures the shrinkage or expansion of a cable jacket exposed to temperature aging for a specified period of time. Maximum shrinkage shall be less than five percent for each specimen tested. The test procedure is described in EIA-RS-455, FOTP-86.

B. CABLE PACKAGING

1. The cable shall be permanently marked to identify the manufacturer, date of manufacture, length markings, a product identification code, and UL messages, where appropriate. The markings shall be printed at regular intervals of not more than two feet apart.

2. The cable shall be packaged on a reel with inner hub diameter greater than the recommended minimum bending diameter of the cable. The anchor holes on the reels shall admit a 2-1/2-inch diameter spindle without binding. The package shall be sturdy enough to endure reasonable handling in the process of shipping and storage. The package shall bear the name of the manufacturer, the product identification code and the total amount of product on the reel.

3. The following information shall be securely attached to the reel as a tag or clearly and permanently stenciled or labeled on each reel:

a. Customer Order Number.
b. Customer Job Number.
c. Customer Reel Number.
d. Termination.
e. Ship Date.
f. Manufacturer's Name.
g. Factory Reel Number.
h. Manufacturer's Cable Code (Type and Fiber count).
i. Length of Cable.
j. Weight of Cable and Reel.
k. Defect Tag.

4. The ends of all cable shall be sealed to prevent the escape of filling compound and to prevent the entry of moisture during shipping, handling, storage and installation.

C. ADDITIONAL FIBER

1. The fiber count of the cable shall be 12, 24 or 72 fibers, as specified above. Each fiber will be tested at the completion of cable installation to verify that there are, indeed, 12, 24, 72 fibers, which conforms to these Specifications.

2. CONTRACTOR may, at their own expense, furnish a cable with more than the specified numbers of fibers to allow for accidental fibers damaged during installation.

D. FIBER OPTIC CABLE MANUFACTURER

1. Manufacturers: Provide products of one of the following:

   a. Corning
   b. Lucent.
   c. Or equal.

E. MANUFACTURER TEST DOCUMENTATION

1. Test documentation from the fiber optic cable manufacturer shall be delivered to the ENGINEER upon delivery of the cable to the Site, as a prerequisite for cable installation.

2. The documentation shall include Optical Time Domain Reflectometer (OTDR) traces for each fiber of each reel at 850 nm and 1300 nm. Optical attenuation test data shall be furnished for each fiber of each reel, as measured at 850 nm and 1300 nm.

F. PRE-INSTALLATION TESTING

1. CONTRACTOR shall test the fiber optic cable prior to its installation. This testing shall be witnessed by the ENGINEER.

2. Testing shall consist of making an OTDR trace of each fiber of each reel, at both 850 nm and 1300 nm. The test shall incorporate a one km long backscatter suppression cable inserted between the OTDR and the fiber end. Each trace shall include the optical length and average attenuation.

3. The results of the testing shall be submitted to the ENGINEER prior to installation. Any cable that shows “out-of-spec” performance shall be replaced, at no additional cost to the OWNER or delay to the Project Schedule.

G. CABLE TERMINATION ENCLOSURE AND HARDWARE

1. Cable termination enclosures shall be furnished and installed at each site accessed by fiber optic cable. The enclosures shall be used to terminate each fiber of the cable.

2. The enclosures/cabinets shall be the 19-inch EIA rack mounted type having provisions for terminating multiple fiber optic cables. Splice trays, strain relief cable attachment points, fiber organizers and bend radius hardware shall be furnished within each termination cabinet. The cabinets shall be furnished with an integral lock to prevent

unauthorized entry. All locks shall be keyed identically, two keys shall be furnished for each cabinet installed.

3. The enclosure cabinets shall house a patch panel internally. The patch panel shall swing out for ease of use. Panel size shall be suited to the number of fibers in the cable, for both directions. Bayonet/flanged couplings shall be furnished and mounted for each fiber to be terminated.

4. The termination enclosure shall have a swing-down front door that provides access to all splice trays and patch panels. They shall be sized to accept 12, 24 or 72 fiber cables and provide space for unstripped, coiled cable, each being up to 25 feet long.

5. The cable termination enclosures and hardware shall be manufactured by Corning, Ditel, or equal.

H. PIGTAIL CABLES AND CONNECTORS

1. Each of the fibers shall be terminated by splicing pigtails in the termination enclosures.

2. Pigtails shall be nine feet long. They shall be single mode for operation at 850 nm and 1300 nm, loose-buffered and manufactured from fiber meeting these Specifications described for the main cable.

3. All connectors shall be identical. They shall be SC-Type, or equal.

I. SPLICING

1. CONTRACTOR shall field splice each fiber to a pigtail cable at the termination enclosures. All splices shall be made by the fusion process and shall have a splice loss no greater than 0.35 dB. Loss measurement shall be performed at the time of splicing and documentation shall be furnished for each splice. Splice testing shall be witnessed by the ENGINEER.

2. Prior to stripping the cable, CONTRACTOR shall record the cable length from the cable jacket. This length shall be documented and included in the test documentation, specified elsewhere.

PART 3 - EXECUTION

A. CABLE INSTALLATION

1. All fiber optic cable shall be installed, terminated, and tested by the fiber subcontractor specified above.

2. In pulling the cable, strain-release, or other tension limiting devices shall be used to limit the pull tension to less than 600 pounds. The ENGINEER shall witness the cable being pulled.

3. Minimum bend radius restrictions shall be satisfied both during and after cable installation.

4. All conduit and cabinet entrances shall be sealed with RTV or other re-enterable sealant material to prevent ingress of water, dust or other foreign materials.

5. Splices in the fiber optic cable shall only be made at termination points where connectorized pigtails are applied. Non-terminating field splices shall not be made, unless authorized by the ENGINEER, in writing. If a field splice is required, it shall be fusion spliced and placed in a buried pull box. Closures shall be AT&T UCB1 with Type 2000 outer case, ATL, Corning (Siecor) SCF, or equal. Encapsulant shall be placed between inner and outer closures. Such splices shall meet the loss parameters/testing requirements specified elsewhere.

6. The ends of all cable shall be sealed to prevent the escape of filling compound and to prevent the entry of moisture during installation.

7. At each well site pull box provide an additional 30 feet of fiber cable and rack on cable loop managers.

8. Provide a minimum of 3 feet separation between the fiber conduit and any water or drain piping.

9. Provide a warning tape a minimum of 3 feet above the fiber conduit and location wire.

10. All fiber conduit ells shall be long radius.

11. At each splice box provide fiber closures installed and made ready for future cable splices.

12. Coordinate network connections related to any outages with the County.

B. CABLE DAMAGE DURING INSTALLATION

1. If the cable becomes damaged during installation, CONTRACTOR shall stop their operations and notify the ENGINEER, in writing, immediately. The OWNER and ENGINEER will decide whether to replace the entire reel of cable or to install a splice at the damaged section.

2. If the OWNER decides to replace the entire reel of cable, CONTRACTOR shall begin the installation at the last designated splice point. The damaged cable between these points shall be removed, coiled, tagged, and given to the OWNER. Installation of new cable to replace damaged cable shall not be a basis of extra payment or Contract completion time. In addition to installation of the new cable, CONTRACTOR shall reimburse the OWNER and entire cost of the replacement reel of cable. This cost will be withheld from the Contract price.

3. If the OWNER decides to install a splice at the damaged point, and the cable is damaged a second time, the entire reel of damaged cable (and all subsequent damaged reels) shall be replaced with new reels at CONTRACTOR'S expense.

C. CABLE ACCEPTANCE TESTING

1. Acceptance testing of the data highway (fiber and electronic equipment) shall be conducted as a part of integrated system field-testing. Prior to such tests, however, the fiber optic cable shall be tested as specified herein.

2. The fiber subcontractor shall retain the services of an independent fiber optic cable testing agent to test the cable and certify the installation. All testing shall be witnessed by the ENGINEER and the OWNER. A test plan shall be submitted at least one week prior to the proposed test date(s). The test plan and procedures shall be mutually agreed upon prior to conducting the tests.

3. Each optical fiber in every span shall be tested after installation and termination. For each fiber, an OTDR trace hardcopy is required. This end-to-end trace shall be performed from BOTH ends of the fiber. The traces shall be made at 850 nm and 1300 nm. Also for each fiber, and end-to-end power attenuation (insertion loss) test shall be performed from BOTH ends of the fiber. The attenuation test shall use a stabilized optical source and an optical power meter calibrated to the appropriate operating wavelength (850 nm and 1300 nm).

4. For each installed fiber, the power attenuation shall not exceed the following, tested from connector to connector at the respective patch panels, at 850 nm and 1300 nm. For the 1300 nm test, substitute 0.0020 for 0.0035 in the first term of the equation.

$$(0.0035)L + (0.35)N + 3.0 \text{ dB}$$

where L = the length of the fiber in meters, and
N = the number of fusion splices in the fiber.

5. Any fiber optic cables containing one or more fibers not meeting this performance will not be accepted by the OWNER, and shall be repaired or replaced at no additional cost to the OWNER.

6. All fiber optic testing shall be documented on pre-approved test forms. Three copies of all documents (including OTDR traces) shall be submitted to the ENGINEER upon successful completion of the testing.

7. Work at the termination cabinets shall be performed such that the fiber optic cables, and the fibers, are not subjected to undesirable bending both during the Work and when permanently fixed in place. The cables, fibers, pigtails, etc. shall be organized in a neat and

orderly fashion within the enclosure. Inspection of the Work shall be performed by the ENGINEER. Unsatisfactory Work shall be reworked.

END OF SECTION

SECTION 13070
PANEL MOUNTED INSTRUMENTS AND DEVICES

PART 1 - GENERAL

1.01 DESCRIPTION

A. Scope:

1. CONTRACTOR shall provide all labor, materials, equipment and incidentals as shown, specified and required to furnish, install, calibrate, test, adjust and place into satisfactory operation panel instruments and devices.

2. Contract Documents illustrate and specify functional and general construction requirements of the panel components and do not necessarily show or specify all components, wiring, piping and accessories required to make a completely integrated system. CONTRACTOR shall provide all piping, wiring, accessories and labor required for a complete, workable and integrated system.

B. Coordination: Coordinate the installation of all items specified herein and required to ensure the complete and proper interfacing of all the components and systems.

1.02 QUALITY ASSURANCE

A. Comply with the requirements of Section 13600, Process Control System General Provisions.

B. Acceptable Manufacturers:

1. Furnish instruments and devices by the named manufacturers or equal equipment by other manufacturers.

2. The named manufacturers have been specified to establish the standard of quality and performance of the equipment to be supplied.

3. Obtain all instruments or devices of a given type from the same manufacturer.

C. Manufacturers' Responsibilities and Services:

1. Design and manufacture the instruments and devices in accordance with the applicable general design requirements specified in Section 13600, Process Control System General Provisions, and the detailed Specifications herein.

1.03 SUBMITTALS

A. Comply with the requirements of Section 13600, Process Control System General Provisions.

1.04 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Comply with the requirements specified in Section 13600, Process Control System General Provisions.

B. Instruments and devices shall not be assembled in the panels until all product information and system Shop Drawings for respective components have been approved.

1.05 IDENTIFICATION TAGS

A. All panel instruments and devices shall have an identification tag meeting the following requirements:

1. Tag numbers shall be as listed in the Instrument Index.

2. Identifying tag number shall be permanently etched or embossed onto a stainless steel tag which shall be fastened to the device housing with stainless steel rivets or self tapping screws of appropriate size.

3. Where neither of the above fastenings can be accomplished, tags shall be permanently attached to the device by a circlet of 1/16-inch diameter stainless steel wire rope.

4. All instruments and devices mounted within panels shall have the stainless steel identification tag installed so that the numbers are easily visible to service personnel. Front of panel mounted components shall have the tag attached to the rear of the device.

5. Front of panel mounted components shall have nameplates, which comply with the requirements specified in Section 13090, Process Controls Panels and Enclosures.

PART 2 - PRODUCTS

ARTICLE INSTRUMENT TITLE

2.01 Power Supplies.

2.02 Uninterruptible Power System.

2.03 Pushbuttons, Selector Switches and Indicating Lights.

2.04 Digital Indicator.

2.05 Analog Indicator.

2.06 Cycle Timer.

2.07 Electronic Totalizer and Integrator.

2.08 Elapsed-Time Meter (Hour meter).

2.09 Control Relay.

2.10 Time Delay Relay.

2.11 Current Alarm Relay.

2.12 Current Isolator.

2.13 Adder.

2.14 Multiplier/Divider.

2.15 Electronic Square Root Extractor.

2.16 Current and Voltage Transducer.

2.17 Watt Transducer.

2.18 Manual Loading Station.

2.19 Operator Interface (OIT)

2.20 Ethernet/Network Switch

2.21 Fiber-To-Copper Media Converters

2.22 Fiber Optic Patch Panels

2.23 Autodialer

2.24 Strip Chart Recorders

2.25 Spare Parts and Test Equipment.

2.01 POWER SUPPLIES

A. General: Single unit and multiple unit power supplies, located in control room panels, remote terminal units and field panels as required.

B. Single Unit Required Features:

1. Solid state circuitry.

2. Surface mounting.

3. Input Power: 120 VAC ±10 percent, 60 Hz.

4. Output Power: 24 VDC or as required.

5. Line/Load Regulation: ±0.005 percent.

6. Ripple: 0.25 mV RMS.

7. Polarity: Floating output.

8. Ambient Temperature: -20°C to +71°C.

9. Response Time: <20µS.

10. Overload Protection: Internal preset.

11. Include mounting brackets, fuse, and mating connector for AC power plug.

12. UL 508 listed.

13. Failover discrete signal monitoring capability to be provided at SCADA for all power supplies within each control panel.

C. Products and Manufacturers: Provide one of the following:

1. Phoenix Quint

2.02 UNINTERRUPTIBLE POWER SYSTEM

A. Ambient

1. Degree of protection IP20

2. Inflammability class in acc. with UL 94 (housing / terminal blocks) V0

3. Ambient temperature (operation) -25 °C ... 70 °C (> 60 °C Derating: 2,5 %/K)

4. Ambient temperature (start-up type tested) -40 °C

5. Ambient temperature (storage/transport) -40 °C ... 85 °C

6. Max. permissible relative humidity (operation) ≤ 95 % (at 25 °C, non-condensing)

7. Climatic class 3K3 (in acc. with EN 60721)

8. Degree of pollution 2

9. Installation height ≤ 5000 m (> 2000 m, observe derating)

B. General

1. Efficiency typ. 93.9 % (400 V AC)

2. typ. 93.8 % (480 V AC)

3. MTBF (IEC 61709, SN 29500) > 985000 h (25 °C)

4. > 638000 h (40 °C)

5. > 311000 h (60 °C)

6. Insulation voltage input/output 4 kV AC (type test)

7. 2.4 kV AC (routine test)

8. Insulation voltage input / PE 3.5 kV AC (type test)

9. 2.4 kV AC (routine test)

10. Insulation voltage output / PE 0.5 kV DC (type test)

11. 0.5 kV DC (routine test)

12. Degree of protection IP20

13. Protection class I

14. Inflammability class in acc. with UL 94 (housing / terminal blocks) V0

15. Mounting position horizontal DIN rail NS 35, EN 60715

C. Approvals

1. UL approvals UL Listed UL 508

2. UL/C-UL Recognized UL 60950-1

3. UL ANSI/ISA-12.12.01 Class I, Division 2, Groups A, B, C, D (Hazardous Location)

D. Manufacturer:

1. APC

2.03 SELECTOR SWITCHES, PUSHBUTTONS AND INDICATING LIGHTS

A. General:

1. Selector switches, pushbuttons and indicating lights shall be supplied by one manufacturer and be of the same series or model type for all the panels provided in this Contract. Equipment Suppliers shall coordinate with CONTRACTOR to provide same series or model type of switches, pushbuttons and indicating lights.

2. Type:

a. Heavy duty, oil tight.

3. Provide legend plate for indication of switch, pushbutton or light function (e.g., "OPEN-CLOSED", "HAND-OFF-AUTO").

4. Mounting: Flush mounted on control panel front, unless otherwise noted.

5. NEMA rated to match panel in which mounted.

B. Selector Switches:

1. Type: Provide selector switches with number of positions as required to perform intended functions as shown and specified.

2. Contacts:

a. Provide number and arrangement of contacts as required to perform intended functions specified, but not less than one single pole, double throw contact.
b. Type: Double break, silver contacts with movable contact blade providing scrubbing action.
c. Rating: Compatible with AC or DC current with devices simultaneously operated by the switch contacts, but not less than 10 A resistive at 120 VAC or DC continuous.

3. Switch Operator: Standard black knob.

C. Pushbuttons (Standard or Illuminated):

1. Type: Provide momentary lighted and/or unlighted, single and/or dual type pushbuttons as required to perform intended functions specified and shown.

2. Contacts: Comply with the requirements specified for selector switches.

D. Indicating Lights:

1. Type: Compact, integral transformer type.

2. Lamps: Six volt, long life (20,000 hours minimum).

3. Common, push to test circuitry or Push–To–Test lamps shall be provided for each panel to simultaneously test all indicating lights on the panel using a single pushbutton.

E. Button and Lens Colors:

1. Green for indication of open, on, running.

2. Red for indication of closed, off (ready), stopped.

3. Amber for indication of equipment malfunction, process trouble and alarms (e.g., "HIGH LEVEL", "LOW LEVEL", etc.).

4. Blue for indication of electrical control power on.

F. Rotary Cam Switches:

1. Provide rotary cam switches with number of positions and poles as required to perform the required signal switching function specified and shown.

2. Contacts:

a. Gold-flashed contacts housed in mechanical contact blocks with number and arrangement of contacts as required to perform intended functions.
b. Contact Rating: Compatible with AC or DC through-put current of signals and devices simultaneously operated by the switch contacts, but not less than 20 A at 600 VAC or 250 VDC continuous.

3. Switch Operator: Standard black knob.

G. Products and Manufacturers: Provide one of the following:

1. Cutler-Hammer, Type E30.

2. Allen Bradley, Series 800H.

3. Or approved equal.

H. Operator-Indicator Units:

1. All operators and indicators shall conform to the following:

a. Type: CMC units as manufactured by Micro Switch.
b. Rating: Oil-tight, heavy duty.
c. Indication: Maximum four quadrant displays with individual lamp.
d. Lamp Voltage: Six volts.
e. Color: Black bezel and knob.

2. Indicator Light Modules:

a. Use: Equipment status (e.g., "ON/OFF", "OPEN/CLOSED").
b. Color Coding and Legends:

Quadrant	Color	Legend
A	GREEN	Off; Closed; No-Flow
B	RED	On; Open; flow
C&D	White	(Equipment Name)

3. "Three Position" Selector Switch Modules:

a. Use: For manual or automatic operation of equipment. (e.g., pumps, gates).
b. Type: Three-position maintained contact type.

c. Color Coding and Legends:

Quadrant	Color	Legend
A	RED	Hand; Open
B	GREEN	Off; Closed
C	Green	Auto
D	White	(Equipment Name)

i. Red or green quadrant lights shall be energized depending on selected position of the switch. White quadrant light shall be energized continuously.

d. "Two Position" Selector Switch:
e. Use: To select equipment mode (e.g., winter/summer; pumps 1/2)
f. Type: Two-position maintained contact type.
g. Color Coding and Legends:

Quadrant	Color	Legend
A	Blue	(Mode)
B	Green	(Mode)
C & D	White	(Function)

i. Blue or green quadrant light shall be energized depending on selected position of the switch. White quadrant light shall be energized continuously.

4. "Alarm Acknowledge" Pushbutton:

a. Use: To silence audible device associated with annunciator.
b. Type: Momentary pushbutton action.
c. Color Coding and Legends:

Quadrant	Color	Legend
A & B	Amber	Alarm

C & D	Amber	Acknowledge

d. Lights: None.

5. "Annunciator Test" Pushbutton:

a. Use: To functionally test the annunciator regarding lights and audible device.
b. Type: Momentary pushbutton action.
c. Color Coding and Legends:

Quadrant	Color	Legend
A & B	Amber	Annunciator
C & D	Amber	Test

d. Lights: None.

2.04 DIGITAL INDICATOR

A. General: The digital indicator shall accept an analog input and convert it to scaled numerical characters for digital display and also provide up to two alarm outputs.

B. Required Features:

1. Display Height: 0.56-inch.

2. Display Capacity: Four digits with decimal point position jumper selectable.

3. Display Type: Seven segment, red LED.

4. Accuracy: ± 0.05 percent.

5. Analog Input: 4 to 20 mADC.

6. Excitation Output: 15 VDC for powering transmitter.

7. Analog Output: Proportional 4 to 20 mADC.

8. Alarm Output: Dual with two 2 A relays.

9. Temperature Range: 0°C to 60°C.

10. Power: 120 VAC, + 10 to -15 percent, five watts.

11. Enclosure: NEMA 4 splash proof.

C. Products and Manufacturers: Provide one of the following:

1. Newport Electronics, Model Q9000E.

2. Precision Digital, Model PD690.

3. Or approved equal.

2.05 ANALOG INDICATOR

A. General: Indicator Unit shall be a signal monitoring instrument that provides continuous monitoring of a process variable on a scaled vertical bar display. Indicator shall match in appearance other panel mounted instruments.

B. Description: Indicator Unit shall display one process variable.

C. Required Features:

1. 1. 250 ohm range resistor).

2. Power Required: 21 to 28 VDC; nominal input current at 24 VDC is 400 mA.

3. Displays: One segmented gas-discharge or LED vertical bar display.

4. Display Accuracy: One percent of input span.

5. Scale Length: Approximately 3-inches.

6. Operating Influences:

a. Ambient Temperature: Maintains display accuracy ratings for temperature change within normal operating conditions.
b. Supply Voltage: Maintains display accuracy ratings for supply voltage variation between 21 and 28 VDC.
c. Electromagnetic Interference (EMI): Maintains display accuracy ratings when instrument is subjected to an electromagnetic field of up to ten volts/meter (when rack-mounted in cabinet with door closed). Display station must be installed in panel.

7. Operating Conditions:

a. Ambient Temperature: 41 to 122°F (5 to 50°C).

b. Maximum Temperature Variation: 36°F per hr (20°C per hr).
c. Ambient Relative Humidity: Ten to 90 percent non-condensing.

8. Mounting: Display station installs in a nominal 1-inch by 6-inch panel cutout and shall match in appearance other panel mounted instruments.

D. Products and Manufacturers: Provide one of the following:

1. OTEK Corporation, Model HI-QSLIM.

2. Ametek/Dixson, Model BE051.

3. Or approved equal.

2.06 CYCLE TIMER

A. Type: Adjustable, microprocessor-based multipurpose timer/counter.

B. Construction Features:

1. Switch selectable ranges as follows:

a. 0 to 0.99 seconds.
b. 0 to 99.9 seconds.
c. 0 to 999 seconds.
d. 0 to 9.99 minutes.
e. 0 to 99.9 minutes.
f. 0 to 999 minutes.
g. 0 to 99.9 hours.
h. 0 to 999 hours.

2. Repeat Accuracy:

a. Timer: ±10 ms on all ranges.
b. Counter: 100 percent on all ranges.

3. Memory: Non-volatile memory that will retain entire program and present time/count periods at loss of power; programmable for both reset and non-reset power fail operation.

4. Operating Temperature: 32 to 140°F.

5. Cycle Progress Display: Three-digit display, programmable to run up to or down from the setpoint and to stop or continue up from zero after time-out/count-out.

6. Time/Count Periods: Three programmable presets; pulse, early and main.

7. Load Relays:

   a. Type: DPDT.
   b. Number: One early and one delayed.
   c. Contact Ratings: Seven amps at 120 VAC.

8. Terminals: Screw terminals accessible at rear.

9. Housing: Fully gasketed, dust and watertight.

10. Power Input: 120 VAC.

C. Products and Manufacturers: Provide one of the following:

1. Automatic Timing and Controls Company, Model 365M.

2. Or approved equal.

2.07 ELECTRONIC TOTALIZER AND INTEGRATOR

A. General:

1. Electronic integrator shall be a solid-state device to totalize a linear flow signal with respect to time. The integrated output shall be indicated on a front counter, calibrated to read directly in units of flow and shall be mounted on the panel face.

B. Required Features:

1. Modular plug-in design.

2. Variable dropout adjustment shall be provided to prevent erroneous counting at low flow rates.

3. Input Signal: 4 to 20 mADC.

4. Power Requirements: 120 VAC ±10 percent, 60 Hz.

5. Accuracy: 0.5 percent of rate between 10 and 100 percent of full scale.

6. Slide-out chassis.

7. Suitable for flush panel mounting.

8. Unit shall match in appearance other panel mounted instruments.

9. Integrator Output Display:

   a. Integrally mounted six or eight-digit LCD.
   b. Non-reset.
   c. Battery backed to prevent loss of display in the event of power outages.

10. Enclosure: NEMA 4X.

11. Ambient Operating Temperature: 0°C to 55°C.

12. Ambient Operating Humidity: 0 to 85 percent non-condensing.

C. Products and Manufacturers: Provide one of the following:

1. Precision Digital, Model PD692.

2. Or approved equal.

2.08 ELAPSED TIME METER (HOUR METER)

A. General: Unit shall be a powered, non-resettable time indicator, with easy to read analog figures.

B. Required Features:

1. Power: 120 VAC, or 4 to 40 VDC.

2. Accuracy: Within one percent.

3. Capacity: Up to 99,999.9 hours (automatic recycle at zero); one-tenth hour resolution.

4. Operating Temperature: -40°C to +68°C.

5. Sealed against dirt and moisture.

6. Tamperproof.

7. Shock resistant.

8. Panel mountable.

9. Nameplate below display shall read "TOTAL HOURS".

C. Products and Manufacturers: Provide one of the following:

1. Dynapar/Veeder-Root, 7795 Series.

2. Cutler-Hammer, E42DIR Series.

3. Or approved equal.

2.09 CONTROL RELAY

A. Type: General purpose, plug-in type rated for continuous duty.

B. Construction Features:

1. Coil Voltages: 24 VDC or 120 VAC, as required.

2. Contacts:

a. Silver cadmium oxide rated not less than 5 A resistive at 120 VAC or 24 VDC continuous.
b. For switching low energy circuits (less than 200 mA) fine silver, gold flashed contacts rated not less than 3 A resistive at 120 VAC or 28 VDC continuous shall be provided.

3. Relays to have clear plastic dust cover.

4. Relays to have pilot light to show energized coil.

5. Relays to be UL recognized.

C. Products and Manufacturers: Provide one of the following:

1. Omron

2.10 TIME DELAY RELAY

A. Type: Dial adjustable, plug-in type time delay relay providing delay-on-make, delay-on-break or interval operation.

B. Construction Features:

1. MOS digital circuit with transformer coupled power.

2. Switch selectable ranges as follows:

   a. One second.
   b. Ten seconds.
   c. One minute.
   d. Ten minutes.
   e. One hour.
   f. Ten hours.

3. Minimum Setting: Three percent of range, except 50 ms for one-second range.

4. Setting Knob Accuracy: Ten percent.

5. Contacts:

   a. Type: DPDT.
   b. Rating: 5 A resistive at 120 VAC, 5 A at 24 VDC.

6. Housing: Plug-in design with dust and moisture resistant molded plastic case.

7. Power Input: 120 VAC or 24 VDC as required.

8. Operating Temperature: 0°C to 55°C.

9. Unit shall have LED to show timing status.

10. Relays to be UL recognized.

C. Products and Manufacturers: Provide one of the following:

1. Automatic Timing and Controls Company, Series 328D.

2. IDEC, Series GE1A.

3. Or approved equal.

2.11 CURRENT ALARM RELAY

A. Type: Direct current, electronic setpoint control relay which accepts 4 to 20 mADC input signal and provides dry circuit contact output based on trip point setting.

B. Performance Requirements:

1. Repeatability: Trip point repeats within ±0.2 percent of span.

2. Trip Adjustment: 0 to 100 percent of span.

3. 3. Adjustable Deadband: 1 to 15 percent of span.

C. Construction Features:

1. Trip Adjustment: Multi-turn front panel adjustment.

2. Contacts: DPDT relays, rated 5 A at 120 VAC or 24 VDC non-inductive.

3. Enclosure: Standard housing designed for internal panel mounting.

4. Power Supply: 120 VAC, 60 Hz or 24 VDC, as required.

D. Products and Manufacturers: Provide one of the following:

1. Ronan, X54 Series.

2. Action Pak, Model AP 1080.

3. Or approved equal.

2.12 CURRENT ISOLATOR

A. General: The isolating unit shall be a two wire, loop-powered device. It shall accept a 4 to 20 mADC input signal and deliver a 4 to 20 mADC output.

B. Required Features:

1. Repeatability: ±One percent of span.

2. Ambient Temperature Range: 0°C to 50°C.

3. Ambient Humidity Range: 0 to 95 percent, non-condensing.

4. Accuracy: 0.5 percent.

5. Linearity: ±0.1 percent of full scale.

6. Provide one spare isolator.

C. Products and Manufacturers: Provide one of the following:

1. Ronan, X57 Series.

2. Action Instruments, G408 Series.

3. Crompton Instruments, 250 Series.

4. Or approved equal.

2.13 ADDER

A. General: Computing element shall add the signals as shown. Provide in sufficient quantities to accommodate all signals.

B. Required Features:

1. Input/output bias adjustments.

2. Process current inputs and outputs (4 to 20 mADC).

3. Input/output isolation.

4. 120 VAC or 24 VDC power, as required.

5. Linearity: ±0.1 percent of span.

6. Response Time: Less than 750 ms (10 to 90 percent)

7. Operating Temperature Range: 0°C to 55°C.

8. Controls: Multi-turn potentiometers for output zero and input span scale factor.

C. Products and Manufacturers: Provide one of the following:

1. Action instruments, Model AP4402.

2. Pribusin Inc., Model IUC-XX-ADD.

3. Or approved equal.

2.14 MULTIPLIER/DIVIDER

A. General: Computing element shall multiply or divide the signals shown. Provide sufficient quantities to accommodate all signals.

B. Required Features:

1. Input/output bias adjustments.

2. Process current inputs and outputs (4 to 20 mADC).

3. Input/output isolation.

4. 24 VDC power.

5. Linearity: ±0.15 percent of span.

6. Operating Temperature: 0°C to 55°C.

C. Products and Manufacturers: Provide one of the following:

1. Action Instruments, Model Q498.

2. Or approved equal.

2.15 ELECTRONIC SQUARE ROOT EXTRACTOR

A. General: Electronic square root extractor shall provide a current signal output that is the square root of the input signal.

B. Required Features:

1. Input Signal: 4 to 20 mADC.

2. Output Signal: 4 to 20 mADC.

3. Adjustable Zero Dropout.

4. Accuracy: 0.25 percent of span.

5. Response Time: 70 ms.

6. Operating Temperature: -10°C to 60°C.

C. Products and Manufacturers: Provide one of the following:

1. API, Model 4440G.

2. Or approved equal.

2.16 CURRENT AND VOLTAGE TRANSDUCER

A. General: Transducer shall convert a sinusoidal alternating current or voltage into a DC current output, proportional to the RMS value of input.

B. Required Features:

1. Inputs: 50/60 Hz.

   a. Current: 1A or 5A current transformer secondaries.
   b. Voltage: 50 to 480 VAC.

2. Output: 4 to 20 mADC into 0 to 500 Ohms.

3. Zero adjustment: ±Two percent minimum.

4. Span adjustment: ±Ten percent minimum.

5. Accuracy: ±0.5 percent.

6. Response time: ≤ 400 ms. to 99 percent rated output.

7. Operating Temperature: 0°C to 50°C.

8. Operating Humidity: 0 to 95 percent non-condensing

9. Output Protection: Fully protected against open or short circuit outputs.

10. Overload Capacity: Two times rated current of 1.25 times rated voltage on a continuous basis.

11. Surge Withstand: Conform to ANSI C37-90a.

C. Products and Manufacturers: Provide one of the following:

1. Crompton Instruments, 250 Series.

2. Ametek, Exceltronic II Series.

3. Or approved equal.

2.17 WATT TRANSDUCER

A. General: Measure active power, in both balanced and unbalanced, single or 3 phase systems.

B. Required Features:

1. Frequency: 60 Hz.

2. Voltage: 50 to 480 volts with ±20 percent range and 2 va maximum burden.

3. Current: 1A or 5A current transformer secondaries with 0 to 125 percent range and 1 va maximum border.

4. Output: 4 to 20 mADC in 0 to 500 ohms.

5. Supply: 120 VAC.

6. Accuracy: 0.5 percent.

7. Response Time: Less than 400 msec up 99 percent rated output.

8. Output Protection: Fully protected against open or short-circuited output.

C. Products and Manufacturers: Provide one of the following:

1. Crompton Instruments, 250 Series.

2. Or approved equal.

2.18 MANUAL LOADING STATION

A. General: Manual-loading station (signal generator) shall be fully suitable for flush panel mounting.

B. Features:

1. Outputs: Two independent 4 to 20 mADC.

2. Horizontal or vertical indicator length (reading station output): 1-1/2-inches minimum.

3. Graduations of Indicator: 0 to 100 percent.

4. Output Adjustment: Front panel pushbuttons.

5. Supply Voltage: 120 VAC or 24 VDC, as required.

6. Accuracy: ±0.2 percent of span.

7. Load Resistance: 0 to 750 ohms.

8. Sampling Rate: 50 ms.

9. Operating Temperature: 4°C to 52°C.

10. Operating Humidity: 10 to 90 percent non-condensing.

11. Overall Length of Unit: Shall not exceed 15-inches in length.

12. Station case shall be constructed of steel and the chassis shall be constructed of non-corrosive metallic material. Bezel shall be finished in a gray enamel finish.

C. Products and Manufacturers: Provide one of the following:

1. ABB, Model 53ML5100.

2. Or approved equal.

2.19 OPERATOR INTERFACE (OIT)

A. General: 10" Color Touchscreen Operator Interface

1. POWER: +24 VDC ±20%

2. 10-Inch SVGA Color High-Resolution Touchscreen HMI (800 x 600)

3. Ethernet Ports: One 10/100 Base-TX

4. Serial Ports: Two RS-232 and One RS-422/485

5. One USB Type B Port

6. NEMA Rating: NEMA 4X

7. Panel Mounting

8. SD Card Memory

9. Operating Temperature: -20°C to 60°C (-4°F to 140°F)

B. Manufacturer:

1. Not Required

2.20 ETHERNET/ NETWORK SWITCH

A. General: Furnish and install fiber-optic modular, managed Ethernet switches for connecting devices on the network. The use of hubs will not be permitted.

B. Features:

1. 10/100/1000 base-T, auto-negotiation 802.3u.

2. Minimum of eight (8) RJ-45 ports. Ethernet ports shall be expanded as needed to interconnect all system components and shall support 10gb.

3. Minimum of two (2) fiber optic ports for one (1) fiber pair. Fiber optic ports shall be expanded as needed to interconnect all system components.

4. Supports the use of IGMP for multicast traffic.

5. Supports VLAN as defined in IEE802.1Q.

6. Supports the use of SNMP management.

7. LED for indicating port status.

8. Internal Panel mounting kit.

9. Failsafe output relay to indicate malfunction with unit.

10. FCC Part 15, Class A compliant

11. Provide management software for multilevel security, web based configuration and remote monitoring.

12. Powered by circuit on Uninterruptible Power Supply.

C. Product and manufacturer:

1. N-TRON

2.21 FIBER-TO-COPPER MEDIA CONVERTERS

A. Fiber optic converters shall convert Ethernet TCP/IP network data to a format suitable for transmission over multi-mode fiber optic cable.

B. Features: Converters shall provide:

1. Full-duplex 100M/1000Gbps Ethernet operation.

2. Single mode fiber optic media support.

3. Remote and local interface status.

C. Provide suitable transformers to convert 120VAC power to appropriate voltage necessary to provide power to Transceivers.

D. For control panel mounting, converter shall be DIN-rail mountable.

E. Product and manufacturer:

1. N-TRON

2.22 FIBER OPTIC PATCH PANELS (FOPP)

A. General: Fiber optic patch panels shall be furnished as required to house fiber optic cable terminations and any other data highway attached equipment.

B. The cabinets shall meet the following requirements:

1. The termination cabinet shall be the rack mounted type, having provisions for terminating multiple fiber optic cables. Splice trays, strain relief cable attachment points, fiber organizers and bend radius hardware shall be furnished with each termination cabinet.

2. Patch Panel size shall be suited to the number of fibers to be terminated within the cabinet. Bayonet/flanged couplings shall be furnished and mounted for each fiber to be terminated.

3. Fiber terminations shall be spliced to pigtail cables using ST connectors (unless indicated otherwise). The pigtails shall be terminated in an orderly method.

4. All fibers shall have connectors installed and terminated on patch panels.

2.23 AUTODIALER

A. Wireless real-time

1. Cellular Communication

2. Software for remote PC running Windows.

3. Managed Service

4. 120VAC with backup battery power

5. Provide one (1) year monitoring service with Mission Communications.

6. Manufacturer

a. Not Required

2.24 STRIP CHART RECORDERS

A. Standard Specifications

1. Compact recorder with a recording width of 100mm

2. Flush Panel Mounting (vertical), mounting next to each other (horizontal and vertical)

3. Recording Period: dot matrix model, continuous for each channel.

4. Chart Speed: 1 to 1500mm/h (1mm step)

5. Periodic printout contents: Date (mm/dd/yy), time(hh:mm), measurement data of each channel , scale printout, recording color, chart speed.

6. Colors: ch1=purple, ch2=red, ch3=green, ch4=blue, ch5=brown, ch6=black (color can be assigned to any channel)

B. Manufacturer:

1. Not Reqiured

2.25 SPARE PARTS AND TEST EQUIPMENT

A. CONTRACTOR shall furnish and deliver the spare parts and test equipment as outlined below, all of which shall be identical and interchangeable with similar parts furnished under this Section.

B. The spare parts shall be packed in containers suitable for long term storage, bearing labels clearly designating the contents and the pieces of equipment for which they are intended.

C. The following shall constitute the minimum spare parts:

1. Five of each type of input-output relay for each 40 or less furnished for this Contract.

2. One replacement power supply for each type and size furnished for this Contract.

3. A one-year supply of all expendable materials.

4. One per ten (two, if fewer than twenty) of each type of panel mounted instrument including lights, and pushbuttons.

5. One dozen of each type and size of fuse used in panels and instruments.

D. The following shall constitute the minimum test and calibration equipment:

1. None

E. All spare parts shall have been operated and tested in the factory as part of factory testing prior to shipment of the control system.

F. For analog instruments, the supplier shall submit a separate quotation for a recommended list of spare-parts and test equipment. Each item recommended shall be listed and priced separately. The spare parts quotation shall contain a statement that the prices quoted are firm for a period of one year (with escalators for the next two years) subsequent to the OWNER'S acceptance of the equipment, and that the supplier understands that the OWNER reserves the right to purchase none, any, or all of the parts quoted. The supplier is required to show that a stock of spare-parts and test equipment is obtainable within a 48-hour period.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install each item in accordance with manufacturers' recommendations and in accordance with the Contract Documents.

B. All items shall be mounted and anchored in compliance with Section 13090, Process Control Panels and Enclosures.

END OF SECTION

SECTION 13090
PROCESS CONTROL PANELS AND HARDWARE

PART 1 - GENERAL

1.01 DESCRIPTION

A. Scope:

1. CONTRACTOR, PICS SUPPLIER shall provide all labor, materials, equipment and incidentals as shown, specified and required to furnish, install, calibrate, test, start-up and place into satisfactory operation all process control panels and enclosures for their respective equipment.

Designation	NAMA Rating	Enclosure Material	Mounting
PLC-E1	12	Painted Steel	Free Standing

1.02 QUALITY ASSURANCE

A. Standards, Codes and Regulations:

1. Construction of panels and the installation and interconnection of all equipment and devices mounted within shall comply with applicable provisions of the following standards, codes and regulations:

   a. National Fire Protection Association 79, Annex “D” Standards, (NFPA).
   b. National Electrical Code, (NEC).
   c. National Electrical Manufacturer's Association Standards, (NEMA).
   d. d. American Society for Testing and Materials, (ASTM).
   e. Operational Safety and Health Administration Regulations, (OSHA).
   f. Underwriters’ Laboratory, Inc., (UL).
   g. State and Local code requirements.
   h. Where any conflict arises between codes or standards, the more stringent requirement shall apply.

2. All materials and equipment shall be new and all panels shall be built in an Underwriters’ Laboratory, Inc. (UL) approved panel shop and bear the UL label.

B. General Design Requirements:

1. Comply with the requirements of Section13600, Process Control System General Provisions.

2. Comply with the control descriptions of Section 13030, Software Control Block Descriptions.

C. Factory Assembly and Testing:

1. Comply with the requirements of Section 13500, Process Control System Factory Testing.

1.03 SUBMITTALS

A. Comply with the requirements of Section 13600, Process Control System General Provisions.

1.04 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Comply with the requirements of Section 13600, Process Control System General Provisions.

PART 2 - PRODUCTS

2.01 GENERAL CONSTRUCTION REQUIREMENTS

A. Provide all electrical and/or pneumatic components and devices, support hardware, fasteners, interconnecting wiring and/or piping required to make the control panels and/or enclosures complete and operational.

B. Panels and Enclosures shall be UL 508A and devices therein shall be UL508 listed.

C. Locate and install all devices and components so that connections can be easily made and that there is ample room for servicing each item.

D. Components for installation on panel exterior shall be located generally as shown. Layouts shall be submitted for review in accordance with Section 13600, Process Control System General Provisions.

E. Where permitted by location and layout as shown, panels and enclosures shall have full height rear access doors. Where rear doors are not possible, panels shall have full or half height front access doors.

F. Adequately support and restrain all devices and components mounted on or within the panel to prevent any movement.

G. Provide sub-panels for installation of all relays and other internally mounted components.

H. All wiring to panel connections from field instruments, devices, and other panels shall be terminated at master numbered terminal strips, unless otherwise specified.

I. Provide copper grounding studs for all panel equipment.

J. Provide the following convenience accessories inside of each control panel:

1. One 120 VAC, 20A duplex, grounding type receptacle.

2. One or more 120 VAC fluorescent light fixtures with 40 watt lamp and protective plastic shield to span across the width of the panel but not less than two-thirds the width of the panel, as a minimum.

3. One 120 VAC, 20A, snap switch, to turn on the light, mounted in an outlet box with a cover and located so that it is easily accessible from access door.

4. Service light with switch and duplex receptacle shall have its own circuit breaker and separate power feed.

K. The bottom 12-inches of free standing panels shall be free of all devices, including terminal strips, to provide ease of installation and testing.

L. No device shall be mounted less than 36-inches above the operating floor level, unless otherwise specified.

2.02 IDENTIFICATION

A. Provide laminated plastic nameplates for identification of panels and components mounted thereon as follows:

1. Nameplates shall be of 3/32-inch thick laminated phenolic type with white matte finish surface and black letter engraving.

2. Panel identification nameplates to have 1/2-inch high letter engravings.

3. Panel mounted component (e.g., control devices, indicating lights, selector switches, etc.) identification nameplates to have 1/4-inch high letter engravings.

4. Nameplates shall be attached to the panel face with two stainless steel self-tapping screws.

5. Nameplate engravings shall include the instrument or equipment tag number and descriptive title as shown and specified.

B. Tag all internally mounted instruments in accordance with the following requirements:

1. Tag numbers shall be as listed in the Instrument Index.

2. The identifying tag number shall be permanently etched or embossed onto a stainless steel tag which shall be fastened to the device housing with stainless steel rivets or self tapping screws of appropriate size.

3. Where neither of the above fastenings can be accomplished, tags shall be permanently attached to the device by a circlet of 1/16-inch diameter stainless steel wire rope.

4. Identification tag shall be installed so that the numbers are easily visible to service personnel.

5. Front of panel mounted instruments shall have the tag attached to rear of device.

C. Tagging of the following items shall be accomplished with the use of adhesive plastic Brady USA, Inc. labels, or equal.

1. Tag all electrical devices (e.g., relays, timers, power supplies) mounted within control panels and enclosures.

2. Tag all pneumatic lines.

3. Numerically tag all terminal blocks.

4. Color code and numerically tag wiring at each end.

2.03 PANELS AND ENCLOSURES

A. General:

1. Panels and enclosures shall meet the NEMA requirements for the type specified.

2. Sizes shown are estimates. CONTRACTOR shall furnish panels and enclosures amply sized to house all equipment, instruments, front panel

mounted devices, power supplies, power distribution panels, wiring, tubing and other components installed within, as required.

B. Construction Features:

1. Control panels located inside environmentally controlled (conditioned spaces) room areas shall be NEMA 12 rated.

   a. Fabricate enclosures using minimum 14-gage steel for wall or frame mounted enclosures and minimum 12-gage for free standing enclosures. Steel shall be free of pitting and surface blemishes.
   b. Continuously weld all exterior seams and grind smooth. Also, surface grind complete removal of corrosion, burrs, sharp edges and mill scale.
   c. Reinforce sheet steel with steel angles where necessary to adequately support equipment and ensure rigidity and to preclude resonant vibrations.
   d. Panel shall be flat within 1/16-inch over a 24-inch by 24-inch area, or flat within 1/8-inch for a larger surface. Flatness shall be checked by using a 72-inch long straight edge. Out-of-flatness shall be gradual, in one direction only, and shall not consist of obvious depressions or a series of wavy sections.
   e. Use pan type construction for doors. Door widths shall not exceed 36-inches.
   f. Mount doors with full-length heavy-duty piano hinge with stainless steel hinge pins.
   g. Provide oil resistant gasket completely around each door or opening.
   h. Provide handle-operated, oil-tight, key-lockable three-point stainless steel latching system with rollers on latch-rods for easy door closing.
   i. Use stainless steel fasteners throughout.
   j. Provide interior mounting panels and shelves constructed of minimum 12-gage steel with a white enamel finish.
   k. Provide steel print pocket with white enamel finish.
   l. Provide enclosure mounting supports as required for floor, frame, or wall mounting.
   m. Provide all holes and cutouts for installation of conduit and equipment. Cable and piping to enter the enclosure through the bottom, unless otherwise noted. All conduit and piping openings and all conduits entering cabinet shall be sealed watertight.
   n. Completely clean all interior and exterior surfaces so they are free of corrosive residue, oil, grease and dirt. Zinc phosphatize for corrosion protection.
   o. One coat of primer shall be applied to all interior and exterior surfaces immediately after corrosion protection has been applied.

Exterior surfaces shall then be given sufficient coats of primer surfacer, applied with sanding and cleaning between coats, until a Grade 1 finish can be produced on the finish coat.

p. All interior surfaces shall be painted with two coats of semi-gloss white polyurethane enamel.

q. Provide interior back panel for mounting of panel components and for easy removal of component system. Panel to be steel, powder coated black.

r. All exterior surfaces shall be painted with a minimum of three finish coats of polyurethane enamel to ultimately produce a Grade 1 finish (super smooth; completely free of imperfections). Color to be selected by ENGINEER from complete selection of standard and custom color charts furnished by the manufacturer. Provide one extra quart of touch-up paint for each exterior finish color.

s. Primer and finish paint shall be compatible and shall be a low VOC, high solids polyurethane enamel, Hi-Solids Polyurethane B65 W300 Series as manufactured by Sherwin-Williams, Inc. or equal. Provide one extra quart of Primer and finish paint.

2. Control panels located in field (outdoor and/or in non-conditioned spaces) shall be NEMA 4X rated.

a. Panels shall be Type 316L stainless steel construction with a minimum thickness of 12-gage for all surfaces (except those areas requiring reinforcement) having a smooth brushed finish.

b. Provide handle-operated, oil-tight, key-lockable three-point stainless steel latching system with rollers on latch-rods for easy door closing.

c. Rolled lip around three sides of door and along top of enclosure opening.

d. Hasp and staple for padlocking.

e. Provide a, gasketed lockable hinged door to encompass all non-NEMA 4 front of panel instruments.

f. Provide 3-inch high channel base assembly, with solid bottom, drilled to mate the panel to its floor pad.

g. Floor Pad: Refer to Part 3 of this Section.

h. Provide interior back panel for mounting of panel components and for easy removal of component system. Panel to be steel, powder coated black.

3. Where the application applies and with the approval of ENGINEER, wall mounted enclosures may be provided. The enclosure shall comply with Paragraph B.1., B.2. or B.3., except for the following:

a. Locations shall be as shown on or as specified under other Sections.

b. Doors shall be full height.
c. Corrosion resistant polyester quick release latches shall be provided.
d. No extra holes or knockouts shall be provided. No light or convenience outlet need be provided.

4. For panels located outdoors, provide sunshields and white epoxy coating on panel exterior, this includes stainless steel. Coordinate proper etching primer for epoxy adhesion. Refer to Instrumentation details shown on the drawings for additional requirements.

C. Electrical Systems:

1. Control of Environment:

a. Outdoor Panels (or Panels located in non-conditioned spaces):

i. Provide adequately sized automatically controlled 120 VAC strip heaters to maintain temperature inside each enclosure above 40ºF to maximum of 95ºF when the outside temperature is -20ºF through 40º F.
ii. Provide automatically controlled ventilation fans to maintain temperature inside each enclosure below the maximum operating temperature rating of the components inside the enclosure. Housing shall be constructed of 316 SS materials.
iii. Provide thermostats to automatically control heating and cooling requirements without need of manual operation of a heating/cooling transfer switch.
iv. Provide documentation if any of the above is deemed unnecessary.

b. Indoor Panels (or Panels located in Conditioned spaces):

i. Provide adequately sized, automatically controlled 120 VAC strip heaters to maintain temperature 10ºF above ambient for condensation prevention inside panels.
ii. Provide documentation if any of the above is deemed unnecessary.

2. Power Source and Internal Power Distribution:

a. General: Control panel power supply source, type, voltage, number of circuits and circuit ratings shall be as shown.
b. Panels shall be provided with an internal 120 VAC power distribution panel with number of circuits and separate circuit breakers sized as required to distribute power to the panel

components. Distribution panel shall contain two spare breakers, minimum.

3. Wiring:

a. Internal wiring shall be Type MTW and THW, Tinned stranded copper wire with thermoplastic insulation rated for 600 V at 90ºC for single conductors, color coded and labeled with wire identification.
b. For DC panel signal wiring - copper, use No. 16 minimum AWG shielded.
c. For DC power wiring, use No. 16 minimum AWG. For AC signal and control wiring, use No. 16 minimum AWG. For wiring carrying more than 15 A, use sizes required by NEC standards.
d. Separate and shield low voltage signal wiring from power and control wiring by a minimum of 6-inches.
e. Group or bundle parallel runs of wire using covered troughs. Maximum bundle size to be 1-inch. Troughs shall have 40 percent spare capacity.
f. Install wire troughs along horizontal or vertical routes to present a neat appearance. Angled runs are not acceptable.
g. Adequately support and restrain all wiring runs to prevent sagging or other movement.
h. Terminate all field wiring (no more than one wire per termination) using screw/clamp type terminals, insulated, crimp-on connectors (soldered type not acceptable) at 600 V rated barrier type terminal strips and permanently affixed numeric identifiers beside each connection. Identifiers to be self-stick plastic tape strips with permanent type, machine printed numbers. For DC field signal wiring, terminal strips shall be capable of handling No. 12 wiring (minimum). Provide Phoenix Contact, Entrelec or Allen Bradley.
i. All wiring shall be installed such that if wires are removed from any one device, power will not be disrupted to any other device.
j. All alarms generated external to the panel, spare alarm, and repeat contacts shall be wired out to terminal blocks.
k. For internal component-to-component wiring only, compression type terminal blocks are acceptable.
l. Provide spare terminals equal in number to 20 percent of the terminals used for each type of wiring (e.g., DC signal and AC power).
m. Provide a separate terminal for grounding each shielded cable.
n. Use separate 5/16-inch diameter copper grounding studs for instrument signal cable shields and AC power.
o. Where wires pass through panel walls, provide suitable bushings to prevent cutting or abrading of insulation.

p. When DC power and/or low voltage AC power is required, provide and install the necessary power supplies and transformers in the panel.

q. Provide circuit breakers to protect each circuit, with no more than one instruments on a single circuit.

r. Provide complete wiring diagram showing "as-built" circuitry. Diagram shall be enclosed in transparent plastic and placed in easily accessible pocket built into panel door.

4. Surge Protection:

a. General: Surge protection shall be provided to protect the electronic instrumentation system from surges propagating along the signal and power supply lines.

b. Products and Manufacturers: Provide one of the following:

i. Phoenix Contact
ii. Dehl
iii. Edco
iv. No approved equal.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install equipment in conformance with NEC.

B. Unless otherwise noted, install indoor NEMA 12 panels on 4-inch concrete pad. Extend pad 4-inches beyond outside dimensions of base, all sides. Lay grout after panel sills have been securely fastened down.

C. Unless otherwise noted, install outdoor NEMA 4X panels on a reinforced concrete pedestal:

1. Minimum Thickness: Eight-inches with No. 4 steel reinforcing bars at 12-inches on centers, each way.

2. Minimum Size: Twelve-inches larger than outer dimensions of base, all sides.

3. Provide excavation and backfill work in conformance with Section 31 24 00, Earthwork for Structures.

4. Provide concrete work in conformance with Section 03 30 00, Cast-In-Place Concrete.

D. Install and interconnect all equipment, devices, electrical hardware, instrumentation and controls and process controller components into and out of and among the enclosures as indicated on the Drawings.

3.02 TESTING AND ADJUSTMENTS

A. Perform system testing and make any adjustments necessary in accordance with this Section, Section13600, Process Control System General Provisions, Section 13500, Process Control System Factory Testing, and Section13400, Process Control System Start-up and Field Testing.

B. Perform power supply, voltage adjustments to tolerances required by the appurtenant equipment.

3.03 SPARE PARTS AND TEST EQUIPMENT

A. CONTRACTOR shall furnish and deliver the spare parts and test equipment as outlined below, all of which shall be identical and interchangeable with similar parts furnished under this Section.

B. The spare parts shall be packed in containers suitable for long-term storage, bearing labels clearly designating the contents and the pieces of equipment for which they are intended.

C. The following shall constitute the minimum spare parts:

1. Five of each type of input-output relay for each 40 or less furnished for this Contract.

2. One replacement power supply for each type and size furnished for this Contract.

3. A one-year supply of all expendable materials.

4. One per ten (two, if fewer than twenty) of each type of panel mounted instrument including lights, pushbuttons.

5. One dozen of each type and size of fuse used in panels and instruments.

END OF SECTION

SECTION 13100
PROGRAMMABLE LOGIC CONTROLLERS

PART 1 - GENERAL

1.01 SCOPE

A. This section covers programmable logic controllers of remote terminal units (RTUs/PLCs), including associated input/output hardware to control process equipment and serve as the interface to field devices. The CONTRACTOR through the use of a qualified PICS Supplier shall furnish, install, modify, configure and commission the Process Instrumentation and Control System (PICS).

1. Control System. The Instrumentation and Control System section shall apply to all equipment furnished or modified under this section. Additional PLC software requirements are indicated in Software Control Block Descriptions section.

2. PICS Supplier shall be responsible for supplying the RTUs/PLCs in the following panels:

   a. PLC-E1

1.02 GENERAL

A. Equipment furnished and installed under this section shall be fabricated, assembled, erected, and placed in proper operating condition in full conformity with the drawings, specifications, engineering data, instructions, and recommendations of the equipment manufacturer, unless exceptions are noted by ENGINEER.

1. General Equipment Stipulations: The General Equipment Stipulations shall apply to all equipment and materials furnished under this section. If requirements in this specification differ from those in the General Equipment Stipulations, the requirements specified herein shall take precedence.

2. Drawings: Supplementing this section, the drawings indicate the number and sizes of RTUs/PLCs, locations of RTUs/PLCs, and provide diagrams and schematics regarding connection and interaction with other equipment. All hardware, including power supplies, special cables, and other appurtenant equipment, shall be provided to meet the functional requirements described herein and indicated on the drawings.

3. I/O List: An input/output (I/O) field device signal listing is included as an appendix attached to this section.

1.03 SUBMITTALS

A. Submittals shall be as specified in the Instrumentation and Control System section

1.04 DELIVERY, STORAGE, AND SHIPPING

A. Delivery, storage and shipping shall be as specified in the Instrumentation and Control System Section.

1.05 SPARE PARTS

A. Spare parts shall be furnished as follows:

	Spare Part	Quantity
1.	Processor modules:	10%, Minimum 1 of each type used
2.	Power supply modules:	10%, Minimum 1 of each type used
3.	I/O modules:	10%, Minimum 1 of each type used
4.	Communications modules:	10%, Minimum 1 of each type used
5.	SPD units:	20%, Minimum 3 of each type used

1.06 I/O POINT LIST DESCRIPTION

A. The I/O point list contains the information necessary to configure the RTU/PLC I/O interface hardware and to indicate range conversion or signal functions.

B. "P&ID TAG" is an alphanumeric character string. For example, the point HCP-FI-813-0123-A, the following apply:

1. The three letter character string (HCP) identifies the Control Panel. Refer to SCADA network diagram for control panel identifiers.

2. The next alpha character is the functional identifier and follows ANSI/ISA-S5.1. In the example, the "F" represents flow.

3. The next alpha character (I) is the function identifier. In the example, the "I" represents an analog input.

4. The three-digit number (813) identifies the P&ID number.

5. The four-digit number (0123) identifies the loop or field device.

6. The final character (A) is used, as required, as a suffix to differentiate multiple points in the same loop.

C. "DESCRIPTION" is an alphanumeric character string that describes the I/O point. Points described as "SPARE" denote pre-wired I/O.

D. “SIGNAL TYPE” is one of the following:

1. AI designates an analog input.
2. DI designates a discrete input.
3. AO designates an analog output.
4. DO designates a momentary, maintained or latched discrete output.
5. DNT designates DeviceNet communication.
6. I/P designates Ethernet Industrial protocol

E. “RANGE/ SETPOINT” is a numeric value denoting the minimum and maximum signal value of the controlled variable. Information in this column is provided only for analog points. For all instrumentation, RANGE information is provided.

F. “UNITS/ N.C. Status” denotes the unit type as it applies to the RANGE. Where-ever applicable N.C Status defines the normal control status.

G. “POWER FROM” indicates where power for the instrument/device producing the signal originates from.

H. “SIGNAL FROM DEVICE” indicates the instrument/device which produces the signal.

I. “SIGNAL FROM TB” is the terminal block number where the signal wire is terminated. Information in this column shall be provided by CONTRACTOR.

J. “SIGNAL FROM TERMINAL #” is the terminal number where the signal wire is terminated. Information in this column shall be provided by CONTRACTOR.

K. “SIGNAL FROM TERMINAL #” is the terminal number where the signal wire is terminated. Information in this column shall be provided by CONTRACTOR.

L. “SIGNAL TO DEVICE” indicates the instrument/device which receives the signal.

M. “SIGNAL TO TB.” is the terminal block number where the signal wire is terminated. Information in this column shall be provided by CONTRACTOR.

N. “SIGNAL TO TERMINAL #” is the terminal number where the signal wire is terminated. Information in this column shall be provided by CONTRACTOR.

O. “SIGNAL TO TERMINAL #” is the terminal number where the signal wire is terminated. Information in this column shall be provided by CONTRACTOR.

P. “RTU/PLC ADDRESS” indicates the device/channel number of the point. Information in this column shall be provided by CONTRACTOR.

Q. “Comments/ Notes” indicates comments or notes if there are any.

1.07 WARRANTY

A. General Warranty: The special warranties specified in this Article shall not deprive OWNER of other rights or remedies OWNER may otherwise have under the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by CONTRACTOR under the Contract Documents.

B. Special Warranties:

1. Furnish manufacturer's written two-year warranty from date of substantial completion against failure or faulty workmanship of the RTU/PLC. Services during the warranty period shall include repair or replacement, and all costs related to visits to site, as necessary to remedy defects.

PART 2 - PRODUCTS

2.01 PROCESS AUTOMATION CONTROLLER (PAC) – RTU/PLC

A. Hardware

1. Major hardware components of the PAC portion of the control system shall include:

   a. Power Supply and Chassis
   b. Central Processing Unit (CPU
   c. Input/Output Modules
   d. Programming Software
   e. Communications Equipment

2. General

   a. The PACs shall provide a control layer between the PC based operator workstations and field mounted transducers, switches, controllers, and process actuators. The PAC shall be an intelligent, programmable, microprocessor-based device that can collect and store data, process and time stamp alarms, provide analog and discrete process control functions and communicate to PC based workstations. The PACs shall support 10/100 Mbps Ethernet 802.3/u compliant data highways and RS 232/485 serial communication communicate between the PACs, third party devices and PC workstations.

   b. All components of the PAC system shall be manufactured to normally recognized industry standards for temperature, electrical interference, vibration, etc. and regularly sold for industrial installations.

c. The PAC system shall be of modular design with a plug-in central processing unit, power supply and input/output modules. All components shall be marketed and supported by the one manufacturer.

d. Where main power is available, a single external 120/240 VAC to 12/24 VDC main power supply shall have the capability of supplying power to the internal power supply/sequencer, CPU and local input/output modules. The system power supplies shall be fused for overload protection.

e. Where main power is unavailable, the PAC shall be capable of being powered by a solar array, regulator and battery bank in lieu of a 120/240 VAC to 24 VDC main power supply. The RTU/PLC shall be designed for low power consumption in order to minimize the size of the backup batteries and solar equipment. The CPU, power supply and backplane alone shall draw no more than 1.5W.

f. The PAC shall be an intelligent, programmable controller capable of stand-alone control operation in the event of failure of the communication link to the operator workstations. During a communication failure, it shall continue to store time-stamped alarm and historical data in non-volatile memory for access upon restoration of the communication network.

g. All products shall be designed, manufactured, and tested in accordance with recognized industrial standards. The RTU/PLC shall adhere to the following environmental specifications:

(1) UL, CUL, CSA or FM, Class 1, Div.2, Groups A – D approval for operation in hazardous locations

(2) Vibration: 1.0G, 10-150 \Hz, 0.5 g over 150-1000 Hz. The system is to be operational during and after testing.

(3) Temperature. All RTU/PLC hardware shall operate at an ambient temperature of -40 to 70 degrees C (-40 to +158

degrees F), with an ambient temperature rating for storage of -40 to + 85 degrees C (- 40 to + 185 degrees F).

(4) Relative Humidity. The Programmable Controller hardware shall function continuously in the relative humidity range of 5% to 95% non-condensing.

(5) Noise Immunity. The Programmable Controller system shall be designed and tested to operate in the high electrical noise environment of an industrial plant as governed by the following regulations: EEE 472, IEC 801, and ANSI/IEEE C-37.90A-1978

h. The supplier shall provide operating instruction manuals with adequate information pertaining to the following:

(1) System specifications

(2) Electrical power requirements

(3) Grounding procedures

(4) Assembly, and installation and wiring procedures

(5) Power up and shut down procedures

(6) Diagnostic and troubleshooting procedures

(7) Programming procedures

(8) Warranty and repair procedures

(9) Recommended spare parts list

i. The supplier shall have the capability to provide product application assistance by trained and experienced engineers to assist the owner with program and system development through telephone consultation and on-site check-out, debug, and start-up assistance.

j. The supplier shall have the capability to conduct on-site training programs at a location provided by the customer.

k. The supplier shall supply Internet based technical support and FAQs on their web site.

l. Modules are defined herein as devices that plug into a chassis and are keyed to allow installation in only one direction. The PAC program must continue to run even without physical I/O modules installed in the chassis.

m. All system modules, main and expansion chassis shall be designed to provide free airflow convection cooling. No internal fans or other means of cooling, except heat sinks, shall be permitted.

n. The manufacturer shall have a fully operational quality assurance and quality control program in place and shall comply with ISO9001:2000 standards for "Quality Systems- Model for Quality Assurance in design/Development, Production, Installation, and Servicing".

o. All major assemblies and sub-assemblies, circuit boards, and devices shall be identified using permanent labels or markings, each of which indicates the manufacturers catalog number and a product manufacturing date code.

p. The PACs shall be one of the following:

   i. Rockwell Automation

3. Power Supply and Chassis

a. Chassis

(1) The I/O chassis shall provide for directly mounting the CPU, power supplies, communication modules, and the I/O modules. Chassis shall be available in sizes to house two, four, eight, and up to fourteen I/O local modules. Both panel and DIN-rail mounting shall be available as standard offering.

b. Internal Power Supply

(1) The internal power supply/sequencer (DC to DC converter) shall operate on 11 to 30V dc to power the CPU, communication cards, and I/O modules.

(2) Power supply health and voltage output levels shall be monitored by the CPU.

(3) At the time of power-up, the power supply/sequencer shall inhibit operation of the processor and I/O modules until the DC voltages are within specifications.

(4) The internal power supply shall not consume an available I/O slot.

(5) The measurement of the voltage supplied to the power supply module shall be available as a floating-point value to the internal software for monitoring and / or trending purposes. The use of an external converter and an analog input is not acceptable.

4. Central Processing Unit (CPU)

a. General

(1)The CPU shall be a plug-in module providing program execution, system timing, local and remote I/O access, alarming, data storage, and communication handling. The CPU shall be a 32-bit microprocessor. It shall execute application programs conforming to the IEC 61131-3 standard and use a real-time multitasking operating system.

(2)The CPU shall be a single printed circuit board utilizing surface mount technology. The CPU shall be available with options for processor speed and memory organization. In addition, the CPU shall be available with or without Ethernet to meet suitability for low power installations.

(3)The CPU shall be supplied with a battery-backed time of day clock and calendar.

(4)A three-position mechanical keylock switch, with removable key, shall be provided. RUN mode will prevent any on-line modification to the application control program. REMOTE mode will allow on-line modification via the network connection only. LOCAL mode will allow modification via network and via a locally connected PC.

(5)The CPU family shall allow for user program transportability from one CPU model to another.

(6)The CPU shall not consume an available I/O slot.

b. Capacity

(1) The CPU shall be capable of controlling both local I/O in the chassis and remote I/O in one or more distributed expansion chassis'

(2) The processing of a typical logic program consisting of a mix of analog and digital commands shall not exceed 2 milliseconds for

1024 instructions. I/O devices located in the same backplane as the CPU should be scanned in less than 0.5 milliseconds.

c. Diagnostics

(1) The CPU shall perform on-line diagnostics that monitor the internal operation of the PAC. If a failure is detected, the CPU shall initiate error messages and initiate a system shutdown if a fatal failure occurs. The following at a minimum shall be monitored:

a. Memory Failure shall cause a Watchdog to occur.

b. Memory battery low shall generate an operator message.

c. CPU general fault shall suspend processor operation.

d. Communications port failure shall generate an operator message.

e. Scan time over run shall generate an operator message.

f. I/O failure shall generate an operator message.

g. Analog I/O over/under range shall generate an operator message.

h. The system shall be completely tested upon power-up and any failures shall be posted to a local display.

(2) All on-line diagnostic information shall be stored and made available to the communication system as alarm conditions with the date and time of occurrence of the fault.

(3) All on-line diagnostic information shall be accessible to the PAC application program.

(4) The CPU shall have LED indicators to show status such as PAC GOOD, PROGRAM IDLE TIME, and Power OK/FAIL. If any of the above conditions fault, the CPU shall visually display an internal PAC diagnostic fail alarm and present a diagnostic display on the CPU LED's.

d. Programming Environment

(1) The CPU shall be capable of being programmed by an external MS Windows PC via a serial communication port on the PAC and remotely via the Ethernet communication interface.

(2) The programming PC shall have access to the application program, the system configuration, all registers, I/O, system fault status, I/O override, and system diagnostics.

(3) Application programs and modifications may be downloaded into the CPU flash memory, while the CPU is running the current application program from RAM memory with minimal impact on the scan time. The newly downloaded program can then be quickly activated to RAM for execution.

(4) The CPU shall support all five-industry standard IEC 61131-3 programming languages. As a minimum, Function Block Diagram, Ladder Diagram, Structured Text, Instruction List, and Sequential Function Chart (SFC) programming shall be provided.

(5) The CPU shall be able to be programmed and monitored over the Ethernet and serial communication networks ports via a laptop (PC).

(6) The programming software shall support the use of Ladder Diagram and Function Block Diagram in the same program and the same worksheet.

(7) The software shall make use of precompiled firmware libraries as well as user defined function blocks and user defined function libraries. User defined libraries shall be easily ported from one project to another without the use of “Cut and Paste”.

e. Memory

(1) The CPU shall contain the several memory types suitable to the data being stored.

a. 16 MB non-volatile Flash memory shall be used to store the application program code, historical data archive and audit files. In addition, any other files such as as-built drawings, maintenance logs, instructions and graphic files may be transferred to the flash memory via FTP (File Transfer Protocol). In addition, the entire program source including all graphics shall be stored in a single zipped file in the flash memory. It shall be possible to upload this entire program into the original program source for editing.

b. Retained values, unreported alarms and data shall be stored in 1 MB battery backed Static RAM. The RAM memory battery backup system shall be capable of retaining all memory for a minimum of three (3) months under load.

c. 4 MB of high-speed dynamic RAM shall be used for the actual program execution and temporary data values. In low power applications without Dynamic RAM, 2 MB Static RAM shall be used for program execution.

(2) Internal detection of low memory backup battery condition shall be indicated on a Diagnostic LED for local indication and also a low battery alarm variable shall be provided to alert an operator at the PC workstations.

(3) The program memory shall be sized as required to implement the functions specified plus a minimum of 10% spare. Scratch

pad or "housekeeping" programs shall not be counted in memory size rating.

(4) The PAC CPU memory addresses shall be automatically configured when configuring the I/O points using ‘Tag Names’. Tag names of at least 32 characters shall be allowed. The engineer shall not be required to assign memory addresses to the individual points.

f. Archiving

(1) The PAC shall have the ability to perform automated archiving of historical data to nonvolatile Flash RAM or battery backed RAM.

(2) Each row of archive data will be time stamped and contain a sequence number.

(3) Each column of data shall be able to be independently configured to use one of the following functions:

a. Weighted average

b. Time Based average

c. Average of the square root of the archived point

d. Square of the average of the square root of the archived point

e. Snapshot

f. Minimum value observed during the period

g. Maximum value observed during the period

h. Capture a totalized value and reset it to 0

i. Total of the archived point over the period

g. Event Audit Logging

(1) The PAC shall be able to monitor both analog and digital values and log any change to these values to an Alarm and Event Audit trail for auditing purposes.

Each record in the log shall contain:

a. The date and time that the change was made

b. The variable or tag name of the changed data point

c. The old value

d. The new value

(2) The PAC shall be able to log alarm occurrences to the Audit trail log. Each record in the log shall contain:

a. The time and date of the alarm

b. The variable or tag name of the changed data point

c. The priority of the alarm (Critical, Non-Critical, Guide, Event)

d. The type of alarm (High, Low, High High, Low Low, Return to Normal)

e. The alarm limit

f. The value that triggered the alarm

(3) A minimum of 500 auditable changes and 500 Alarms shall be able to be logged.

5. Local Input/Output Modules (I/O)

a. General

(1) The I/O count and type shall be determined, as that required to implement the functions specified plus an allowance for active spares as noted below.

(2) Each I/O drop or I/O location shall include 20 percent active input points (both DI and AI) and 20 percent active outputs points (both DO and AO) for future use. The spares shall be the

same types of I/O modules supplied. Spare output points that require the use of an external relay shall be supplied with the external relay.

(3) The I/O modules shall be available with both local and remote terminations. Local terminations allow field wiring directly to the I/O module with up to 14-gauge wire. Remote, DIN rail mounted, termination modules connect to I/O module cards in the PAC chassis via pre-assembled mass terminated cables.

(4) Field wiring terminal blocks shall be pull-apart type, if mounted on the I/O modules to allow I/O module replacement without disconnection of the field wiring. All field wiring terminal blocks shall be 300V minimum NEMA rated and accommodate no less than #14 gauge wire.

(5) Surge protection on all modules shall meet C37.90-1978 and IEC 801-5 standards.

(6) I/O module usage shall comply with the following table unless noted otherwise:

I/O Type	Channel/Module	Module Type
Analog input	6	1-5 Vdc or 4-20mA (externally sourced
Analog input	8	4-20mA (internally sourced
Analog output	4	4-20mA (externally sourced)
Discrete input	16	Internally sourced dry contact
Discrete input	8	120/240 VAC and 24 VDC (externally sourced)
Discrete output	8	120/240 VAC and 24 VDC open drain

		(externally sourced)
Counter input	4	24 VDC (externally sourced) (0-10 KHz)
Counter input	4	Internally sourced (0-10 KHz)
Thermocouple	6	B, R, S, J, E, K, T, C, N, +/- 10 mV
RTD	4	2, 3 or 4 wire 100 ohm Platinum

b. Discrete I/O

(1) Open-source outputs shall be solid state MOSFET with an operating voltage range of 10 – 31 Vdc with a capability of sinking up to 500 mA.

(2) Remote terminated Relay type outputs shall be Form-C type (both NO and NC contact) and shall be rated for 5.0 amps continuous. These type outputs shall be used on all MCC circuits or other inductive loads. Local direct wire to I/O module outputs shall be solid state relay rated 6A at 120/240 VAC.

(3) Each discrete input and output shall have an LED or other visible indication of on/off status.

(4) Discrete input and output modules shall be available with optional 500 V to the chassis and 1500 V optical isolation to field devices.

c. Analog I/O

(1) All of the analog inputs shall have at least 14 bit resolution and all analog outputs shall have at least 12 bit resolution. Analog input and output system accuracy shall be within .1% of full scale at 25° C and .3% of full scale

from –40° to +70°

(2) Analog input and output modules shall be available with optional 500 V isolation to chassis.

B. Software

1. Operating System

a. The PAC shall use a real-time, pre-emptive multitasking operating system allowing program execution to be scheduled and prioritized. The application program shall run from complied code for fast execution.

b. The operating system shall reside in the PAC itself. It is not acceptable to transfer data to a PC containing the operating system.

2. PAC Programming Software

a. The supplier shall provide all PAC configuration software packages complete with documentation, disks, licenses, and copy protection devices to allow application development.

b. The software package shall allow off-line program development and on-line editing, annotation, monitoring, debugging, uploading, and downloading of programs to the PACs via RS-232-C, RS-485 and Ethernet data highway.

c. All required hardware (including cables, cable adapters, etc.) to allow the PAC's connection to a Standard RS-232-C, RS-485 and Ethernet data highway personal computer port shall be furnished.

d. The software package shall include a software license agreement allowing the Owner the right to utilize the software as required for any current or future modification, documentation, or development of the PAC's furnished for this project.

e. The software shall be capable of the following IEC 61131-3 functions:

(1) Function Block Diagram

(2) Sequential Function Chart

(3) Instruction List

(4) Structured Text

(5) Ladder Diagram

f. The system shall have the capability to create and reuse User Defined Function Blocks containing one or more functions or function blocks. These User Defined Function Blocks shall be stored in a User Library that is transportable between application programs. Each User Defined Function Block shall have reassignable inputs and outputs so each instance of the function block can have different variables attached to the terminals.

g. The system software shall be Microsoft Windows-based and run in a Windows 10 environment and include a 32-bit simulator capable of executing the application program in the PC to allow the engineer to test and debug the program prior to downloading to the PAC.

h. The software shall also include a live I/O simulator which will allow the developer to test programs without the necessity of being connected to a PAC

i. The system shall provide extensive on-line program debugging tools to allow analysis and troubleshooting of the application program. Live dynamic variable values shall be displayed in the application program worksheets and languages in which they were developed. The debugging tools shall include as a minimum the following capabilities

(1) Variables Cross Reference containing all variables, Function Blocks, Actions, Transitions and connections used in the program.

(2) A graphical Logic Analyzer to record and trend variable values over a certain time interval.

(3) A Watch Window to display variable values of interest, from different worksheets, in a single window.

(4) Breakpoint, Step and Single Cycle program execution to step and trace execution.

(5) Built-in Data Line Monitor for serial communication message monitoring and debugging.

j. The software shall include a security feature to prevent unauthorized personnel from modifying and downloading the program to a PAC. The security shall consist of an ID and Password sign-on to access on-line functions.

k. The username and password shall be stored on the PAC itself and not in the application development software. The security features can only be adjusted by an individual who has access to an administrative level ID and password for the PAC.

l. The software shall have extensive on-line Windows-based help screens.

m. Annotation shall be possible from any Microsoft Windows application. Full text import and export of reference data shall also be possible.

n. The software shall support local and remote downloading of the IEC 61131-3 application and control program selectively to flash and RAM memory. In addition, the entire application source may be downloaded and stored in Flash memory for future upload to the IEC 61131-3 programming software.

3. Instruction Set

a. The IEC 61131-3 instruction set, manufacturer libraries and functional extensions shall be pre-programmed Firmware and installed in the RTU/PLC by the manufacturer.

(1) Firmware upgrades will be made available to authorized users on the manufacturer's web site. Firmware upgrades may be downloaded to the RTU/PLC flash memory via a locally connected PC or remotely via any wired or wireless serial or Ethernet port utilizing the manufacturer's protocol. Remote Firmware downloading shall not interrupt RTU/PLC measurement or control operations or normal data communication during the download process. A brief interruption upon completion will be acceptable to allow activation of the new Firmware.

(2) A communication failure during the download process must not allow corrupt Firmware to execute in the RTU/PLC. Incomplete Firmware downloads due to a communication failure will be completed when proper communication is reestablished.

b. The CPU shall be capable of performing high-level instructions including data word functions such as:

(1) Four-Function Math: The CPU shall be capable of performing addition, subtraction, multiplication, and division on integer and floating-point numbers.

(2) Compare Function: The CPU shall perform the compare function that compares two integers for less than, equal to, greater than, and not equal to. The programmed function shall energize when true and de-energize when false.

(3) Move Function: The CPU shall be able to move a bit, byte, word, double word, integer, and floating-point value from one memory location to another memory location.

c. The PAC CPU shall perform all the functions of the conventional three-mode (PID) analog controller. The CPU shall be able to process up to 64 PID loops. The number of PID loops shall be limited only by the installed physical hardware and shall not be constrained by software limits. Each PID loop shall incorporate an anti-windup algorithm.

c. The system shall have the capability to address software timers and software counters in any combination and quantity up to the limit of available memory.

d. The PAC shall be capable of executing nested conditional logic including IF, THEN and ELSE, which will allow the programmer to control program execution.

e. It shall be a function of the CPU to convert between all data types. For example, the CPU shall allow conversion between Integer, Real, String, BCD and Boolean.

f. The system shall have the capability to enter comments in any free workspace area of Ladder Diagram, Function Block and Sequential Function Chart diagrams.

g. The system shall have a means to program a fault recovery routine. When a major system fault occurs in the system, the fault recovery routine shall be executed, and the system shall determine if the fault has been eliminated. If the fault is eliminated, program execution resumes. If the fault still exists, the system will shut down. A user shall have the option to either resume operation or to shut down upon fault detection.

h. Multiple cyclic interrupt routines having assignable interrupt priority shall be programmable such that the routine shall be executed regularly. The interval at which the routine is executed shall be user-specified in the range of 1 to 65,535 milliseconds.

i. Supported trigonometric instructions must include Sine, Cosine, Tangent, Inverse Sine, Inverse Cosine, and Inverse Tangent. These instructions must fully support floating-point math and be accessible in ladder and other programming languages.

j. Additional floating-point instructions must support Natural Log and Exponential.

k. It shall be possible to complete complex, combined calculations in a single instructions or equations of the format ((A+((B-C)*D))/E).

l. Variable operation functions shall include Average, Square Root, Integration, Differentiation, Totalize, and lead/lag.

m. Variable selection functions shall include a Comparator to select an output based on comparison of two analog inputs and Multiplexor to select from a group of inputs.

C. Communications

1. Communication Ports and Remote I/O Communications

a. The CPU shall support up to three built-in serial communication ports for programming, operator interface peer-to-peer communications and remote I/O operations. The serial ports shall support data rates up to 115.2 K baud.

b. The CPU shall have two optional 10/100 MHz Ethernet port for peer-to-peer, operator interface and remote I/O. The connections shall be standard 10/100Base-T, RJ45 connections. The Ethernet ports shall provide independent Ethernet networks with routing capability.

c. A dedicated port shall be available to connect to the manufacturers Local Operator Display. This display shall not require the use of any of the available programming or network serial communication ports.

d. Serial ports expansion shall by available providing at least two additional built-in RS 232 and two additional RS 485 ports. In addition to the two serial ports, communication expansion shall allow one built-in 900 MHz spread spectrum radio and one built-in V.90 dial-line modem.

e. A ‘Virtual Port’ software function shall be included in the standard instruction set to redirect serial messages to an IP Ethernet port allowing serial port expansion through the use of commonly available Terminal Servers. It shall be possible to mix protocols through the virtual port to multiple serial devices connected to Terminal Servers.

2. Protocols

(a) In addition to the PAC manufacturers own serial protocol, the PAC shall also support the following serial protocols:

(1) Serial RTU and ASCII Modbus

(2) Ethernet I/P

(3) DNP3

(4) HART protocol (via an external, field loop, HART transceiver)

(5) DF1

(6) Generic ASCII protocols

b. In addition to the PAC manufacturers own IP protocol, the PAC shall also support the following IP protocols over TCP/IP or UDP/IP:

(1) Open Modbus (Modbus over IP)

(2) DNP3

(3) CIP

(4) FTP

(5) SMTP

c. The PAC shall support the use of serial ports as IP ports by employing the Point to Point Protocol (PPP). Access via PPP shall have the following security options:

(1) None

(2) Plain text Authorization (PAP)

(3) Encrypted Challenge Authorization (CHAP)

d. The Modbus protocol shall be designed to communicate with as many other Modbus capable devices as possible. The following configuration parameters shall be available:

(1) Gould or Enron variants

(2) Select 0 based or 1 based counting for address offset

(3) High bit first or low bit first

(4) High byte first or low byte first

(5) High word first or low word first

(6) The use of 8, 16 or 32 bit registers for Integer values

(7) The use of two 16bit or one 32 bit registers for IEEE floating point values

(8) The ability to adjust the register count and address range in the Modbus message for devices storing 32 bit values as:

(a) One 32 bit register taking up one address space and accessed by a call for one register

(b) Two 16 bit registers taking up two address spaces and accessed by a call for two registers

(c) Two 16 bit registers taking up one address space and accessed by a call for two registers

(9) The following Modbus commands shall be able to be used by a Modbus Master Port or responded to by a Modbus Slave Port

(a) 1 - Read Coil Status

(b) 2 - Read Input Status

(c) 3 - Read Holding Registers

(d) 4 - Read Input Registers

(e) 5 - Force Single Coil

(f) 6 - Preset Single Register

(g) 7 - Read Exception Status

(h) 15 - Force Multiple Coils

(i) 16 - Preset Multiple Registers

e. Each communications port can be configured, independently, for Modbus. That is, different ports could utilize completely different configurations, including different variants of Modbus and different register memory maps.

f. The PAC protocol shall support program file downloading, on-line program editing and debug, historical file transfer, alarm message transmission and network time-syncing.

g. The PAC protocol shall support a Report-By-Exception (RBE) polling mechanism to minimize communication overhead in low bandwidth networks. Data values will only be transmitted if they have changed beyond the specified deadband.

h. The supplier shall provide web-based PC software for PAC configuration and data access. It shall rely on an open architecture, industry standard, .html format and be compatible with Microsoft Internet Explorer. The software shall provide access to the data via Internet, Intranet, dedicated networks and direct local connections.

(1) The software shall include a set of ActiveX Controls for reading and writing real-time and historical data, trending, recipe editing and custom display generation

(2) The custom as well as Pre-configured web interface may be stored on a PC or downloaded to the PAC flash memory. It may then uploaded from flash memory and run on the PC.

i. The supplier shall provide an OPC Server compliant with OPC Data Access specification 1.0a and 2.0 and the OPC Alarm and Event specifications.

(1) The OPC server shall provide a background polling mechanism capable of refreshing the database at a slower scheduled rate than the primary polling rate for current active display and trend data.

(2) The OPC server shall provide tag browsing by compatible client applications.

(3) The OPC server database shall be created automatically by reading the PAC tag file. Retyping of the PAC tags to generate the OPC server database is not acceptable.

D. I/O Expansion

1. I/O Expansion Rack

a. I/O shall be expandable beyond the base PAC chassis by interfacing to one or more I/O Expansion chassis'. The I/O expansion chassis' shall be the same as the main PAC chassis and support all of the same I/O modules. The application control program shall run in the main PAC CPU.

b. This main PAC CPU will interface to the I/O Expansion chassis communication module via one of the available Ethernet ports. The I/O Expansion communication processor shall not require programming or variable address mapping of I/O.

E. RTU/PLC I/O Surge Protection Devices (SPD

1. Analog Signals._All analog require SPDs at both ends of the circuit. The SPD shall:

a. The SPD shall consist of a multistage hybrid unit that does not use metal oxide varistors (MOVs), not interfere with the normal operation of the device, and have a trip level less than the surge withstand level of the instrument.
b. The SPD shall be designed to withstand a 10 kA test current of a (8/20) us waveform per IEEE C62.41.-2002, category C Area.
c. SPDs used in Division 1 hazardous areas will conform to EN 020/DIN EN 50 020/VDE 0170/0171 part 7: 1996-04. SPDs in hazardous areas shall provide at least 500V isolation between intrinsic safety ground and earth ground.
d. The SPD shall have a series resistance less than 10 ohms and a maximum operating load of 250 mA.

e. The SPD shall have an operating temperature range of -40^C to +80^C.
f. The SPD shall provide line-to-line and line-to-ground protection.
g. The SPD shall be DIN rail mountable or pipe mountable depending on the application.
h. No more than two analog signals per SPD will be allowed.
i. The SPD shall be Phoenix Contact PlugTrab PT 2x2 series or MTL SD-32 series for DIN rail mounting, and Phoenix Contact PipeTrab S-PT 1 series, or MTL TP-P pipe series for conduit installation at the instrument.

2. Digital Signals. All RTU/PLC digital input and output signals shall be protected with a Surge Protection Device (SPD) in the RTU/PLC enclosure. Relay isolated outputs do not require a SPD, but do require surge suppression across the relay coil.

   a. The SPD shall consist of a multistage hybrid unit that does not use metal oxide varistors (MOVs), not interfere with the normal operation of the device, and have a trip level less than the surge withstand level of the instrument.
   b. The SPD shall be designed to withstand a 10 kA test current of a (8/20) us waveform per IEEE C62.41.-2002, category C Area.
   c. SPDs used in Division 1 hazardous areas will conform to EN 020/DIN EN 50 020/VDE 0170/0171 part 7: 1996-04. SPDs in hazardous areas shall provide at least 500V isolation between intrinsic safety ground and earth ground.
   d. The SPD shall have a series resistance less than 10 ohms and a maximum operating load of 250 mA.
   e. The SPD shall have an operating temperature range of -40^C to +80^C.
   f. The SPD shall provide line-to-line and line-to-ground protection.
   g. The SPD shall be DIN rail mountable.
   h. No more than two signals per SPD will be allowed.
   i. The SPD shall be Phoenix Contact PlugTrab PT 2x2 series or MTL SD-32 series selected for the application and voltage range

3. Communications Signals. All copper serial communications links (RS-232, RS-485) shall be protected at both ends of the circuit, or as shown on the system block diagram

   a. The SPD shall consist of a multistage hybrid unit that does not use metal oxide varistors (MOVs), not interfere with the normal operation of the device, and have a trip level less than the surge withstand level of the instrument.
   b. SPDs for shall be UL497B listed.

c. SPDs used in Division 1 hazardous areas will conform to EN 020/DIN EN 50 020/VDE 0170/0171 part 7: 1996-04. SPDs in hazardous areas shall provide at least 500V isolation between intrinsic safety ground and earth ground.

d. SPDs for data communication shall have a minimum cutoff frequency (3 dB) of 100MHz for 50 ohm systems.

e. The SPD shall have a series resistance less than 2.2 ohms and a maximum operating load of 250 mA.

f. The SPD shall have an operating temperature range of -40^C to +80^C.

g. The SPD shall provide line-to-line and line-to-ground protection.

h. The SPD shall have a peak clamping voltage of +/- 25 V dc.

i. The SPD shall be DIN rail mountable.

j. The SPD shall be designed to withstand a 10 kA test current of a (8/20) us waveform per IEEE C62.41.-2002, category C Area.

b. The SPD shall be Phoenix Contact Data-PlugTrab PT PT5-HF Series, or MTL SD-32 series selected for the application and voltage range.

c. RTU/PLC Analog I/O Signal Isolation. All RTU/PLC analog signals will be provided with 3-way signal isolating amplifiers. Signal isolation power supplies shall be separate from field digital input power supplies.

PART 3 - EXECUTION

3.01 INSTALLATION REQUIREMENTS

A. RTUs/PLCs installation requirements are specified in Div 13 sections except as described herein.

B. Field check, testing, and training shall be as specified in the Instrumentation and Control System section.

3.02 CONFIGURATION

A. RTU/PLC Programming and Configuration: Configuration services are as specified below and as specified in Section 13030, Software Control Block Descriptions.

B. Programming Responsibilities: System Supplier will have all RTU/PLC and HMI programming responsibilities for the project as tabulated below. The System Supplier shall provide all programming services or any Test software required for acceptance testing.

	PROCESSOR ID	MODEL	RESPONSIBILITY
1.	PLC-E1	ControlLogix	PICS Supplier

C. Communications Configuration: The communications devices shall be fully configured and installed by System Supplier. Communications shall be configured as shown on the drawings.

3.03 I/O CONFIGURATION

A. Implement the control system database fields in a consistent manner by using the following procedures:

1. Use abbreviations and acronyms already established in the Contract Documents. In particular, use the information in the I/O Point List.

2. Use only abbreviation or acronym for a word or group of words, respectively.

3. Use the same subject and word order within data fields.

4. Use the same term (either phrase, word or acronym) to denote the same meaning. Do not use multiple terms for a single meaning.

5. Use the point names, descriptions, logic state descriptions, ranges and units of measurement exactly the same wherever the point is referenced.

6. Show point names and descriptions for all point references on documentation.

7. Spell correctly.

8. Maintain lists of acronyms and abbreviations used.

3.04 I/O HARDWARE CONFIGURATION

A. Partition the I/O among cards within an I/O enclosure to provide control loop integrity.

1. Put all inputs of the same I/O type associated with a device (e.g. pump, blower, clarifier or other piece of equipment) on the same card.

2. Put all inputs of the same I/O type for devices arranged in process trains (e.g. a pump, its inlet valve and its outlet valve, or a pump and its associated macerator) on the same card or cards if more than one card is required to accommodate the points.

3. Put all outputs of the same I/O type associated with a device or group of devices in a process train on the same card or cards if more than one card is required to accommodate the points.

4. Where the preceding requirements specified in this paragraph would cause more than 20 percent spare points on a card, points for a device or process train may be split between two consecutive cards.

5. Make unused terminals resulting from partitioning the I/O into pre-wired spares. Provide pre-wired spare points with all cabling and termination internal to the DCU as done for other I/O points.

3.05 POINT DATA FIELDS

A. I/O point data fields may be subject to review and modification by the ENGINEER during the Shop Drawing review phase. Incorporate changes directed by the ENGINEER completely into the entire system, at no additional cost to OWNER, subject to the following limitations:

B. Limit the total number of modifications to 20 percent of the total number of I/O points.

C. Each unique change will count as one modification. For example, modifying the description, range, and engineering unit on an analog input count as three modifications.

D. Analog input alarm limit definition will not be counted as a modification.

END OF SECTION

SECTION 13200
PROCESS CONTROL SYSTEM INPUT/OUTPUT LIST

PART 1 - GENERAL

1.01 DESCRIPTION

A. Scope:

1. This Section describes the system input/output (I/O) list, which follows this Section and requirements for configuring the control system database.

B. Related Sections:

1. Section 13100, Programmable Logic Controllers.

C. Refer to the attachment at the end of this specification for the 13200A – PLC Input/Output List.

1.02 SUBMITTALS

A. For each I/O attribute listed in the I/O list that cannot be used exactly as listed, submit an explanation of the reason for the deviation and propose a method to modify the I/O list information. Do not proceed with any configuration until a method of resolving deviations is accepted by the ENGINEER.

1.03 I/O POINT LIST DESCRIPTION

A. The I/O point list contains the information necessary to configure the PLC or PLC I/O interface hardware and to indicate range conversion or signal functions.

B. “POINT NUMBER” is an alphanumeric character string. For example, the point MP-F0123I1, the following apply:

1. The first two characters (MP) refers to the specific plant area (MP = Main Pump, for example).

2. The third character is the functional identifier and follows ANSI/ISA-S5.1. In the example, the “F” represents flow.

3. The four-digit number (0123) identifies the loop or field device.

4. The next alpha character (I) is the function identifier. In the example, the “I” represents an analog input.

5. The final numeric character (1) is used, as required, as a suffix to differentiate multiple points in the same loop.

C. “DESCRIPTION” is an alphanumeric character string up to 40 positions in length. Points described as “SPARE” denote pre-wired I/O.

D. “SIGNAL TYPE” is one of the following:

1. AI designates an analog input.

2. DI designates a discrete input.

3. PI designates a pulse input.

4. AO designates an analog output.

5. DO designates a momentary, maintained or latched discrete output.

E. “DATA FIELD 1” and “DATA FIELD 2” describes the function or signal characteristics. These are further defined under each signal type.

F. “RELAY” is used only for discrete outputs to indicate the action of the contacts:

1. “MO” designates momentary action.

2. “MA” designates maintained action.

G. “ALARM” is used only for discrete inputs to distinguish between status inputs and alarm inputs.

H. “CROSS REFERENCE” is used to designate those I/O points that are transferred between the DCU and PLC via the digital communications link (PLC Gateway). Designation is made by listing "PLC" under the reference description.

1.04 SIGNAL TYPE DESCRIPTION

A. Analog Input:

1. “DATA FIELD 1” is the electrical input signal range and units.

2. “DATA FIELD 2” is the process parameter range and engineering unit.

B. Discrete Input:

1. “DATA FIELD 1” is the condition that exists when a field contact is closed.

2. “DATA FIELD 2” is the condition that exists when a field contact is open.

C. Pulse Input:

1. “DATA FIELD 1” is the pulse frequency range.

2. “DATA FIELD 2” is the process parameter range and engineering unit.

D. Analog Output:

1. “DATA FIELD 1” is the electrical output signal and units.

2. “DATA FIELD 2” is the range of the controlled variable and engineering units.

E. Discrete Output:

1. Discrete outputs can be momentary or maintained.

2. “DATA FIELD 1” is the contact closed function.

3. “DATA FIELD 2” is the contact open function.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 I/O CONFIGURATION

A. Implement the control system database fields in a consistent manner by using the following procedures:

1. Use abbreviations and acronyms already established in the Contract Documents. In particular, use the information in the I/O Point List.
2. Use only abbreviation or acronym for a word or group of words, respectively.
3. Use the same subject and word order within data fields.
4. Use the same term (either phrase, word or acronym) to denote the same meaning. Do not use multiple terms for a single meaning.
5. Use the point names, descriptions, logic state descriptions, ranges and units of measurement exactly the same wherever the point is referenced.
6. Show point names and descriptions for all point references on documentation.
7. Spell correctly.
8. Maintain lists of acronyms and abbreviations used.

3.02 I/O HARDWARE CONFIGURATION

A. Partition the I/O among cards within an I/O enclosure to provide control loop integrity.

1. Put all inputs of the same I/O type associated with a device (e.g. pump, blower, clarifier or other piece of equipment) on the same card.
2. Put all inputs of the same I/O type for devices arranged in process trains (e.g. a pump, its inlet valve and its outlet valve, or a pump and its associated macerator) on the same card or cards if more than one card is required to accommodate the points.
3. Put all outputs of the same I/O type associated with a device or group of devices in a process train on the same card or cards if more than one card is required to accommodate the points.
4. Where the preceding requirements specified in this paragraph would cause more than 20 percent spare points on a card, points for a device or process train may be split between two consecutive cards.
5. Make unused terminals resulting from partitioning the I/O into pre-wired spares. Provide pre-wired spare points with all cabling and termination internal to the DCU as done for other I/O points.

3.03 POINT DATA FIELDS

A. I/O point data fields may be subject to review and modification by the ENGINEER during the Shop Drawing review phase. Incorporate changes directed by the ENGINEER completely into the entire system, at no additional cost to OWNER, subject to the following limitations:

1. Limit the total number of modifications to 20 percent of the total number of I/O points.
2. Each unique change will count as one modification. For example, modifying the description, range, and engineering unit on an analog input count as three modifications.
3. Analog input alarm limit definition will not be counted as a modification.

3.04 INPUT/OUTPUT TAGGING

A. Each tag number shall be written as follows AA I ####Y # where:

1. AA =Area/DPU or PLC Identifier.
2. I = ISA Identification.
3. #### =4 Digit Loop Number.
4. Y = Function Identifier.
5. # = Suffix (to distinguish between similar variables).

B. Area/DPU/PLC/RTU Identifier:

C. ISA Identification:

1. A =Miscellaneous Analytical.
2. B =Burner, Combustion.
3. C = Chlorine Residual/Gas.
4. D = Density.
5. E = Voltage.
6. F = Flow.
7. G = Intrusion.
8. H = Hand.
9. I = Current.
10. J = Power.
11. K = Time.
12. L = Level.
13. M = Motor.
14. N = pH.
15. O = Oxygen.

16. P = Pressure.
17. Q = Quantity.
18. R = Radioactivity.
19. S = Speed, Frequency.
20. T = Temperature.
21. U = Common Alarm.
22. V = Vibration.
23. W = Torque (Weight or Force).
24. X = Hazardous Gas.
25. Y = Event, State or Presence (Switch Position).
26. Z = Position, Dimension.

D. Function Identifier:

1. A = Available / In Auto (input)
2. B = Backward Rotation (input)
3. C = Full Closed (input)
4. D = Full Open (input)
5. E = Close/Energize (output)
6. H = High (input)
7. I = Input (Analog)
8. L = Low (input)
9. N = Open (output) or Control Mode (input)
10. O = Output (Analog)
11. R = Running (input)
12. S = Start (output)
13. T = Stop (output)
14. U = Malfunction (input)
15. V = Slow (output)
16. W = Slow (input)
17. X = Selector Switch (input)

E. Examples:

1. MPZ0120N=Main Pump Building, Valve 0120 Position, Open Command.
2. IAT0128I = Incinerator A, Temperature Transmitter 0128, Analog Input Value.

3. STL0333L = Settled Wastewater Building, Level Switch 0333, Low Alarm (Discrete Input).

END OF SECTION

SECTION 13300
PLANT MONITORING AND CONTROL SYSTEM TRAINING

PART 1 - GENERAL

1.01 REQUIREMENTS AND RESPONSIBILITIES

A. CONTRACTOR shall provide all labor, materials, equipment and incidentals as shown, specified and required to perform and coordinate all required training at times acceptable to OWNER and ENGINEER.

B. CONTRACTOR shall retain the services of the Process Instrumentation and Control System (PICS) Supplier to provide operational and maintenance training for all process, monitoring and control equipment as specified herein.

C. The PICS SUPPLIER shall provide for on-site training by an authorized representative of the equipment manufacturer as part of the Supplier's services. The manufacturer's representative shall be fully knowledgeable in the operation and maintenance of the equipment.

D. CONTRACTOR, PICS SUPPLIER shall be responsible for all costs, including cost of travel, meals and lodging, for their respective equipment, if required, that is associated with training, and shall provide all required materials, texts and required supplies. A maximum of eight (8) people will be attending training courses.

E. All training shall be conducted in the normal eight-hour working days until conclusion of the training course. For on-site training, the course instructor shall be assigned full time and shall not perform other duties throughout the period of the course.

F. Training shall occur after all other process related training in completed. The Contractor shall coordinate the training sequences.

1.02 SUBMITTALS

A. Within 60 days of the effective date of the Notice to Proceed, CONTRACTOR, PICS SUPPLIER shall submit their plan for training and also conforming to the requirements of Instruction of Operations and Maintenance Personnel. Included in the plan shall be course outlines and schedules for training to be provided on-site.

1.03 GENERAL TRAINING

A. General:

1. Respective contractors or suppliers shall provide supplier or manufacturer approved representative's who shall perform standardized, structured training courses at a training facility in Columbia County staffed with regular full time training instructors covering both operation and maintenance of the system equipment furnished by the Supplier or Manufacturer.

2. OWNER will send the following personnel to attend training courses at the project site.

a. Operations Training: 4 persons.
b. Maintenance Training: 4 persons.

B. Operator Training Course:

1. Provide a minimum of three (3), days, eight hours per day, course covering the structure and the functions of the PLC's, SCADA equipment and other system components and devices. The course shall familiarize the student with the procedures for applying the system to process control problems and develop student programming capability.

2. As a minimum, the course shall cover the following topics:

a. Overview of systems functional capabilities.
b. Equipment overview including system component functions, operating principals and proper use.
c. Loading and start-up of the digital system hardware components.
d. Use of system commands.
e. Development of programs and control schemes.
f. Development and use of system displays.
g. Programming concepts and techniques.
h. Use of bulk storage device for system backup.

C. Maintenance Training Course:

1. Provide a minimum of three (3) days, eight hours per day, course covering preventive and troubleshooting maintenance for the system components. The course shall familiarize the student with diagnostic capabilities of the system, both software and hardware, and also the routine maintenance procedures on the system and the common peripheral devices.

2. As a minimum the course shall cover the following topics:

a. System overview description including the power subsystems and logic components of the processor bus.
b. Description of the maintenance and troubleshooting aids of the system including software diagnostic programs.
c. Description of all bus operations.
d. Description of peripheral and process interface devices.

1.04 SPECIFIC TRAINING

A. Onsite training to begin after startup and demonstration testing process is completed.

1. Primary Sensors/Transducers and Field Instruments:

a. The services of equipment manufacturer's representatives shall be provided for a minimum of two (2) hours for each type of instrument including analytical equipment.
b. Provide on-site operation and maintenance training by Supplier and the equipment manufacturer representatives after the completion of the Startup process, conforming to the

requirements of Instruction of Operations and Maintenance Personnel.

c. Training shall accomplish the following:

i. Provide instruction covering use and operation of the equipment to perform the intended functions.

ii. Provide instruction covering procedures for routine, preventive and troubleshooting maintenance including equipment calibration.

iii. Explain procedures for placing the equipment in and out of operation and explain necessary actions and precautions to be taken regarding the overall plant monitoring and control system.

2. Training covering the control equipment:

a. The PICS Supplier shall provide minimum of two (2) days of additional operations training covering all system components.

b. Training course shall accomplish the following:

i. Provide all instructions necessary to operate and utilize all system components.

ii. Provide all instruction necessary to monitor and control the system processes from the designated control panel.

iii. Explain procedures for control of the system during scheduled or rescheduled shutdown and the subsequent start-up.

iv. Provide instructions for regular caretaking operations.

3. PLC & SCADA Training:

a. The PICS Supplier shall provide minimum of one (1) day - eight hours, of additional operations training covering all PLC system components.

b. The PICS Supplier shall provide training that covers PLC's, SCADA system equipment and the components of the network as follows:

i. Provide an overview of system hardware and software.

ii. It shall train people in configuration, operation and programming processors.

iii. The emphasis shall be placed on how to perform set point changes, minor programming changes, range changes, diagnostics and upkeep of documentation.

iv. Instruction for hardware and software maintenance, trouble shooting and maintenance planning.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

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SECTION 13400
PROCESS CONTROL SYSTEM START-UP AND FIELD TESTING

PART 1 - GENERAL

1.01 SYSTEM CHECK-OUT AND START-UP RESPONSIBILITIES

A. CONTRACTOR shall provide all labor, materials, equipment and incidentals as shown, specified and required to furnish and install all equipment and coordinate all activities necessary to perform check-out and start-up of the equipment.

B. CONTRACTOR shall retain the services of the Process Instrumentation and Control System (PICS)Supplier to supervise and/or perform check-out and start-up of all system components. As part of these services, the PICS Supplier shall include for those equipment items not manufactured by him; the services of an authorized manufacturers' representative to check the equipment installation and place the equipment in operation. The manufacturers' representative shall be thoroughly knowledgeable about the installation, operation and maintenance of the equipment.

1.02 CHECKOUT AND START-UP

A. CONTRACTOR, under the supervision of the PICS Supplier, and other instrument suppliers as applicable, shall perform the following:

1. Check and approve the installation of all components and all cable and wiring connections between the various system components prior to placing the various processes and equipment into operation.

2. Conduct a complete system checkout and adjustment, including calibration of all instruments, tuning of control loops, checking operation functions, and testing of final control actions. When there are future operational functions included in this work, they should be included in the system checkout. All problems encountered shall be promptly corrected to prevent any delays in start-up of the various unit processes.

B. Both CONTRACTOR and PICS SUPPLIER shall provide all test equipment necessary to perform the testing during system checkout and start-up.

C. CONTRACTOR and PICS SUPPLIER shall be responsible for the initial operation of monitoring and control system and shall make any required changes, adjustment or replacements for operation, monitoring and control of the various processes and equipment necessary to perform the functions intended.

D. CONTRACTOR shall furnish to the ENGINEER certified calibration reports for field instruments and devices specified in Section 13080, Primary Sensors and Field Instruments, and panel mounted devices specified in Section 13070, Panel-Mounted Instruments and Devices, as soon as calibration is completed.

E. CONTRACTOR shall furnish ENGINEER an installation inspection report certifying that all equipment has been installed correctly and is operating properly. The report shall be signed by authorized representatives of CONTRACTOR, and PICS SUPPLIER.

F. CONTACTOR and PICS SUPPLIER shall perform all calibrations with the Owner present. No exceptions.

1.03 INTEGRATED SYSTEM FIELD TEST

A. Following the PICS checkout and initial operation, CONTRACTOR, under the supervision of the PICS SUPPLIER, shall perform a complete system test to verify that all equipment and programmed software is operating properly as a fully integrated system, and that the intended monitoring and control functions are fully implemented and operational. Any defects or problems found during the test shall be corrected by CONTRACTOR and then retested to demonstrate proper operation.

B. Following demonstration of all system functions, the PICS including field sensors/transducers and instruments shall be running and fully operational for a continuous 48 hour period. The Operational Availability Demonstration specified below shall not begin until the continuous 48 hour integrated system test has been successfully completed and OWNER and ENGINEER agree that the Operation Availability Demonstration can begin.

1.04 OPERATIONAL AVAILABILITY DEMONSTRATION

A. Operational Availability Demonstration (OAD) shall begin following completion of the integrated system field test as specified above and shall continue until a time frame has been achieved wherein the system (both hardware and software) availability meets or exceeds 99.7 percent for seven (7)consecutive days and no system failures have occurred which result in starting the OAD over again. During the OAD the system shall be available to plant operating personnel for use in normal operation of the plant.

B. For the purpose of the OAD, the system will be defined as consisting of the following systems and components:

1. Plant Control Panel, PCP all remote displays all PLC panels as shown on SCADA Network drawing, provided by the PICS SUPPLIER, and CONTRACTOR.

2. Generator & Switchgear Control Panel and all Standby Generator panels as shown on SCADA Network drawing, provided by the Equipment Supplier.

3. Main Plant SCADA HMI software and SCADA control system changes

C. The conditions listed below shall constitute system failures which are considered critical to the operability and maintainability of the system. The OAD shall be terminated if one or more of these conditions occur. Following correction of the problem, a new seven (7) consecutive day OAD shall begin.

1. Failure to repair a hardware or software problem within 120 consecutive hours from the time of notification of a system failure.

2. Recurrent hardware or software problems: if the same type of problem occurs three times or more.

3. Software problem causing a processor to halt execution.

D. The following conditions shall constitute a system failure in determining the system availability based on the equation specified in Paragraph 1.4.E., below:

1. Failure of PLC's.

2. Loss of communications between devices on the communications network.

3. Failure of one or more input/output components.

4. Failures of any type affecting ten or more input/output points simultaneously.

5. Failure of any type affecting one or more regulatory control loops or sequential control strategies thereby causing a loss of the automatic control of the process variable or process sequence operation.

6. Failure of power supply. Where redundant power supplies are provided, failure of one power supply shall not constitute a system failure provided the backup power supply operates properly and maintains supply power. Failure of the backup supply to operate properly and maintain supply power shall constitute a system failure.

7. Failure of three or more primary sensors/transducers or field instruments simultaneously.

E. The system availability shall be calculated based on the following equation:

$$A = \frac{TTO}{TTO + TTR} \times 100 \text{ percent}$$

where, A = system availability in percent

TTO = total time in operation
TTR = total time to repair

F. Time to repair shall be the period between the time that CONTRACTOR is notified of a system failure and the time that the system has been restored to proper operation in terms of hours with an allowance for the following dead times which shall not be counted as part of the time to repair period.

1. Actual travel time for service personnel to get to the Site up to six hours per incident from the time CONTRACTOR is notified of a system failure.

2. Time for receipt of spare parts to the plant site once requested up to 24 hours per incident. No work shall be done on the system while waiting for delivery of spare parts.

3. Dead time shall not be counted as part of the system available period. The dead time shall be logged and the duration of the OAD extended for an amount of time equal to the total dead time.

G. Completion of a seven (7) consecutive day period without any restarts of the OAD and with system availability in excess of 99.7 percent will constitute acceptance of the PICS by OWNER.

H. All parts and maintenance materials required to repair the system prior to completion of the OAD shall be supplied by CONTRACTOR at no additional cost to OWNER. If parts are obtained from the required plant spare parts inventory, they shall be replaced to provide a full complement of parts as specified.

I. A Plant Monitoring and Control System Malfunction/Repair Reporting Form shall be completed by the plant personnel and ENGINEER to document system failures, to record CONTRACTOR notification, arrival and repair times and CONTRACTOR repair actions. Format of the form shall be developed and agreed upon prior to the start of the OAD.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 13500
PROCESS CONTROL SYSTEM FACTORY TESTING

PART 1 - GENERAL

1.01 DESCRIPTION

A. Scope

1. PICS SUPPLIER shall provide all labor, materials, equipment, and incidentals as specified and required for factory testing at their respective facilities to verify that system their components function properly, compatible with each other's system and comply with the functional and performance requirements of the Contract Documents.

2. Perform factory testing on the following types of equipment:

   a. Control panels,
   b. Graphical screens on OIT's and configured OIT software provided by PICS supplier.

3. Perform factory testing on the process control systems for the following process equipment:

   a. Control Panel PLC-E1

4. PICS SUPPLIER shall advise ENGINEER in writing of the scheduled dates for process control systems factory testing; submit such notice not less than 28 days prior to the scheduled start of factory testing. The PICS SUPPLIER shall make all arrangements and pay all costs for six (6) OWNER/ENGINEER representativesto be present at their factory testing facility (located within the USA) during operational testing of the process control systems at their respective factories, either for individual units or for the integrated system. In lieu of OWNER and ENGINEER witnessing the process control system factory testing, CONTRACTOR shall submit a letter, sealed and signed by a professional engineer, certifying that the required factory testing was successfully completed in accordance with testing procedure approved by ENGINEER and the Contract Documents.

B. Related Sections:

1. 13600, Process Control System General Provisions.

1.02 QUALITY ASSURANCE

A. Qualifications:

1. Professional Engineer:

   a. Engage a registered professional engineer legally qualified to practice and experienced in providing the engineering services

of the kind indicated. Professional engineer may be an employee of manufacturer.

b. Submit qualifications data.

c. Responsibilities include but are not necessarily limited to:

i. Preparing or supervising the preparation of factory test set-ups.

ii. Performing or supervising performance of factory testing, interpretation and engineering analysis of factory testing data, and preparation of test reports.

iii. Certifying that factory tests performed and results achieved comply with the Contract Documents.

B. Action Submittals: Submit the following:

1. Testing Plans:

a. Submit factory test procedures in accordance with Section 13600, Process Control System General Provisions, for all equipment listed in Paragraph 1.01.A of this Section. Obtain ENGINEER's acceptance of testing plan not less than 28 days prior to scheduled start of factory test.

C. Informational Submittals: Submit the following:

1. Source Quality Control Submittals:

a. Written results of factory testing for process control systems. Submit the complete factory test report within two weeks after completion of the factory test.

b. Certification of factory testing results by professional engineer.

2. Qualifications Statements:

a. Professional engineer.

PART 2 - PRODUCTS

2.01 SOURCE QUALITY CONTROL

A. Inspections Prior to Factory Testing:

1. Inspect each panel, console, and cabinet to verify compliance with the Contract documents, and approved Shop Drawings and approved other CONTRACTOR submittals.

2. Inspection shall include, but not be limited to, the following:

a. Nameplates and tags.

b. Wire sizes and color coding.

c. Terminal block contact ratings and numbers.

d. Panel-mounted equipment and identification.

e. External and internal panel layout.

f. Proper wiring practices and grounding.
g. Enclosure flatness, finish and color.
h. NEMA rating and environmental control equipment.

3. Correct materials and equipment that do not comply with the Contract Documents and submittals approved by ENGINEER, and re-inspect until compliance is verified.

B. Factory Tests:

1. System Hardware Operational Testing:

a. Test each input/output device and component to verify operability. If panel or device being tested contains pneumatic systems, test the instruments associated with such systems to verify that calibration.
b. Test all system hardware components to verify proper operation of the equipment as stand-alone units and as a system. Tests shall include, but are not necessarily limited to, the following:

i. AC/DC power checks.
ii. Power fail/restart tests.
iii. Verify that network switch, and fiber-optic converters are powered by separate circuits.
iv. 4) Verify thatquantity of circuits assigned to power field instruments corresponds to approved Shop Drawings and approved other CONTRACTOR submittals.

c. Criteria for Acceptance: System hardware operational testingshall acceptably demonstrate that specified and required equipment operations capabilities function properly.
d. Test remote I/O, operator interface terminals, linking devices, and similar devices, to verify that communication between unitsfunctions properly.
e. Perform an integrated system test, with all control system equipment connected (excluding field sensors and instruments), to verify that equipment performs and functions properly as an integrated system. During the factory test, simulate field sensors and instruments using appropriate signal generators, switches, and jumper cables.
f. Separately test each panel furnished under this Contract to verify that panel instruments and processors are perform and function properly in accordance with the Contract Documents. For the factory test required in this Section, simulate field sensors and field instruments using appropriate signal generators, switches, and jumper cables.

2. System Hardware Demonstration

a. PICS shall perform and be solely responsible for system hardware demonstration of their systems factory test.

b. Preparation:

i. System performance shall be tested using fully-integrated system, including all software and hardware. Entire control system, including one of each type of field device with interconnecting cables, shall be assembled at the factory test location and simulated inputs applied. Signal generators shall be appropriately sized and calibrated for full range of use and shall have a power source to accommodate not less than a full day of testing. Prior to the factory test, provide process I/O simulation panel that includes the following:

I. Toggle switches to simulate field or other input contacts.

II. Indicating lights to simulate outputs from tested panels.

III. Control relays to simulate motor control center coil inputs.

IV. Time relays to simulate position switches.

V. Indications (in milliamps) to indicate every 4 to 20 ma-dc output from tested panel.

VI. Potentiometers to simulate 4 to 20 ma-dc inputs to tested panel.

VII. Each device shall have nameplate with description and device's process and instrumentation Drawings (P&ID) tag number. Nameplates shall be removable and interchangeable for multiple use of the panel during the test.

ii. Operator Interfaces: Prior to factory testing of the system, configure the display environments in accordance with the display structure agreed upon between PICS, ENGINEER, and OWNER. Load and link database parameters to the specified fields.

c. Factory Test:

i. PICS shall demonstrate system software utility programs and system software security programs incorporated into their control system, to demonstrate proper functioning of the various functions and capabilities specified.

ii. Perform complete system test, during which entire system shall operate continuously without failure in accordance with the Contract Documents.

iii. Demonstrate the monitoring and control information displayed on each HMI screen, based on simulation of each associated point for each screen, in accordance with test procedure approved by ENGINEER. Simulation through forced values in the PLC programming is acceptable. In addition, OWNER or ENGINEER will randomly select, at the time of the factory test, additional inputs and outputs to be simulated in quantitynot less than five percent of total I/Oquantity. Demonstrate that monitoring and control application software associated with I/O points performs and functions as intended.

iv. Demonstrate communications between integrated system elements; include such demonstration in the testing procedure submittal, where applicable.

v. Operator Interfaces:

I. During factory test, demonstrate overall display structure, including environment configurations, passwords, security, and other parameters and functions.

II. Review menu display contents to demonstrate how an operations personwill navigate within the overall display structure.

III. Demonstrate assignment of displays to annunciator keys.

IV. Review each graphic display for correctness relative to layout, symbols, color scheme, and other requirements.

V. Demonstrate operation of standard alarm management displays (current alarm display, alarm history, and similar alarm displays).

VI. Perform demonstration of each type of report specified. Printing shall be an integral part of the report demonstration.

VII. Perform testing of new graphics developed for the existing SCADA software.

PART 3 - EXECUTION (NOT USED)

END OF SECTION

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SECTION 13600
PROCESS CONTROL SYSTEM GENERAL PROVISIONS

PART 1 - GENERAL

1.01 DESCRIPTION

A. Scope:

1. This section covers the furnishing and installation of an instrumentation and control system. The system shall be furnished as specified, complete with all software, hardware, input/output hardware, instrumentation, and all devices, accessories, appurtenances, testing, system commissioning and training necessary for proper operation. All other process instrumentation and control systems shall be furnished under this section by a single Process Instrumentation Control System (PICS) Supplier herein called the “PICS Supplier”.

2. PICS Supplier shall provide all labor, materials, equipment, and incidentals as shown, specified, and required to furnish, install, calibrate, test, start-up and place in satisfactory operation a complete process instrumentation control system.

3. The process instrumentation and control Work includes, but is not limited to, the following:

   a. SCADA software modifications.
   b. Panels and panel-mounted instruments and devices.
   c. Programmable logic controllers (PLC) and software.
   d. Human-machine interface (HMI) software and configuration.
   e. Local area network hardware and software.
   f. Uninterruptible power supply.
   g. Programming and configuring of control panels and SCADA software including remote dial out.
   h. Historical Database, trending, report generation

B. PICS shall monitor, store, display, and log process and equipment operating information; perform various process control functions; and generate various reports.

C. The Contract Documents describe the required PICS and PICS functions and operational requirements.

D. All software shall be of the latest releases.

E. Coordination:

1. Process Controls:

a. The PICS SUPPLIER, shall be required to attend monthly coordination meetings upon receiving the notice to proceed and once PICS SUPPLIER is on site, coordination meetings will be required every two (2) weeks.

b. A central computer system is proposed and is provided this contract, the software is VT SCADA. Instruments, PLC's/ PLC's and controls programming (I&C) Work under this contract provided by PICS Supplier shall, as part of the scope, be interfaced with existing computer system. Programming of control logic and configuration of the control system with new process graphical screens - human machine interface (HMI) software is part of the Work. Process control description of process system and its associated equipment is included in Section 13030, Software Control Block Descriptions.

c. Some panels and equipment provided by others but furnished under other Specification Sections are under this Contract for coordination and integration into the total control system. The CONTRACTOR is responsible for any additional hardware and software that is needed to interface with these panels.

d. CONTRACTOR shall coordinate with Suppliers of panels and equipment to provide fully functional system complying with the Contract Documents and that interfaces with the central computer system.

e. Computer system input/output list identifies the inputs and outputs that is required, and is part of this Section. Use the input/output list for coordinating signals between equipment provided under this and other contracts, but may not be totally inclusive, verification is the responsibility of the PICS. Include Work for other vendor supplied furnished control options not on the input/output list at no additional cost to OWNER.

2. PICS Supplier's Responsibilities:

a. Preparing all process control equipment submittals in accordance with the Contract Documents.

b. Proper interfacing of instrumentation and control equipment with field equipment, instruments, devices, and panels, including required interfacing with packaged process control systems furnished by other equipment Suppliers, and any required interfacing with the Site's electrical system such as generator or power monitoring.

c. Review and coordination with manufacturers, other Suppliers, and other contracts of Shop Drawings and other CONTRACTOR submittals for equipment, valves, piping, and appurtenances for ensuring proper interfacing of hardware, and locations and installation requirements of inline devices and instrument taps.

d. Direct, detailed oversight of installation of instruments, panels, consoles, cabinets, wiring and other components, and related wiring and piping connections.
e. Calibrating, source quality control, field quality control, and start-up of the system.
f. Responsibility for correction period obligations for the PICS.
g. Training operations and maintenance personnel in operation and maintenance (including calibration and troubleshooting) of the PICS.

1.02 REFERENCES

A. Standards referenced in this Section are:

1. ANSI/ASQ Z1.4, Sampling Procedures and Tables For Inspection By Attributes.

2. ISA 5.4, Instrument Loop Diagrams.

3. ISA 20, Specification Forms for Process Measurement & Control Instruments, Primary Elements & Control Valves.

4. 4. NFPA 79, Electrical Standard for Industrial Machinery.

1.03 QUALITY ASSURANCE

A. Qualifications:

1. Supplier:

a. Shall be financially sound with at least ten years of continuous experience in designing, implementing, supplying, and supporting process control systems for municipal water treatment facilities comparable to PICS required for the Project, relative to hardware, software, cost, and complexity.
b. Shall have record of at least 10 successful process control system equipment installations in the past year. Upon ENGINEER's request, submit record of experience for at least 8 projects, each with the following information: project name, owner name and contact information, name and contact information for contractor, name and contact information for engineer or architect, approximate and contract value of process control systems Work for which Supplier was responsible,
c. Shall be capable of training operations and maintenance personnel in PICS applications, and in operating, programming, and maintaining the control system and equipment.
d. Shall have UL-approved panel shop.
e. Supply and support system hardware components and software packages of fully developed and field-proven

standardized designs that are not a highly unique, custom, or one-of-a-kind systems.

f. Possess a thorough, working knowledge of water treatment processes and control philosophy in accordance with standard practices of the water treatment industry.

g. Possess and maintain a documented program of failure analysis.

h. PICS Supplier shall be:

i. Smart Energy Solutions, Sumterville, FL (321) 229-7643

B. Manufacturers:

1. Manufacturers of instrumentation and control equipment furnished for the PICS shall be experienced producing similar equipment and shall have the following qualifications:

a. Shall manufacture instrumentation and control system components that are fully-developed, field-proven, and of standardized designs.

b. Shall have system of traceability of manufactured unit through production and testing in accordance with ANSI/ASQ Z1.4.

c. Shall have guaranteed availability clause (99.99 percent, minimum for three (3) years) for microprocessor-based components and appurtenances.

d. Shall have documented product safety policy relevant to materials and equipment proposed for the Work.

C. Pre-submittal Conference

1. Schedule and conduct a pre-submittal conference by the PICS Supplier within 45 days after acceptance of PICS Supplier by OWNER.

2. Required Attendance for Pre-submittal Conference: CONTRACTOR, ICS Supplier, ENGINEER, and OWNER. Pre-submittal conference will be approximately 8 hours. Conference will be held at The ENGINEERS office unless otherwise acceptable to the entities attending.

3. Purpose of pre-submittal conference is to review manner in which PICS Supplier intend to comply with requirements of the Contract Documents relative to PICS submittals before submittals are prepared.

4. Bring to pre-submittal conference list of proposed personnel committed to assignment to the Project. List shall include PICS Supplier project manager, project engineer, any field representatives or local service representative, and sales representative(s); and

similar personnel for PICS Supplier. Indicate addresses of personnel not based at Subcontractor's and Supplier's office nearest to the Site.

5. Prepare items listed below for presentation at pre-submittal conference. Submit information to ENGINEER two weeks prior to pre-submittal conference.

   a. List of materials and equipment required for PICS, and manufacturer and model proposed for each item.
   b. List of currently-known requests for interpretations of which CONTRACTOR, and PICS Supplier are currently aware.
   c. List of proposed exceptions to the Contract Documents along with brief explanation of each.
   d. Proposed PICS network architecture diagram.
   e. Sample of each type of process control submittal required by the Contract Documents. These may be submittals prepared for other projects.
   f. Flow chart showing steps to be taken in preparing and coordinating PICS submittals.
   g. General outline of types of tests to be performed to verify that all sensors and transducers, instruments, and digital processing equipment are functioning properly.

1.04 SUBMITTALS

A. Action Submittals: Submit the following: In accordance to Div 1 requirements.

1. Shop Drawings:

   a. Field Instruments:

      i. Manufacturer’s product name and complete model number of devices proposed for use, including manufacturer’s name and address.
      ii. Instrument tag number in accordance with the Contract Documents.
      iii. Data sheets and manufacturer’s catalog literature. Provide data sheets in accordance with ISA 20 and annotated for features proposed for use. For instruments not included in ISA 20, submit data sheets using a format similar to ISA 20.
      iv. Description of construction features.
      v. Performance and operation data.
      vi. Installation, mounting, and calibration details; instructions and recommendations.
      vii. Service requirements.
      viii. Dimensions of instruments and details of mating flanges and locations of closed tanks, pipe sizes for

insertion instruments, and upstream/downstream straight run pipe lengths required.

ix. Range of each device and calibration information

x. Descriptions of materials of construction and listing of NEMA ratings for equipment

b. Panels, Consoles, and Cabinets:

i. Layout drawings that include:

I. Front, rear, and internal panel views to scale.

II. Tag number and functional name of components mounted in and on panel, console, or cabinet, as applicable.

III. Product information on panel components.

IV. Nameplate location and legend including text, letter size and colors to be used.

V. Location of anchorage connections.

VI. Location of external wiring and piping connections.

VII. Mounting and installation details, coordinated with actual application.

VIII. Proposed layouts and sizes of operator interface graphic display panels and alarm annunciator panels.

IX. Calculations substantiating panel heating and cooling provisions proposed.

X. Subpanel layouts and mounting details for items located inside control panels.

ii. Product information on panel components including:

I. Manufacturer's product name and complete model number of devices being provided, including manufacturer's name and address.

II. Instrument tag number in accordance with the Contract Documents.

III. Data sheets and catalog literature. Submit data sheets as shown in ISA 20 and annotated for features proposed for use. For instruments not included in ISA 20, submit data sheets with format similar to ISA 20.

IV. Description of construction features.

V. Performance and operation data.

VI. Installation, mounting, and calibration details; instructions and recommendations.

VII. Service requirements

iii. Wiring and piping diagrams, including the following:

I. Name of each panel, console, or cabinet.
II. Wire sizes and types.
III. Pipe sizes and types.
IV. Terminal strip and terminal numbers.
V. Wire color coding.
VI. Functional name and manufacturer's designation for components to which wiring and piping are connected.
VII. Lightning and surge protection grounding.

iv. Electrical control schematics in accordance with NFPA 79. Control schematics shall be in accordance with convention indicated in Annex D of NFPA 79. Standardized wiring diagrams that do not accurately reflect actual wiring to be furnished are unacceptable. Tables or charts for describing wire numbers are unacceptable.
v. Stock list or bill of materials for each panel including tag number, functional name, manufacturer's name, model number and quantity for components mounted in or on the panel or enclosure.
vi. Detail showing anchorage plan of wire bundles between subpanels and front panel mounted devices.

c. Field wiring and piping diagrams, include the following:

i. Wire and pipe sizes and types.
ii. Terminal numbers at field devices and in panels.
iii. Fiber optic termination designations in the field and in panels.
iv. Color coding.
v. Conduit numbers in which wiring will be located.
vi. Locations, functional names, and manufacturer's designations of items to which wiring or piping are connected.

d. Proposed operator interface graphics layouts. Each graphic display and process report layout will be subject to modification from CONTRACTOR's submitted format within limits of software package used for development. Implement such modifications in accordance with ENGINEER's written comments on the submittal.
e. Plant monitoring and control system (PMCS):

i. Submit the following general information:

I. Detailed block diagram showing system hardware configuration and identifying model numbers of system components.

II. Software listings for operating system, applications, and HMI.

III. Software language and organization.

IV. Format, protocol and procedures for data transmission and communications with input/output modules and peripheral devices, including wide area network (WAN) or local area network (LAN) devices.

V. HMI interfacing details, licensing structure, and included functions.

VI. Control and failure modes.

f. Online and offline capabilities for programming, system utilities, and diagnostics.

g. Input/Output Information:

i. Input/output (I/O) point listing with I/O module cross-reference identification.

ii. I/O module cross-reference identification based on I/O address list developed by PICS Supplier.

h. Database listing, including all I/O points.

i. Suggested detailed format and configuration of log reports, alarm summaries, printer outputs, displays, and graphics.

2. Hardware:

a. Layout drawings showing front, rear, end, and plan views to scale of equipment, I/O components, power supplies, and peripheral devices.

b. Equipment ventilation and cooling requirements.

c. Interconnection diagrams, including termination details, cable identification list, and cable length.

d. Drawings showing equipment layout.

e. Installation requirements, instructions, and recommendations.

3. Software:

a. Licensing agreement with name of licensee, renewal requirements, release and versions, expiration dates (if any) and upcoming releases scheduled before Project completion. When upcoming releases are expected, provide descriptions, when available, of features that differ from the proposed release.

b. Provide information of number of run, client, and development licenses as well as I/O point count limit per license.

c. Standard technical and instructional documentation covering software for utility, system support, system documentation, display, communications, data logging and storage and

diagnostic functions. Submit this information as electronic files.

d. Standard technical documentation covering all aspects of the computer system software functions and capabilities, including instruction set description and programming procedures related to monitoring, display, logging, reporting and alarming functions.

e. Detailed functional descriptions of application programs explaining control, display, logging and alarming features to be provided and functions to be performed.

4. Documentation describing memory type, size and structure and listing size of system memory, I/O and data table memory and size of memory available for control programs.

5. System I/O Loop Wiring Diagrams: Prepare Shop Drawings on module-by-module basis and include the following information:

a. Rack numbers, module type and slot number, and module terminal point numbers. Include location and identification of intermediate panel and field terminal blocks and terminal numbers to which I/O wiring and power supply wiring is connected. Identify power supply circuits with designation numbers and ratings.

b. Wiring types, wire numbers, and color coding.

c. Designation of conduits in which field I/O wiring will be installed.

d. Location, functional name, tag numbers and manufacturer's module numbers of panel and field devices and instruments to which I/O wiring will be connected.

e. Prepare loop wiring diagrams in accordance with ISA 5.4.

f. Complete point-to-point interconnection wiring diagrams of field wiring associated with the system. Diagrams shall include the following:

i. Field wiring between each equipment item, panel, instruments, and other devices, and wiring to control stations, panelboards, and motor starters. Some of this equipment may be specified in other Divisions. CONTRACTOR is responsible for providing complete point-to-point interconnection wiring diagrams for control and monitoring of that equipment.

ii. Numbered terminal block and terminal identification for each wire termination.

iii. Identification of assigned wire numbers for interconnections. Assign each wire a unique number.

iv. Schedule showing the wiring numbers and the conduit number in which the numbered wire is installed.

v. Junction and pull boxes through which wiring will be routed.
vi. Identification of equipment in accordance with the Contract Documents.

6. Product Data:

a. Product data for field instruments in accordance with requirements for Shop Drawings in this Section.
b. Product data for panels, consoles, and cabinets in accordance with requirements for Shop Drawings in this Section.
c. Product data for field wiring and piping provided for instrumentation and control service and not included under other Sections or contracts.
d. Product data for SCADA system, including software and hardware. Requirements for software product data are included in requirements for Shop Drawings under this Section.

7. Samples:

a. Color charts for finish paint for metallic panels. Provide full range of paint manufacturer's standard and custom colors. Color selection will be by ENGINEER.
b. Color charts for fiberglass-reinforced panels. Provide full range of panel manufacturer's standard and custom colors. Color selection will be by ENGINEER.

8. Factory Acceptance Test Procedure: Submit proposed procedures for factory testing required to comply with the Contract Documents. Test procedure shall include the following:

a. Visual inspection of components and assembly.
b. Description of hardware operational testing.
c. Description of software demonstration.
d. Description of testing equipment to be used.
e. Sign-off sheets to be used at time of testing.

B. Informational Submittals: Submit the following:

1. Documents to be submitted prior to pre-submittal conference, in accordance with this specification.

2. System Software Documentation: Submit preliminary software documentation not later than 28 days prior to scheduled start of factory testing. Software documentation shall include the following:

3. Complete printed copies of all programming.

a. Complete listing of external and internal I/O address assignments, register assignments and preset constant values

with function point descriptions. List unused/undefined I/O and data table registers available.

b. Copies of all configured HMI screens.

4. Manufacturer's Instructions:

a. Shipping, handling, storage, installation, and start-up instructions.

b. Templates for anchorage devices for materials and equipment that will be anchored to concrete or masonry.

5. Source Quality Control Submittals:

a. Results of factory testing.

6. Special Procedure Submittals:

a. Notification to OWNER and ENGINEER at least 14 days before readiness to begin system checkout at the Site. Schedule system checkout on dates acceptable to OWNER and ENGINEER.

b. Written procedure for system checkout. Submit not less than90 days prior to starting system checkout.

c. Ninety days prior to starting system checkout submit written procedure for start-up.

7. Field Quality Control Submittals:

a. Submit the following prior to commencing system checkout and start-up.

i. Completed calibration sheets for each installed instrument showing five-point calibration (zero, 25, 50, 75, 100 percent of span), signed by factory-authorized serviceman.

ii. Field calibration reports

iii. Field testing reports.

8. Supplier's Reports:

a. Installation inspection and check-out report.

b. Submit written report of results of each visit to Site by Supplier's service technician, including purpose and time of visit, tasks performed, and results obtained. Submit within two days of completion of visit to the Site.

9. Qualifications Statements:

a. PICS Supplier.

b. Manufacturers, when required by ENGINEER.

C. Closeout Submittals: Submit the following:

1. Operations and Maintenance Data:

a. Submit in accordance with Section, Operation and Maintenance Data.
b. Include complete up-to-date system software documentation. Provide hardcopy and electronic copies.

2. Record Documentation:

a. Prepare and submit record documents in accordance with, Project Record Documents.
b. Revise all PICS Shop Drawings to reflect as-built conditions in accordance with the following.

i. Use" as-built" updates of approved Shop Drawings and submittals in operation and maintenance manuals.
ii. Half-size black line prints of wiring diagrams applicable to each control panel shall be laminated and placed in envelope inside a suitable print pocket or container inside each control panel.
iii. Submit drawings of the point-to-point interconnection wiring diagrams updated to reflect final as-built equipment information and as-installed field installation information.

D. Maintenance Materials Submittals: Submit the following:

1. Spare Parts and Test Equipment

a. General

i. Furnish the spare parts and test equipment in accordance with the Contract Documents, identical to and interchangeable with similar materials and equipment provided for the PICS under the Contract.
ii. Provide source quality control for spare parts as part of factory testing prior to shipment of process control system equipment.
iii. For process sensors and other analog instruments, Supplier shall submit a separate quotation for recommended list of spare parts and test equipment. Separately list and price each item recommended. Spare parts quotation shall include a statement that prices quoted are valid for a period of two (2) year from date of equipment installation and that Supplier understands that OWNER reserves the right to purchase none, any, or all parts quoted. Upon request, Supplier shall submit documentation that stock of spare parts and test equipment is obtainable within 48 hours of receipt of OWNER’s order.

b. Furnish the following spare parts per PLC supplied:

i. Five of each type of input/output relay for each quantity of twenty five (25) or fraction thereof provided under the Contract.
ii. One complete PLC, including One type of each PLC input/output module or card used.
iii. One replacement power supply for each type and size provided under the Contract.
iv. One-year supply of all expendable or consumable materials.
v. One per quantity of five or fraction thereof of gauges, indicators, and switches provided, complete with diaphragm seals, filled and ready to use.
vi. Twelve of each type and size of fuse used in instruments.

2. Software:

a. Furnish copies of all software (with the selected versions) licensed to Columbia County. Follow the submittal guidelines for software submittals.
b. Submit copies of programming and configuration files developed specifically for the Project in accordance with Operations and Maintenance Data.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Prior to packaging, each manufacturer or Supplier shall securely attach tag number and instructions for proper field handling and installation to each instrument. Refer to Div 1.

PART 2 - PRODUCTS

2.01 PICS – GENERAL PROVISIONS FOR PRODUCTS

A. General:

1. All electrically-powered equipment and devices shall be suitable for operation on 115-volt plus-or-minus 10 percent, 60 Hertz plus-or-minus two Hertz power. If different voltage or closer regulation is required, provide suitable regulator or transformer.

2. Provide appropriate power supplies for all two-wire transmitters, loops for monitoring discrete inputs and necessary outputs. Install power supplies mounted in enclosures, and install in appropriate control room or field panel.

3. Power supplies shall be suitable for minimum of 130 percent of the maximum simultaneous current draw.

4. Provide power on-off switch or air circuit breaker for each item requiring electrical power.

5. Provide isolation transformers, line voltage regulators and power distribution panels for the distributed digital portions of the PICS to eliminate electrical noise and/or transients entering on the primary power line.

6. Unless otherwise shown or indicated in the Contract Documents, control system shall be furnished to use 4 to 20 mA DC analog signals.

7. Provide signal converters and repeaters where required. Analog inputs to distributed control system shall be through appropriate repeaters to provide signal isolation where series-looped with other devices and to allow loop to maintain integrity even when distributed control system is out of service. Power supplies shall adequate for signal converter and repeater loads.

8. Signals shall be isolated from ground.

9. Signals shall not have a transient DC voltage exceeding 300 volts over one millisecond nor a DC component over 300 volts.

10. PICS and associated input/output wiring will be used in a facility environment where there can be high-energy AC fields, DC control pulses, and varying ground potentials between the sensors/transducers or input contact locations and PICS components. PICS shall be adequate to provide proper protection against interferences from all such possible situations.

11. Instrumentation and PICS components shall be heavy-duty types, suitable for continuous service in a municipal water treatment plant environment. Furnish products that are currently in production at the time products are shipped from the factory. All equipment furnished shall be of modular construction and be capable of field expansion through installation of plug-in circuit cards and additional cabinets as necessary. Logic and control loops shall be fail-safe.

12. Instrumentation and other PICS components shall return automatically to accurate measurement within 15 seconds upon restoration of power after a power failure, and when transferred to standby power supply.

13. Provide surge protection for instruments and all other PICS components that could be damaged by electrical surges.

14. Field-mounted instruments and PICS components shall be suitable for installation in humid and corrosive service conditions. Field-mounted instrument enclosures, junction boxes, and appurtenances shall comply with NEMA 4X requirements:

    a. FRP in Chemical Containment Areas
    b. 316 SS for all other

c. Refer to drawings for additional requirements.

15. Relays with interconnections to field devices shall be wired through terminal blocks. Terminals as part of the relay base are unacceptable.

16. Panel mounted instruments, switches, and other devices shall be selected and arranged to present a pleasing coordinated appearance. Front-of-panel-mounted devices shall be of the same manufacturer and model line.

17. All components furnished, including field-mounted and rear-of-panel instruments, shall be tagged with the item number and nomenclature as shown and the instrument index in the Contract Documents or, as applicable, the "data sheets" that are part of the Contract Documents.

18. Ranges and scales specified in the Contract Documents shall be coordinated to suit equipment actually furnished. Range, scale, and set point values specified in other Sections of Division 40 are for initial setting and configuration. Coordinate specified values with actual equipment furnished to implement proper and stable process action as systems are placed in operation.

19. Field-mounted devices shall be treated with an anti-fungus spray.

20. Field-mounted devices shall be protected from exposure to freezing temperatures.

B. Environmental Conditions:

1. PICS and its components shall be designed and constructed for continuous operation under the following temperature and humidity conditions:

a. Equipment and Devices Installed in Control Rooms:

i. Ambient Temperature: 60 degrees F to 80 degrees F normal range; and 40 degrees F to 105 degrees F occasional maximum extremes.

ii. Relative Humidity: 80 percent, normal; 95 percent maximum.

b. Equipment and devices installed at indoor locations (other than control rooms) for digital processing equipment hardware, control panels, and instruments:

i. Ambient Temperature: 40 degrees F to 120 degrees F.

ii. Relative Humidity: 98 percent maximum.

c. Equipment and Devices Installed Outdoors:

i. Ambient Temperature: -10 degrees F to 120 degrees F.

ii. Relative Humidity: 100 percent maximum.

PART 3 - EXECUTION

3.01 PICS – GENERAL PROVISIONS FOR EXECUTION

A. Refer to Sections 13030 through 13600 for execution requirements for the PICS.

END OF SECTION

SECTION 16050

ELECTRICAL - GENERAL PROVISIONS

PART 1 - GENERAL

1.01 DESCRIPTION

A. Scope of Work:

1. Furnish all labor, materials, equipment and incidentals required for a complete electrical system as hereinafter specified and shown on the Drawings, whether or not specifically shown or called for.

2. The work, apparatus and materials which shall be furnished under these Specifications and accompanying Drawings shall include all items listed hereinafter an/or shown on the Drawings. All materials necessary for the complete installation shall be furnished and installed by the Contractor to provide complete power, generator, lighting systems, instrumentation, wiring and control systems as indicated on the Drawings and/or as specified herein whether or not specifically shown or called for. Certain equipment will be furnished as specified in other Section of this specification which will require conduit and wire to complete the installation as required.

3. The Contractor shall furnish and install the necessary cables, transformers, motor control centers, protective devices (surge protection), conductors, exterior electrical system, etc., to serve motor loads, lighting loads and miscellaneous electrical loads as indicated on the Drawings and/or as specified hereinafter.

4. The work shall include complete testing of all equipment and wiring at the completion of the work and making any minor connection changes or adjustments necessary for the proper functioning of the system and equipment. All workmanship shall be of the highest quality; substandard work will be rejected.

5. Provide permitting and acceptance testing.

6. Make all field connections to process instrument panels and other control panels furnished under other Divisions of these Specifications.

7. For process instrumentation furnish and install all conduit, wire and interconnections between primary elements, transmitters, local indicators and receivers. Coordinate wire termination with the instrumentation supplier.

8. It is the intent of these Specifications that the electrical system shall be suitable in every way for the service required. All material, equipment, appliances and all work which may be reasonably implied as being incidental to the work of this Section shall be furnished at no extra cost.

9. Each bidder or his authorized representatives shall, before preparing a bid, visit all areas of the existing building and/or proposed site in which work will take place and be performed to inspect carefully the present installation and conditions. The submission of the bid by this bidder shall be considered evidence that the bidder has visited the project and noted the locations and conditions under which the work will be performed and that the bidder takes full responsibility for a complete knowledge of all factors governing his work.

10. All necessary temporary power requirements are the responsibility of the Contractor and shall be furnished at to extra cost to the Owner.

11. All necessary temporary power, control and instrumentation requirements are the responsibility of the Contractor and shall be furnished at no extra cost to the Owner. Power and controls shall be furnished to all existing equipment at all times.

B. Service and Metering:

1. Permanent electrical power and metering will be provided by the at 227/480 volts, 3-phase, 4 wire, wye, solid grounded, 60 Hertz.

C. Codes, Inspections and Fees:

1. All material and installation shall be in accordance with the latest edition of the National Electrical Code and all applicable national, local and state codes.

2. Pay all fees required for permits, inspections, and connections.

D. Tests:

1. Test all systems and repair or replace all defective work. Make all necessary adjustments to the systems and instruct the Owner's personnel in the proper operation of the systems.

E. Interpretation of Drawings:

1. The Drawings are not intended to show exact location, quantity or size of conduit runs. All installation of the raceway system shall be as directed by approved shop drawing. Any installation of a raceway system before shop drawing submittal and approval will at the sole risk of the Contractor.

2. All three-phase circuits shall be run in separate conduits unless otherwise shown on the Drawings.

3. Unless otherwise approved by the Engineer, conduit shown exposed shall be installed exposed; conduit shown concealed shall be installed concealed.

4. Where circuits are shown as "home-runs" all necessary fittings and boxes shall be provided for a complete raceway installation.

5. The Contractor shall harmonize the work of the different trades so that interferences between conduits, piping, equipment, architectural and structural work will be avoided. All necessary offsets shall be furnished so as to take up a minimum space and all such offsets, fittings, etc., required to accomplish this shall be furnished and installed by the Contractor without additional expense to the Owner. In case interference develops, the Owner's authorized representative is to decide which equipment, piping, etc., must be relocated, regardless of which was installed first.

6. Verify with the Engineer exact locations and mounting heights of lighting fixtures, switches and receptacles prior to installation.

7. The locations of equipment, fixtures, outlets, and similar devices shown on the Drawings are approximate only. Exact locations shall be as approved by the Engineer during construction. Obtain in the field all information relevant to the placing of electrical work and, in case of any interference with other work, proceed as directed by the Engineer and furnish all labor and materials necessary to complete the work in an approved manner.

8. Surface mounted panel boxes, junction boxes, conduit, etc., shall be supported by spacers to provide a clearance between wall and equipment.

9. Circuit layouts shown are not intended to show the number of fittings, or other installation details. Furnish all labor and materials necessary to install and place in satisfactory operation all power, lighting, and other electrical systems shown. Additional circuits shall be installed wherever needed to conform to the specific requirements of the equipment.

10. The ratings of motors and other electrically operated devices together with the size shown for their branch circuit conductors and conduits are approximate only and are indicative of the probable power requirements insofar as they can be determined in advance of the purchases of the equipment.

11. All connections to equipment shall be made as shown, specified, required, and directed and in accordance with the approved shop drawings, regardless of the number of conductors shown on the Electrical Drawings.

F. Size of Equipment:

1. Investigate each space in the building through which equipment must pass to reach its final location. If necessary, the manufacturer shall be required to ship his material in sections sized to permit passing through such restricted areas in the building.

2. The equipment shall be kept upright at all times. When equipment has to be tilted for each of passage through restricted areas during transportation, the manufacturer shall be required to brace the equipment suitably, to insure that the tilting does not impair the functional integrity of the equipment.

G. Component Interconnections:

1. Component equipment furnished under this Specification will not be furnished as integrated systems.

2. Analyze all systems components and their shop drawings; identify all terminals and prepare drawings or wiring tables necessary for component interconnection.

H. Record Drawings:

1. As the work progresses, legibly record all field changes on a set of project Contract Drawings. When the project is complete furnish a complete set of reproducible "as-built" drawings for the Project Record Documents, Section 01780.

1.02 SUBMITTALS

A. Material and Shop Drawings:

1. As specified under Section 01300, shop drawings shall be submitted for approval of all materials, equipment, apparatus, and other items as required by the Engineer.

2. Shop drawings shall be submitted for the following equipment:

a. Motor Control Centers

b. Disconnect Switches

c. Wire and Cable

d. Supporting Devices

e. Variable Frequency Drives

f. Test Data

3. The manufacturers' name and product designation or catalog numbers shall be submitted for the following material:

a. Conduit

b. Receptacles

c. Boxes and Fittings

d. Switches

e. Lamps

f. Control Relays

4. Prior to submittal by the Contractor, all shop drawings shall be checked for accuracy and contract requirements. Shop drawings shall bear the date checked and shall be accompanied by a statement that the shop drawings have been examined for conformity to Specifications and Drawings. This statement shall also list all discrepancies with the Specifications and Drawings. Shop drawings not so checked and noted shall be returned.

5. The Engineer's check shall be only for conformance with the design concept of the project and compliance with the Specifications and Drawings. The responsibility of, or the necessity of, furnishing materials and workmanship required by the Specifications and Drawings which may not be indicated on the shop drawings is included under the work of this Section.

6. The responsibility for all dimensions to be confirmed and correlated at the job site and for coordination of this work with the work of all other trades is also included under the work of this Section.

7. No material shall be ordered or shop work started until the Engineer's approval of shop drawings has been given.

B. Manufacturer's Services

1. Provide manufacturer's services for testing and start-up of the following equipment:

   a. Variable Frequency Drives
   b. Motor Control Centers

2. Provide manufacturer's of the above listed equipment shall provide an experienced Field Service Engineer to accomplish the following tasks:

   a. The equipment shall be visually inspected upon completion of installation and prior to energizing to assure that wiring is correct, interconnection complete and the installation is in compliance with the manufacturer's criteria. Documentation shall be reviewed to assure that all Drawings, operation and maintenance manuals, parts list and other data required to check out and sustain equipment operation is available on site. Documentation shall be red-lined to reflect any changes or modifications made during the installation so that the "as-built" equipment configuration will be correctly defined. Spare parts shall be inventoried to assure correct type and quantity.

   b. The Field Service Engineers shall provide engineering support during the energizing and check out of each major equipment assembly. They shall perform any calibration or adjustment required for the equipment to meet the manufacturer's performance specifications.

c. Upon satisfactory completion of equipment test, they shall provide engineering support of system tests to be performed in accordance with manufacturer's test specifications.

d. Three (3) 4-hour training sessions (one for each system) on operation, and two (2) 4-hour training sessions (one for each system) on maintenance and trouble-shooting procedures shall be provided for the Owner's maintenance personnel. All training shall be conducted at a facility provided by the Owner. The maintenance and trouble-shooting sessions shall be conducted with record "as-built" electrical drawings sufficient for a class of eight personnel.

e. A final report shall be written and submitted to the Contractor within fourteen days from completion of final system testing. The report shall document the inspection and test activity, define any open problems and recommend remedial action.

PART 2 - PRODUCTS

2.01 MATERIALS AND EQUIPMENT

A. The materials used in all systems shall be new, unused and as hereinafter specified. All materials where not specified shall be of the very best of their respective kinds. Samples of materials or manufacturer's specifications shall be submitted for approval as required by the Engineer.

B. Materials and equipment used shall be Underwriters Laboratories, Inc., listed.

C. Electrical equipment shall, at all times during construction, be adequately protected against mechanical injury or damage by water. Electrical equipment shall not be stored out-of-doors. Electrical equipment shall be stored in dry permanent shelters. If any apparatus has been damaged, such damage shall be repaired by the Contractor at his own cost and expense. If any apparatus has been subject to possible injury by water, it shall be thoroughly dried out and put through such special tests as directed by the Engineer, at the cost and expense of the Contractor, or shall be replaced by the Contractor at his own expense.

D. All fasteners shall be type 316 stainless steel.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Provide and place all sleeves for conduits penetrating floors, walls, partition, etc. Locate all necessary slots for electrical work and form before concrete is poured.

B. All cutting and patching shall be done in a thoroughly workmanlike manner.

3.02 INSPECTION AND TESTING

A. Test all systems and repair or replace all defective work. Make all necessary adjustments to the systems and instruct the Owner's personnel in the proper operation of the systems.

END OF SECTION

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SECTION 16060
POWER DISTRIBUTION SYSTEM COORDINATION STUDY

PART 1 GENERAL

1.01 DESCRIPTION

A. Scope:

1. CONTRACTOR shall provide all labor, materials, equipment, services, and incidentals required to perform Power System Studies and distribution system field testing.

B. The Power System Studies shall include a Short Circuit Study, a Protective Device Evaluation Study, Arc Flash Study, and a Protective Device Coordination Study for a completely coordinated Power Distribution System for both the proposed and existing systems.

1.02 REFERENCES

A. Standards referenced in this Section are listed below:

1. American National Standards Institute, (ANSI).

   a. ANSI C37.04, Rating Structure for AC High-Voltage Circuit Breakers Rated on a Symmetrical Current Basis.
   b. ANSI C37.010, Application Guide for AC High Voltage Circuit Breakers Rated on a Symmetrical Basis.

2. Institute of Electrical and Electronics Engineers, (IEEE).

   a. IEEE 141, Electric Power Distribution in Industrial Plants.
   b. IEEE 399, Recommended Practice for Industrial and Commercial Power System Analysis.

3. National Electrical Code, (NEC).

1.03 QUALITY ASSURANCE

A. Source Quality Control:

1. Retain the services of a Registered Professional Engineer, to perform the Power System Studies and field services. The Registered Professional Engineer shall be from an independent consulting firm or from the manufacturer of the power distribution equipment.
2. Coordinate with the Engineer performing the studies and assist him in the collection
3. All information pertaining to the existing system necessary to perform the studies shall be obtained in advance prior to performing the studies.
4. All motor starting and transformer information shall be based upon the equipment installed distribution system. The Field Engineer shall be from the manufacturer of the power distribution equipment.

B. All test equipment and instrument calibration shall be in accordance with the latest edition of the accuracy standard of the U.S. National Institute of Standards and Technology.

1.04 SUBMITTALS

A. Shop Drawings: Submit the following:

1. Copies of calculations and results of the Short Circuit Study, Protective Device Evaluation and Coordination Studies in a report format. The report shall be stamped and signed by the Registered Professional Engineer.
2. Work sequence for the field testing shall be submitted in advance prior to performing tests. The sequence shall indicate the schedule of work, time frame and downtime for the equipment.
3. Time current curves for all protective devices included within the power system studies.

B. Reports:

1. Field test report shall be submitted.

PART 2 PRODUCTS

2.01 POWER SYSTEM STUDIES

A. General:

1. Provide a current and complete Short Circuit Study, Protective Device Evaluation Study, and a Protective Device Coordination Study for the Electrical Distribution System.
2. The studies shall include all portions of the high and low voltage electrical distribution system from the normal and alternate sources of power through the low- voltage distribution system. Normal system operating method, alternate operation, and operations which could result in maximum fault conditions shall be thoroughly covered in the study.
3. Problem areas or equipment inadequacies shall be promptly brought to the ENGINEER'S attention.

B. Short Circuit Study:

1. The Short Circuit Study shall be performed with the aid of a computer program.
2. The study input data shall include the utility company's short circuit, single and three phase contributions, with the X/R ratio, the resistance and reactance components of and all other applicable circuit parameters.
3. Short-circuit momentary duties and interrupting duties shall be calculated on the basis of maximum available fault current at each switchgear bus, switchboard, motor control center, distribution panelboard, pertinent branch circuit panelboards, and other significant locations through the system.
4. The short circuit tabulations shall include symmetrical fault currents, and X/R ratios. For each fault location, the total duty on the bus, as well as the individual contribution from each connected branch, including motor back EMF current contributions shall be listed with its respective X/R ratio.

C. Protective Device Evaluation Study:

1. A Protective Device Evaluation Study shall be performed to determine the adequacy of circuit breakers, controllers, surge arresters, busways, switches, and fuses by tabulating and comparing the short-circuit ratings of these devices with the available fault currents.
2. Appropriate multiplying factors based upon system X/R ratios and protective device rating standards shall be applied.

D. Protective Device Coordination Study:

1. A Protective Device Coordination Study shall be performed to select or to check the selections of the power fuse ratings, protective relay characteristics and settings, ratios and characteristics of associated voltage and current transformers, and low- voltage breaker trip characteristics and setting.

2. The overcurrent device settings computed in the Protective Device Coordination Study shall provide complete 100 percent selectivity. The system shall be selectively coordinated such that only the device nearest a fault will operate to remove the faulted circuit. System selectively shall be based on both the magnitude and the duration of a fault current.

3. The Protective Device Coordination Study shall include all voltage classes of equipment starting at the utility's incoming line protective device down to and including each of the medium and low voltage equipment. The phase and ground overcurrent and the phase and ground fault protection shall be included, as well as settings for all other adjustable protective devices.

4. The time-current characteristics of the installed protective devices shall be plotted on the appropriate log-log paper. Reasonable coordination intervals and separation of characteristic curves shall be maintained. The coordination plots for phase and ground protective devices shall be provided on a complete system basis. Sufficient curves shall be used to clearly indicate selective coordination achieved through the utility main breaker, power distribution feeder breakers, and the overcurrent devices at each major load center.

5. There shall be a maximum of eight protective devices per plot. Each plot shall be appropriately titled. Plots shall include the following information as required for the circuits shown:

   a. Representative one-line diagram, legends and types of protective devices selected.
   b. Power company's relays or fuse characteristics.
   c. Significant motor starting characteristics.
   d. Parameters of transformers, ANSI magnetizing inrush and withstand curves.

e. Operating bands of low voltage circuit breaker trip curves, and fuse curves.
f. Relay taps, time dial and instantaneous trip settings.
g. Cable damage curves.
h. Symmetrical and asymmetrical fault currents.

6. The selection and settings of the protective devices shall be provided separately in a tabulated form listing circuit identification, IEEE device number, current transformer ratios, manufacturer, type, range of adjustment, and recommended settings. A tabulation of the recommended power fuse selection shall be provided for all fuses in the system.

E. Arc Flash Hazard Study:

1. An Arc Flash Hazard Study shall be performed for the electrical distribution system shown on the one-line drawings. The intent of the Arc Flash Hazard Study is to determine hazards that exist at each major piece of electrical equipment shown on the one-line drawing. This includes switchgear, switchboards, panelboards, motor control centers and transformers. The study shall include creation of Arc Flash Hazard Warning Labels listing all items. The Contractor will install the labels. The arc flash hazard study shall consider all operating scenarios during normal conditions alternate operations, emergency power conditions, and any other operations, which could result in maximum arc flash hazard

2.02 STUDY REPORT

A. The results of the Power Distribution System Coordination Study shall be summarized in a final typewritten report. The report shall include the following Sections:

1. Description, purpose, basis, written scope, and a single-line diagram of the Power Distribution System which is included within the scope of the study.
2. Tabulations of circuit breaker, fuses, and other equipment ratings versus calculated short-circuit duties, and commentary regarding same.
3. Protective device time versus current coordination curves, tabulations of relay and circuit breaker trip settings, fuse selection, and commentary regarding same.
4. Fault current tabulation including a definition of terms and a guide for interpretation.
5. Tabulation of appropriate tap settings for relay seal-in units.

6. Tabulation of equipment survey information.

PART 3 EXECUTION

3.01 FIELD SERVICES

A. The Registered Professional Engineer shall conduct an equipment survey of devices and information necessary to perform the Power System Studies.

B. The survey shall include the following information to the extent applicable:

1. Manufacturer, type and size of each power fuse.
2. Manufacturer, type, model and settings for each protective relay, trip unit and circuit breaker.
3. Current transformer ratios for each protective relay.
4. Appropriate data of motors and transformers included with the study.

C. The Registered Professional Engineer, as part of the field service Work, shall collect all data and coordinate with the equipment vendors to establish the proper settings for the actual devices provided.

3.02 FIELD TESTING

A. Provide field testing of the distribution system in accordance with the manufacturer’s recommendations. All field testing shall be performed by the Field Engineer, after the completion and approval of the Power System Studies. The field-testing results shall be documented within a report, with the final settings of all protective devices.

B. The Field Engineer with necessary tools and equipment shall adjust, set, calibrate and test all protective devices. All protective relays and meters in the medium and low voltage equipment shall be set, adjusted, calibrated and tested in accordance with the manufacturer's recommendations, the coordination study and best industry practice.

C. Proper operation of all equipment associated with the device under test and its compartment, shall be verified, as well as complete resistance, continuity and polarity tests of power, protective and metering circuits. Any minor adjustments, repairs and lubrication necessary to achieve proper operation shall be considered part of this Contract.

D. All solid-state trip devices shall be set including all required programming necessary for the protection required. The devices shall be checked and tested for setting and operation. Circuit breakers and/or contactors associated with the trip devices shall be tested for trip and close function with their protective device.

3.03 MAINTENANCE OF OPERATIONS

A. Since the field-testing work specified may require that certain pieces of equipment be taken out of service, CONTRACTOR shall perform the Work with due regard to maintenance of operations and construction staging in accordance with the requirements of this Section with OWNER'S operation. All testing procedures and schedules must be scheduled in advance prior to any work beginning.

END OF SECTION

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SECTION 16075

ELECTRICAL IDENTIFICATION

PART 1 GENERAL

1.01 SCOPE OF WORK

A. The Contractor shall furnish and install identification for raceways; power and control cables; conductors; underground-line warning tape, warning labels and signs; instruction signs; equipment identification labels; and any other miscellaneous identification products as shown in the Drawings and specified in this Section.

1.02 SUBMITTALS

The Contractor shall submit shop drawings in accordance with Section 01300, Submittals and Acceptance:

A. Product Data: For each electrical identification product indicated.

1.03 WORK SEQUENCE

A. The Contractor shall coordinate identification names, abbreviations, colors, and other features with requirements in other sections requiring identification applications; Drawings, Shop Drawings, manufacturer's wiring diagrams, and the Operations and Maintenance (O&M) Manual; and with those required by codes, standards, and 29 CFR 1910.145. Use consistent designations throughout the Project.

B. Coordinate installation of identifying devices with completion of covering and painting of surfaces where devices are to be applied.

C. Coordinate installation of identifying devices with locations of access panels and doors.

D. Install identifying devices before installing acoustical ceilings and similar concealment.

1.04 REFERENCE STANDARDS

Reference standards and recommended practices referred to in this Section shall be the latest revision of any such document in effect at the bid time. The following documents are a part of this Section. Where this Section differs from these documents, the requirements of this Section shall apply.

A. American National Standards Institute (ANSI)

1. ANSI Z535—Safety Alerting Standards.

B. American Society for Testing and Materials (ASTM)

1. ASTM D638—Standard Test Method for Tensile Properties of Plastics.
2. ASTM D882—Standard Test Method for Tensile Properties of Thin Plastic Sheeting.

C. American Society of Mechanical Engineers (ASME)

1. ASME A13.1—Scheme for the Identification of Piping Systems.

D. Institute of Electrical and Electronics Engineers (IEEE)

1. IEEE C2—National Electrical Safety Code.

E. Occupational Safety and Health Administration (OSHA)

1. 29 CFR 1910.144—Safety Color Code for Marking Physical Hazards.

2. 29 CFR 1910.145—Specifications for Accident Prevention Signs and Tags.

F. National Fire Protection Association (NFPA)

1. NFPA 70—National Electric Code.
2. NFPA 70E—Standard for Electrical Safety in the Workplace.

G. Underwriter's Laboratories (UL)

1. UL 969—Marking and Labeling Systems.

1.05 QUALITY ASSURANCE

A. Comply with ASME A13.1

B. Comply with NFPA 70.

C. Comply with 29 CFR 1910.144 and 29 CFR 1910.145.

D. Comply with ANSI Z535.4 for safety signs and labels.

PART 2 PRODUCTS

2.01 POWER RACEWAY IDENTIFICATION MATERIALS

A. Comply with ASME A13.1 for minimum size of letters for legend and for minimum length of color field for each raceway size.

B. Colors for Raceways Carrying Circuits at 600 V or Less:

1. Black letters on an orange field.
2. Legend: Indicate voltage .

C. Colors for Raceways Carrying Circuits at More Than 600 V:

1. Black letters on an orange field.
2. Legend: "DANGER: CONCEALED HIGH-VOLTAGE WIRING" with 3-inch-high letters on 20-inch centers.

D. Self-Adhesive Vinyl Labels for Raceways Carrying Circuits at 600 V or Less: Preprinted, flexible label laminated with a clear, weather- and chemical-resistant coating and matching wraparound adhesive tape for securing ends of legend label.

E. Snap-Around Labels for Raceways Carrying Circuits at 600 V or Less: Slit, pretensioned, flexible, preprinted, color-coded acrylic sleeve, with diameter sized to suit diameter of raceway or cable it identifies and to stay in place by gripping action.

F. Snap-Around, Color-Coding Bands for Raceways Carrying Circuits at 600 V or Less: Slit, pretensioned, flexible, solid-colored acrylic sleeve, 2 inches long, with diameter sized to suit diameter of raceway or cable it identifies and to stay in place by gripping action.

G. Tape and Stencil for Raceways Carrying Circuits More Than 600 V: 4-inch-wide black stripes on 10-inch centers diagonally over orange background that extends the full length of raceway or duct and is 12 inches wide. Stop stripes at legends.

H. Metal Tags: Brass or aluminum, 2-inch-by-2-inch-by-0.05-inch with stamped legend, punched for use with self-locking cable tie fastener.

I. Write-On Tags: Polyester tag,0.015-inch thick, with corrosion-resistant grommet and cable tie for attachment to conductor or cable.

1. Marker for Tags: Marker for Tags: Machine-printed, permanent, waterproof, black ink marker recommended by printer manufacturer.

2.02 POWER AND CONTROL CABLE IDENTIFICATION MATERIALS

A. Comply with ASME A13.1 for minimum size of letters for legend and for minimum length of color field for each raceway and cable size.

B. Snap-Around Labels: Slit, pretensioned, flexible, preprinted, color-coded acrylic sleeve, with diameter sized to suit diameter of raceway or cable it identifies and to stay in place by gripping action.

C. Snap-Around, Color-Coding Bands: Slit, pretensioned, flexible, solid-colored acrylic sleeve, 2 inches long, with diameter sized to suit diameter of raceway or cable it identifies and to stay in place by gripping action.

2.03 CONDUCTOR IDENTIFICATION MATERIALS

A. Color-Coding Conductor Tape: Colored, self-adhesive vinyl tape not less than 3 mils thick by 1 to 2 inches.

2.04 FLOOR MARKING TAPE

A. 2-inch-wide, 5-mil pressure-sensitive vinyl tape, with black and white stripes and clear vinyl overlay.

2.05 UNDERGROUND-LINE WARNING TAPE

A. Tape:

1. Recommended by manufacturer for the method of installation and suitable to identify and locate underground electrical and communications utility lines.
2. Printing on tape shall be permanent and shall not be damaged by burial operations.
3. Tape material and ink shall be chemically inert and not subject to degrading when exposed to acids, alkalis, and other destructive substances commonly found in soils.

B. Color and Printing:

1. Comply with ANSI Z535.1 through ANSI Z535.5.
2. Inscriptions for Red-Colored Tapes: ELECTRIC LINE, HIGH VOLTAGE,.
3. Inscriptions for Orange-Colored Tapes: TELEPHONE CABLE, CATV CABLE, COMMUNICATIONS CABLE, OPTICAL FIBER CABLE, .

C. Tag: Type I:

1. Detectable three-layer laminate, consisting of a printed pigmented polyolefin film, a solid aluminum-foil core, and a clear protective film that allows inspection of the continuity of the conductive core, bright-colored, continuous-printed on one side with the inscription of the utility, compounded for direct-burial service.
2. Overall Thickness: 5 mils.
3. Foil Core Thickness: 0.35 mil.
4. Weight: 28 pounds/1,000 square feet.
5. 3-Inch Tensile According to ASTM D882: 70 lbf and 4,600 psi.

2.06 WARNING LABELS AND SIGNS

A. Comply with NFPA 70 and 29 CFR 1910.145.

B. Self-Adhesive Warning Labels: Factory-printed, multicolor, pressure-sensitive adhesive labels, configured for display on front cover, door, or other access to equipment unless otherwise indicated.

C. Baked-Enamel Warning Signs:

1. Preprinted aluminum signs, punched or drilled for fasteners, with colors, legend, and size required for application.
2. 1/4-inch grommets in corners for mounting.
3. Nominal size, 7 by 10 inches.

D. Metal-Backed, Butyrate Warning Signs:

1. Weather-resistant, nonfading, preprinted, cellulose-acetate butyrate signs with 0.0396-inch galvanized-steel backing; and with colors, legend, and size required for application.
2. 1/4-inch grommets in corners for mounting.
3. Nominal size, 10 by 14 inches.

E. Warning label and sign shall include but are not limited to the following legends:

1. Multiple Power Source Warning: "DANGER: ELECTRICAL SHOCK HAZARD - EQUIPMENT HAS MULTIPLE POWER SOURCES."
2. Workspace Clearance Warning: "WARNING: OSHA REGULATION - AREA IN FRONT OF ELECTRICAL EQUIPMENT MUST BE KEPT CLEAR FOR 36 INCHES."
3. Arc Flash Warning Label: Refer to Section 16280, Overcurrent Protective Device Coordination, and NFPA 70E for arc flash warning label requirements.

2.07 INSTRUCTION SIGNS

A. Engraved, laminated acrylic or melamine plastic, minimum 1/16-inch thick for signs up to 20 square inches and 1/8-inch thick for larger sizes.

1. Engraved legend with black letters on white face.
2. Punched or drilled for mechanical fasteners.
3. Framed with mitered acrylic molding and arranged for attachment at applicable equipment.

B. Adhesive Film Label: Machine printed, in black, by thermal transfer or equivalent process. Minimum letter height shall be 3/8-inch.

C. Adhesive Film Label with Clear Protective Overlay: Machine printed, in black, by thermal transfer or equivalent process. Minimum letter height shall be 3/8-inch. Overlay shall provide a weatherproof and UV-resistant seal for label.

2.08 EQUIPMENT IDENTIFICATION LABELS

A. Adhesive Film Label: Machine printed, in black, by thermal transfer or equivalent process. Minimum letter height shall be 3/8-inch.

B. Adhesive Film Label with Clear Protective Overlay: Machine printed, in black, by thermal transfer or equivalent process. Minimum letter height shall be 3/8-inch. Overlay shall provide a weatherproof and UV-resistant seal for label.

C. Self-Adhesive, Engraved, Laminated Acrylic or Melamine Label: Adhesive backed, with white letters on a dark-gray background. Minimum letter height shall be 3/8-inch.

D. Engraved, Laminated Acrylic or Melamine Label: Punched or drilled for screw mounting. White letters on a dark-gray background. Minimum letter height shall be 3/8-inch.

E. Stenciled Legend: In nonfading, waterproof, black ink or paint. Minimum letter height shall be 1 inch.

2.09 CABLE TIES

A. General-Purpose Cable Ties: Fungus inert, self extinguishing, one piece, self locking, Type 6/6 nylon.

1. Minimum Width: 3/16-inch.
2. Tensile Strength at 73ºF, According to ASTM D638: 12,000 psi.
3. Temperature Range: Minus 40º to plus 185ºF.
4. Color: Black except where used for color-coding.

B. UV-Stabilized Cable Ties: Fungus inert, designed for continuous exposure to exterior sunlight, self extinguishing, one piece, self locking, Type 6/6 nylon.

1. Minimum Width: 3/16-inch.
2. Tensile Strength at 73ºF, According to ASTM D638: 12,000 psi.
3. Temperature Range: Minus 40º to plus 185ºF.
4. Color: Black.

2.10 MISCELLANEOUS IDENTIFICATION PRODUCTS

A. Paint: Comply with requirements in Division 9 Painting Sections for paint materials and application requirements. Select a paint system applicable for surface material and location (exterior or interior).

B. Fasteners for Labels and Signs: Self-tapping, stainless-steel screws or stainless-steel machine screws with nuts and flat and lock washers.

PART 3 EXECUTION

3.01 INSTALLATION

A. Verify the identity of each item before installing identification products.

B. Location: Install identification materials and devices at locations for most convenient viewing without interference with operation and maintenance of equipment. Align nameplates in center near the top of equipment being marked.

C. Apply identification devices to surfaces that require finish after completing finish work.

D. Attach signs and plastic labels with mechanical fasteners appropriate to the location and substrate.

E. Self-Adhesive Identification Products: Clean surfaces before application, using materials and methods recommended by the manufacturer of the identification device.

F. System Identification Color-Coding Bands for Raceways and Cables: Each color-coding band shall completely encircle cable or conduit. Place adjacent bands of two-color markings in contact, side by side. Locate bands at changes in direction, at penetrations of walls and floors, at 50-foot-maximum intervals in straight runs and at 25-foot-maximum intervals in congested areas.

G. Aluminum Wraparound Marker Labels and Metal Tags: Secure tight to surface of conductor or cable at a location with high visibility and accessibility.

H. Cable Ties: For attaching tags. Use general-purpose type, except as listed below:

1. Outdoors: UV-stabilized nylon.
2. In Spaces Handling Environmental Air: Plenum rated.

I. Underground-Line Warning Tape: During backfilling of trenches, install continuous underground-line warning tape directly above line at 12 inches below finished grade. Use multiple tapes where the width of multiple lines installed in a common trench or concrete envelope exceeds 16 inches overall.

J. Painted Identification: Comply with requirements in Division 9 Painting Sections for surface preparation and paint application.

3.02 IDENTIFICATION SCHEDULE

A. Identify all devices operating at more than 250 VAC phase-to-phase or 125 VAC phase-to-ground with red enamel letters or numerals of appropriate height applied with a stencil.

B. Accessible Raceways and Metal-Clad Cables, 600 V or Less, for Service, Feeder, and Branch Circuits More Than30 A, and 120 V to ground: Identify with self-adhesive vinyl labelself-adhesive vinyl tape applied in bands. Install labels at 30-foot maximum intervals.

C. Accessible Raceways and Cables within Buildings: Identify the covers of each junction and pull box of the following systems with self-adhesive vinyl labels with the wiring system legend and system voltage. System legends shall be as follows:

1. Emergency Power.
2. Power.
3. UPS.

D. Power wiring and control wiring shall be identified in all handholes with a waterproof permanent tag attached to the cable with plastic cable ties.

E. Conductors shall be identified at each termination, pull box, junction box, handhole, point of entry to or exit from wireways, panelboards, control panels, and other points of access. Tags or labels shall be securely affixed to the conductor in visible locations. Tags shall be durable plastic with the designation stamped on one side with suitable dies. Labels shall be permanent with legible black characters on white heat-shrink tubing or equivalent identification acceptable to the Owner.

1. Power-Circuit Conductor Identification, 600 V or Less: For conductors in vaults, pull and junction boxes, manholes, and handholes, use color-coding conductor tape to identify the phase. Tags or labels shall identify both the switchboard, MCC, panel, etc., it is served from and the circuit number.

2. Control conductor (including monitor and instrumentation conductors) shall be identified by color coding and tag or label as to wire number (corresponding to the manufacturer's wiring diagram) and equipment name.

3. Color-Coding for Phase and Voltage Level Identification, 600 V or Less: Use colors listed below for ungrounded service feeder and branch-circuit conductors.

   a. Color shall be factory applied or field applied for sizes larger than No. 8 AWG, if authorities having jurisdiction permit.

   b. Colors for 208/120V Circuits:

      (1) Phase A: Black.

      (2) Phase B: Red.

      (3) Phase C: Blue.

   c. Colors for 480/277V Circuits:

      (1) Phase A: Brown.

      (2) Phase B: Orange.

      (3) Phase C: Yellow.

   d. Field-Applied, Color-Coding Conductor Tape: Apply in half-lapped turns for a minimum distance of 6 inches from terminal points and in boxes where splices or taps are made. Apply last two turns of tape with no tension to prevent possible unwinding. Locate bands to avoid obscuring factory cable markings.

F. Power-Circuit Conductor Identification, More than 600 V: For conductors in vaults, pull and junction boxes, manholes, and handholes, use plastic tag holder with adhesive-backed phase tags, and a separate tag with the circuit designation.

G. Install instructional sign, including the associated color-code, for grounded and ungrounded conductors using adhesive-film-type labels.

H. Conductors to Be Extended in the Future: Attach identification tags to conductors and list source.

I. Auxiliary Electrical Systems Conductor Identification: Identify field-installed alarm, control, and signal connections.

1. Identify conductors, cables, and terminals in enclosures and at junctions, terminals, and pull points. Identify by system and circuit designation.
2. Use a system of marker tape designations that is uniform and consistent with the system used by the manufacturer for factory-installed connections.
3. Coordinate identification with Project Drawings, manufacturer's wiring diagrams, and the O&M Manual.

J. Locations of Underground Lines: Identify with underground-line warning tape for power, lighting, communication, and control wiring and optical fiber cable.

1. Limit use of underground-line warning tape to direct-buried cables.
2. Install underground-line warning tape for direct-buried cables and for cables in the raceway.

K. Workspace Indication: Install floor marking tape to show working clearances in the direction of access to live parts. Workspace shall be as required by NFPA 70 and 29 CFR 1926.403 unless otherwise indicated. Do not install at flush-mounted panelboards and similar equipment in finished spaces.

L. Warning Labels for Indoor Cabinets, Boxes, and Enclosures for Power and Lighting: Baked-enamel warning signs.

1. Comply with 29 CFR 1910.145.

2. Identify system voltage with black letters on an orange background.

3. Apply to exterior of door, cover, or other access.

4. For equipment with multiple power or control sources, apply to door or cover of equipment, including but not limited to the following:

a. Controls with external control power connections.

M. Operating Instruction Signs: Install instruction signs to facilitate proper operation and maintenance of electrical systems and items to which they connect. Install instruction signs with approved legend where instructions are needed for system or equipment operation.

N. Emergency Operating Instruction Signs: Install instruction signs with white legend on a red background with minimum 3/8-inch-high letters for emergency instructions at equipment used for power transfer.

O. Equipment Identification Labels: On each unit of equipment, install unique designation label that is consistent with wiring diagrams, schedules, and the O&M Manual. Apply labels to disconnect switches and protection equipment, central or master units, control panels, control stations, terminal cabinets, and racks of each system. Systems include power, lighting, control, communication, signal, monitoring, and alarm systems unless equipment is provided with its own identification. Identification plates shall be furnished for lighting and power panelboards, motor control centers, all line voltage heating and ventilating control panels, fire detector and sprinkler alarms, door bells, pilot lights, disconnect switches, manual starting switches, magnetic starters, and process control devices.

1. Identification plates shall be furnished for all line-voltage enclosed-circuit breakers; the plates shall identify the equipment served, voltage, phase(s), and power source. Circuits 480 volts and above shall have conspicuously located warning signs in accordance with OSHA requirements.

2. Provide nameplates of minimum letter height as scheduled below:

    a. Panelboards, switchboards, and motor control centers: 1/4-inch, identify panel name; 1/8-inch, identify voltage, phase, number of wires, and source. Panelboards and control panels shall have designation in 1/4-inch high letters and voltage in 1/8-inch high letters centered above door on exterior trim.

    b. Safety switches: same as above.

    c. Safety color coding for identification of warning signs shall conform to NEMA Z535.

    d. Red identification plates reading CAUTION: 480/277 VOLTS shall be provided in switch and outlet boxes containing 277- or 480-volt circuits. An identification plate marked DANGER: 480 VOLTS shall be provided on the outside of 480-volt enclosures. The identification plate shall use white lettering on a red laminated plastic.

3. Any equipment with externally powered wiring shall be marked with a laminated plaster name plate having 3/16-inch-high white letters on a red background as follows: DANGER: EXTERNAL VOLTAGE SOURCE.

4. Labeling Instructions:

    a. Indoor Equipment:Self-adhesive, engraved, laminated acrylic, Unless otherwise indicated, provide a single line of text with 1/2-inch-high letters on 1-1/2-inch-high label; where two lines of text are required, use labels 2 inches high.

    b. Outdoor Equipment: Engraved, laminated acrylic, or melamine label.

    c. Elevated Components: Increase sizes of labels and letters to those appropriate for viewing from the floor.

d. Mark equipment mounted remotely from the source of power (such as pumps and fans) with equipment number, source of power, and starter location. Where starters are remotely mounted, marking shall include equipment name, number, and location.

e. Unless labels are provided with self-adhesive means of attachment, fasten labels with appropriate mechanical fasteners that do not change the NEMA or NRTL rating of the enclosure.

5. Equipment to be Labeled :

a. Panelboards: Typewritten directory of circuits in the location provided by the panelboard manufacturer. Panelboard identification shall be engraved label.

b. Enclosures and electrical cabinets.

c. Access doors and panels for concealed electrical items.

d. Switchboards.

e. Transformers: Label that includes tag designation shown on the Drawings for the transformer, feeder, and panelboards or equipment supplied by the secondary.

f. Emergency system boxes and enclosures.

g. Enclosed switches.

h. Enclosed circuit breakers.

i. Enclosed controllers.

j. Variable-speed controllers.

k. Push-button stations.

l. Power transfer equipment.

m. Contactors.

n. Remote-controlled switches, dimmer modules, and control devices.

o. Monitoring and control equipment.

p. UPS equipment.

END OF SECTION

SECTION 16110

RACEWAYS AND FITTINGS

PART 1 - GENERAL

1.01 DESCRIPTION

A. Scope of Work:

1. Furnish and install complete raceway systems as shown on the Drawings and as specified herein.

B. The complete above grade raceway system shall be rigid aluminum above grade and PVC-40 below grade.

1.02 QUALITY ASSURANCE

A. Qualifications:

1. The equipment shall be products of manufacturers who are fully experienced, reputable and qualified in the manufacture of the equipment to be furnished. The system components shall be designed, constructed, delivered and installed in accordance with the best practices and methods.

B. Standards:

1. Underwriters Laboratories, Inc. (U.L.).

2. American Society for Testing and Materials, (ASTM).

3. Federal Specifications.

C. Manufacturers:

1. Non-Metallic Raceways.

a. Carlon.

b. Triangle Pipe and Tube Co.

c. Phillips Petroleum Co.

d. Indian Head Company.

e. Or equal.

2. Metallic Raceways:

a. Youngstown Sheet and Tube Co.

b. Allied Tube and Conduit Corp.

c. Wheeling-Pittsburg Steel Corp.

d. Or equal.

1.03 SUBMITTALS

A. Material and Shop Drawings:

1. Copies of all materials required to establish compliance with these specifications shall be submitted in accordance with the provisions of the General Conditions. Submittals shall include at least the following:

a. Certified shop drawings with performance data and physical characteristics.

b. Descriptive literature, bulletins, and/or catalogs of each item of equipment.

c. All information required by Section 01300.

d. A complete total bill of materials for all equipment.

2. In the event that it is impossible to conform with certain details of the specifications, describe completely all non-conforming aspects of the Shop Drawing transmittal.

PART 2 - PRODUCTS

2.01 GENERAL

A. The specifications are intended to give a general description of what is required, but do not cover all details which may vary in accordance with the exact requirements of the equipment as offered. They are, however, intended to cover the furnishing, delivery, installation and field testing of all materials, equipment and apparatus as required. Any additional auxiliary equipment necessary for the proper operation of the proposed installation not mentioned in these specifications or shown on the Drawings shall be furnished and installed.

B. The material covered by these specifications is intended to be standard equipment of proven ability and as manufactured by reputable concerns having experience in the production of such equipment. The equipment furnished shall be designed, constructed, and installed in accordance with best practice and methods and shall operate satisfactorily when installed as shown on the Drawings.

2.02 MATERIALS AND EQUIPMENT

A. Metallic Conduit:

1. ALUM conduit shall contain less than 0.1 percent copper and conform to Federal Specification WW-C-540C.

B. Non-Metallic Conduit and Fittings:

1. PVC conduit shall be schedule 80 composed of High Impact PVC (polyvinyl) chloride (C-200 Compound), and shall conform to industry standards, and be UL listed in accordance with Article 347 of National Electrical Code for underground and exposed use. Materials must have tensile strength of 55 PSI, at 70 degrees F, flexural strength of 11,000 PSI, compression strength of 8600 PSI. Manufacturer shall have five years' extruding PVC experience.

2. Liquidtight Flexible Conduit and Fittings shall be for use per Article 351 of the NEC. PVC compounds shall not include fillers. Fittings shall be manufactured from high impact PVC.

C. Liquidtight, Flexible Non-Metallic Conduit, Couplings and Fittings:

1. Liquidtight, flexible non-metallic conduit shall be all PVC conduit and manufactured by Thomas and Betts Co., K-Flex, Inc., or equal.

2. Fittings used with Liquidtight flexible conduit shall be of the non-metallic type as manufactured by the Thomas and Betts Co., Xtraflex System, K-Flex, Inc., or equal.

D. Flexible Couplings:

1. Flexible Couplings shall be as manufactured by the Thomas and Betts Co., K-Flex, Inc., or equal.

E. Conduit hubs shall be as manufactured by Myers Electric Products, Inc., Raco,, Div., Appleton Electric Co., or equal.

F. Conduit wall seals shall be Type WSK as manufactured by the O.Z. Electrical Mfg. O., or equal.

G. Combination expansion-deflection fittings shall be Type XD as manufactured by the Crouse-Hinds Co., or equal.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Installation shall be in strict accordance with the manufacturer's instructions and recommendation, in the location shown on the Drawings.

B. No conduit smaller than 1/2-inch electrical trade size shall be used, nor any have more than three 90 degree bends in any one run. Pull boxes shall be provided as required or directed. Minimum size floor conduit shall be 3/4-inch.

C. No wire shall be pulled until the conduit system is complete in all details; in the case of concealed work, until all rough plastering or masonry has been completed; in the case of exposed work, until the conduit system has been completed in every detail.

D. The ends of all conduit shall be tightly plugged to exclude dust and moisture while the buildings are under construction.

E. Conduit supports shall be spaced at intervals of 4 feet or less, as required to obtain rigid construction. Conduit straps shall be type as manufactured by "CLIC".

F. Single conduits shall be supported by means of one-hole non-metallic pipe clamps in combination with one-screw back plates, to raise conduits from the surface. Multiple runs of conduits shall be supported on trapeze type hangers with fiberglass horizontal members and fiberglass treaded hanger rods. The rods shall be not less than 3/8-inch diameter.

G. Conduit hangers shall be attached to structural steel by means of non-metallic beam or channel clamps. Where attached to concrete surfaces, concrete inserts of the spot type shall be provided.

H. All conduits on exposed work shall be run at right angles to and parallel with the surrounding wall and shall conform to the form of the ceiling. No diagonal runs will be allowed. Bends in parallel conduit runs shall be concentric. All conduit shall be run perfectly straight and true.

I. No broken run shall exceed 500 feet in length. This length shall be reduced by 75 feet for each 90 degree elbow.

J. Conduit terminating in boxes shall have sealing double lock-nuts and insulating bushings.

K. Conduit terminating in gasketed enclosures shall be terminated with sealing conduit hubs.

L. Conduit wall seals shall be used for all conduits penetrating walls below grade or other locations shown on the Drawings.

M. Liquidtight flexible metal conduit shall be used for all motor terminations and other outdoor equipment where vibration is present.

N. Flexible couplings shall be used in hazardous locations for all motor termination and other equipment where vibration is present.

O. Expansion fittings shall be installed in the following cases: In each conduit run wherever it crosses an expansion joint in the concrete building structure; in each conduit run which is mechanically attached to separate structures to relieve strain caused by shift on one structure in relation to the other; in straight conduit runs above ground which is more than one hundred feet long and interval between expansion fittings in such a run shall not be greater than 100 feet.

P. PVC joints shall be solvent welded. Threads will not be permitted on PVC conduit and fittings. Installation of PVC conduit shall be in accordance with manufacturer's recommendations. PVC conduit shall not be used to support fixture or equipment. Field bends shall be made with approved hotbox. Heating with flame and hand-held dryers are prohibited.

Q. Conduit installations on roofs shall be kept to a bare minimum. Conduit shall be supported above roof at least 6 inches using approved conduit supporting devices. Supports to be fastened to roof using roofing adhesive as approved by roofing contractor.

R. Cables in vertical raceways shall be supported as per NEC Article 300-19. Provide and install supporting devices for cables, including any necessary accessible pullbox as required regardless if shown on drawings or not. Provide and install access panels as required. Coordinate location of pull box and access panel with the Engineer prior to installation. This includes empty raceways for future use.

S. Provide and install pullboxes, junction boxes, fire barrier at fire rated walls, etc., as required by NEC Article 300, whether shown on drawings or not.

T. Paint all field cut threads and coat all aluminum conduits in contact with concrete per manufactures's recommendations.

U. Raceways which do not have conductors furnished under this division of specification shall be left with an approved nylon pullcord in the raceway.

V. Grounding conductor shall be included in total conduit fill determining conduit sizes, even though not included or shown on drawings. Grounding conductors run with feeders shall be bonded to portions of conduit that are metal by approved ground bushings.

W. All aluminum conduits in contact with concrete shall be coated with bitumastic paint.

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SECTION 16120

WIRES AND CABLES

PART 1 - GENERAL

1.01 DESCRIPTION

A. Scope of Work:

1. Furnish, install and test all wire, cable and appurtenances as shown on the Drawings and as hereinafter specified.

B. General Design:

1. Wire for lighting, and receptacle circuits in the administration building shall be type THHN solid.

2. Wire for all power feeder and motor circuits outside of the administration building shall be type THHN stranded.

3. Single conductor wire for control, indication and metering shall be type THHN No. 14 AWG, stranded.

4. Multi-conductor control cable shall be No. 14 AWG, stranded tinned copper.

5. Wire for process instrumentation shall be No. 16 AWG, stranded tinned copper.

6. Except for control and signal leads, no conductor smaller than No. 12 AWG shall be used.

1.02 QUALITY ASSURANCE

A. Standards:

1. Insulated Cable Engineers Association (ICEA).

2. Underwriters Laboratories, Inc. (U.L.)

3. American Society for Testing and Materials (ASTM)

B. Manufacturers:

1. 600 volt wire and cable.

a. Hi-Tech Cable Corp.

b. Collyer Insulated Wire Co.

c. Okonite Co.

d. Rome Cable Co.

e. American Insulated Wire Corp.

f. Triangle PWC, Inc.. Or equal

2. Instrumentation and Control Cable:

a. American Insulated Wire Corp.

b. Rome Cable Corp.

c. Okonite Co.

d. Eaton Corp. "Polyset".

e. Triangle PWC, Inc.

f. Or Equal.

1.03 PRODUCT DELIVERY, STORAGE AND HANDLING

A. All conductors shall be carefully handled to avoid kinks or damage to the insulation.

B. All conductors stored outdoors shall be covered.

PART 2 - PRODUCTS

2.01 GENERAL

A. Wires and cables shall be of annealed, 98 percent conductivity, soft drawn copper conductors.

B. All conductors shall be stranded except lighting and receptacle circuits.

2.02 MATERIALS

A. 600 Volt Wire and Cable:

1. Type THHN shall be PVC insulation with nylon jacket.

B. Instrumentation and Control Cable:

1. Process instrumentation wire shall be twisted pair, 600 volt, cross linked polyethylene insulated, aluminum tape shielded, polyvinyl chloride jacketed, type "XLP". Multi-conductor cables with individually shielded twisted pairs shall be installed where indicated.

2. Multi-conductor control cable shall be stranded, 600 volt, cross-linked polyethylene insulated with PVC jacket, type "XLP".

C. Terminations and Splices:

1. Unless otherwise indicated on the plans, no splices may be made in the cables without prior approval of the Engineer. Where splicing is approved, the splicing material shall be as recommended and approved by the cable manufacturer.

PART 3 - EXECUTION

3.01 INSTALLATION

A. All conductors shall be carefully handled to avoid kinks or damage to insulation.

B. Lubrications shall be used to facilitate wire pulling. Lubricants shall be U.L. listed for use with the insulation specified.

C. Shielded instrumentation wire shall be installed from terminal to terminal with no splicing at any intermediate point.

D. Shielded instrumentation wire shall be installed in rigid steel conduit and pull boxes that contain only shielded instrumentation wire. Instrumentation cables shall be separated from control cables in manholes.

E. Shielding on instrumentation wire shall be grounded at one end only as directed by the supplier of the instrument.

F. Wire and cable connections to terminals, splices, and taps shall be made with compression connectors. Connections of insulated conductors shall be insulated and covered. All connections shall be made using materials and installation methods in accordance with instructions and recommendations of the manufacturer of the particular item of wire and cable. The conductivity of all completed connections shall not be less than that of the uncut conductor. The insulation resistance of all completed connections of insulated conductors shall be not less than that of the uncut conductor.

G. All wire and cable shall be continuous and without splices between points of connection to equipment terminals, except a splice will be permitted by the Engineer if the length required between the points of connection exceeds the greatest standard shipping length available from the manufacturer specified or as approved by the Engineer.

H. Installed, unapproved wire shall be removed and replaced at no additional cost to the Owner.

I. Steel fish tapes and/or steel pulling cables shall not be used in PVC raceway systems.

J. Remove debris and moisture from the conduits, boxes, and cabinets prior to cable installation and mandrel with device of one size smaller than conduit and mandrel with wire brush one size larger than conduit.

3.02 TESTS

A. All 600-volt wire insulation shall be tested with a megohm meter after installation. Tests shall be made at not less than 1000-VDC. A cable test data form shall be provided for Engineer review.

B. All service conductors shall be tested as in Paragraph A above. These tests shall be witnessed by the Engineer.

END OF SECTION

SECTION 16130

BOXES

PART 1 - GENERAL

1.01 DESCRIPTION

A. Scope of Work

1. Furnish and install all junction boxes, pull boxes, service entrance boxes and for a complete raceway system as shown on the Drawings and as specified herein.

B. General Design

1. Unless otherwise hereinafter specified or shown on the Drawings, all boxes and fasteners shall be type NEMA 4X, 316-stainless steel.

2. All boxes in air conditioning plenums above ceilings shall be pressed steel.

3. All boxes that do not receive devices are to have blank plates installed matching wiring device plates.

1.02 QUALITY ASSURANCE

A. Standards

1. Underwriters Laboratories, Inc. (U.L.)

2. Federal Specifications

3. American Society for Testing and Material, (ASTM)

B. Manufacturers

1. Hoffman, Type CHNFSS

2. Or Equal

1.03 SUBMITTALS

A. Materials and Shop Drawings

1. See Section 16050 - General Provisions.

1.04 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Boxes and fittings shall be stored indoors protected from damage.

1.05 WARRANTY AND GUARANTEES

A. All boxes and fittings shall be warranted against defects or failure for a period of one year from date of acceptance.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Boxes shall be constructed as follows:

1. 14-gauge 316L stainless steel
2. Continuously welded and ground smooth, no holes or knockouts.
3. Seamless foam in-place gasket, watertight, dust-tight.
4. Stainless steel screws and clamps.

PART 3 - EXECUTION

3.01 INSTALLATION

A. All boxes shall be supported away from surfaces.

B. All boxes shall be sized per the National Electrical Code (NEC)

C. All conduit entries into boxes shall not lower or change the NEMA rating of the box.

END OF SECTION

SECTION 16140

WIRING DEVICES

PART 1 - GENERAL

1.01 DESCRIPTION

A. Scope of Work:

1. Furnish and install wiring devices and all necessary accessories and appurtenances required as hereinafter specified and shown on the Drawings.

2. Wiring devices shall include the following:

a. Wall Switches

b. Device Plates

c. Plugs

d. Receptacles

e. Lighting Control Time Clocks

f. Lighting Contactors

g. Control Stations

h. Ground Fault Interrupter Receptacles

B. Related Work Described Elsewhere:

1. General Provisions: Section 16050.

2. Raceway: Section 16110.

1.02 QUALITY ASSURANCE

A. Standards:

1. Underwriters Laboratories Inc. (UL).

2. National Electric Manufacturers Association (NEMA).

3. National Electrical Code (NEC).

B. Manufacturers:

1. Wall switches, device plates, plugs, and receptacles as follows:

   a. Arrow-Hart

   b. Bryant

   c. Hubbell

   d. Leviton

   e. or Equal

2. Clocks:

   a. Simplex

   b. or Equal

3. Lighting Contactors:

   a. Square-D

   b. Cutler-Hammer

   c. or Equal

4. Dimmer Controls:

   a. Leviton

   b. Prescolite

   c. or Equal

5. Control Stations:

   a. Hoffman Engineering Co.

   b. Square-D

   c. Crouse-Hinds

   d. Or equal

1.03 SUBMITTALS

A. Material and Shop Drawings:

1. Submit material list and catalog cut-sheets for all items covered under this section. Indicate type, ratings, material, color, and manufacturer.

1.04 PRODUCT DELIVERY, STORAGE AND HANDLING

A. All devices covered under this Section shall be stored indoors, protected from damage.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Switches:

1. Wall switches shall be of the indicating, toggle action, flush mounting quiet type. All switches shall conform to Federal Specification W-S-896-D.

2. Wall switches shall be of the following types and manufacturer or equal. Any reference to a specific figure number of a specific manufacturer is for the purpose of establishing a type and quality of product and shall not be considered as proprietary.

a. Single pole - Arrow-Hart, Catalog No. 1991.

b. Double pole - Arrow-Hart, Catalog No. 1992.

c. Three way - Arrow-Hart, Catalog No. 1993.

d. Four way - Arrow-Hart, Catalog No. 1994.

e. Single pole, key operated - Arrow-Hart Catalog No.1l991-L.

f. Momentary contact, 2 circuit, center off - Arrow-Hart, Catalog No. 1895.

g. Weatherproof cover for Arrow-Hart 2900 series tap action switches - Arrow-Hart Catalog No. 2881-G.

B. Receptacles:

1. Wall receptacles shall be of the following types and manufacturer or equal.

a. Single, 20A, 125V, 1P, 3W; Arrow-Hart, Catalog No 5351.

b. Duplex, 20A, 125V, 2P, 3W; Arrow-Hart, Catalog No. 5352.

c. Weatherproof, 20A, 125V, 2P, 3W; Arrow-Hart, Catalog No. 5351 and WLRD-1 cover.

d. Corrosion-resistant, duplex, 20A, 1 25V, 2P, 3W; Arrow-Hart, Catalog No. 5351 and WLRD-l cover.

e. 60A, 480V, 3P, 2W; weatherproof receptacle shall be Crouse-Hinds Catalog No. ARE6324 with Crouse-Hinds Catalog No. APJ 6385 plug.

f. Ground fault interrupter, duplex, 20A, 125V, 3P, 2W; Arrow-Hart Catalog No. GF5342.

g. Stainless steel indoor mounting plate for G.F.I. receptacle; Arrow-Hart Catalog No. 97061.

h. Weatherproof cover for G.F.I. receptacle in FS box; Arrow-Hart Catalog No. 4501-FS.

i. Clock hanger, 15A, 125V, 2P, 3W; Arrow-Hart Catalog No. 452.

j. Single, 20A, 125V, 2P, 3W; Arrow-Hart Catalog No. 8510BL; cover: Arrow-Hart Catalog No. 9301C indoor, 7420C weatherproof.

k. Single, 30A, 125V, 2P, 3W; Arrow-Hart Catalog No. 5716N; cover: Arrow-Hart Catalog No. 9301C indoor, 7420C weatherproof.

l. Clothes dryer, 30A, 125/250V, 3P, 3W; Arrow-Hart Catalog No. 9344N. Matching cord set shall also be included.

C. Device Plates:

1. Plates for flush mounted devices shall be of the required number of gangs for the application involved and shall be 302 (18-8) high nickel stainless steel of the same manufacturer as the device.

D. Lighting Contactor:

1. Lighting contactors shall be of the electrically operated, electrically held type in NEMA 1 enclosures of the number of poles as called for on the Drawings.

2. Contactors shall be rated for 25A-600 volt contacts and be similar and equal to Automatic Switch Company bulletin 1255-166 RC.

E. Lighting Control Time Switches:

1. Time switches for the control of lighting shall have astronomic dials, reserve power and be similar and equal to the following types:

a. Where time switch is indicated to be for momentary contact operation it shall be similar and equal to Intermatic Inc. Catalog No. ET-70115-C.

b. Where time switch is indicated for SPST maintained control it shall be similar and equal to Intermatic Inc. Catalog No. V-45471-CR.

c. Where time switch is indicated for DPST maintained control it shall be similar and equal to Intermatic Inc. Catalog No.V-45471-CR.

d. Where time switch is indicated for roadway or equipment, lighting shall be similar or equal to Intermatic Inc. Catalog No. ET-7000 Series.

F. Control Stations:

1. Control stations for start/stop pushbutton and hand-off-automatic selector switches shall be corrosion resistant, dust-tight, watertight and weatherproof, NEMA 4X, 600 VAC, UL Standard 508 as manufactured by Crouse-Hinds Series NCS or equal.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Receptacles in process areas and shops shall be mounted 36 inches above the floor unless otherwise noted on the Drawings.

B. Receptacles in office and other like areas shall be mounted 18 inches above the floor unless otherwise noted on the Drawings.

C. Use bolt, screws, nuts and other threaded devices having standard threads and heads so they may be installed and replaced without special tools.

D. Check light switch locations before rough-in to avoid installing a switch behind the door swing.

E. The Engineer and Owner reserve the right to change any switch or receptacle location within the same room, without added cost prior to rough-in.

F. Locate outlets intended for the supply of specific items such as water coolers, copying machines, fans, etc., as recommended by the item manufacturer.

END OF SECTION

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SECTION 16160

PANELBOARDS

PART 1 - GENERAL

1.01 DESCRIPTION

A. Scope of Work:

1. Furnish all labor, materials, equipment and incidentals required and install all panelboards as hereinafter specified and as shown on the Drawings.

1.02 QUALITY ASSURANCE

A. Standards:

1. Panelboards shall be in accordance with the Underwriter Laboratories, Inc. "Standard for Panelboards" and "Standard for Cabinets and Boxes" and shall be so labeled where procedures exist. Panelboards shall also comply with NEMA Standard for Panelboards and the National Electrical Code.

B. Manufacturer (NEMA 1):

1. 120/240V, single phase, 3 wire, and 120/208V three phase, 4-wire panelboards shall be as manufactured by the Square D Co., or. Cutler/Hammer

2. 480V, three phase, 3-wire panelboards shall be as manufactured by the, Square D Co., I-Line or. Cutler/Hammer

C. Manufacturer (NEMA 3 and 12):

1. NEMA 3 and 12 panelboards shall be type NLP as manufactured by the Crouse-Hinds Company or equal.

1.03 SUBMITTALS

A. Materials and Shop Drawings:

1. See Section 16050 General Provisions.

PART 2 - PRODUCTS

2.01 RATING

A. Panelboard ratings shall be as shown on the Drawings. All panelboards shall be rated for the intended voltage.

2.02 CONSTRUCTION AREA (NEMA 1)

A. Interiors:

1. All interiors shall be completely factory assembled with circuit breakers, wire connectors, etc. All wire connectors, except screw terminals, shall be of the anti-turn solderless type and all shall be suitable for copper or aluminum wire of the sizes indicated.

2. Interiors shall be so designed that circuit breakers can be replaced without disturbing adjacent units and without removing the main bus connectors and shall be so designed that circuits may be changed without machining, drilling or tapping.

3. Branch circuits shall be arranged using double row construction except when narrow column panels are indicated. Branch circuits shall be numbered by the manufacturer.

4. A nameplate shall be provided listing panel type, number of circuit breakers, ratings and source.

B. Buses:

1. Bus bars for the mains shall be of tin-plated copper. Full size neutral bars shall be included. Bus bar taps for panels with single pole circuit devices shall be arranged for sequence phasing of the branch circuit devises. Bussing shall be braced throughout to conform to industry standard practice governing short circuit stresses in panelboards. Phase bussing shall be full height without reduction. Cross connectors shall be copper.

2. Neutral bussing shall have a suitable lug for each outgoing feeder requiring a neutral connection.

3. Spaces for future circuit breakers shall be bussed for the maximum device that can be fitted into them.

C. Boxes:

1. Recessed boxes shall be made from galvanized code gauge steel without multiple knockouts. Surface mounted boxes shall be painted to match the trim. Boxes shall be of sufficient size to provide a minimum gutter space of 4 inches on all sides.

2. Surface mounted boxes shall have an internal and external finish as hereinafter specified in Paragraph D4.

3. At least 4 interior mounting studs shall be provided.

4. All conduit entrances shall be field punched.

D. Trim:

1. Hinged doors covering all circuit breaker handles shall be included in all panel trims.

2. Doors shall have semi flush type cylinder lock and catch, except that doors over 48 inches in height shall have a vault handle and 3-point catch, complete with lock, arranged to fasten door at top, bottom and center. Door hinges shall be concealed. Two keys shall be supplied for each lock. All locks shall be keyed alike; directory frame and card having a transparent cover shall be furnished on each door.

3. The trims shall be fabricated from code gauge sheet steel.

4. All exterior and interior steel surfaces of the panelboard shall be properly cleaned and finished with ANSI Z55.1, No. 61 light gray paint over a rust-inhibiting phosphatized coating. The finish paint shall be of a type to which field applied paint will adhere.

5. Trims for flush panels shall overlap the box by at least 3/4 inch all around. Surface trims shall have the same width and height as the box. Trims shall be fastened with quarter turn clamps.

2.03 CONSTRUCTION (NEMA 4X)

A. Interiors and Buses:

1. Interiors and buses shall be as hereinbefore specified for NEMA 1 construction.

2. Interior trim shall be complete. No exposed wiring allowed.

B. Boxes and Covers:

1. Boxes and covers shall be made from stainless steel.

2. Boxes and covers shall be hinged together and gasketed. All metallic parts on exterior shall be stainless steel.

3. Conduit openings shall be sealed with lock rings or sealing washers.

4. Polycarbonate or plastic enclosures or boxes are unacceptable.

2.04 CIRCUIT BREAKERS

A. Panelboards shall be equipped with circuit breakers with frame size and trip settings as shown on the Drawings.

B. Circuit breakers shall be molded case, bolt-in type, for NEMA 1 and plug-in for NEMA 4X.

C. Circuit breakers used in 120/240 and 120/208V panelboards shall have an interrupting capacity of not less than 22,000 amperes, RMS symmetrical.

D. Three pole breakers used in 480V panelboards shall have an interrupting capacity of not less than 25,000 - amperes, RMS symmetrical.

E. GFCI:

1. GFCI (ground fault circuit interrupter) shall be provided for circuits where indicated on the Drawings. GFCI units shall be 1 pole, 120 volt, molded case, bolt-on breakers, incorporating a solid state ground fault interrupter circuit insulated and isolated from the breaker mechanism. The unit shall be U.L. listed Class A Group I device (5 milliamp sensitivity, 25 millisecond trip time), and in interrupting capacity of 10000 amperes RMS.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Boxes for surface mounted panelboards shall be mounted so there is at least 1/2 inch air space between the box and the wall.

B. Unless otherwise noted on the Drawings, top of cabinets shall be mounted 6-feet 0-inch above the floor, properly aligned and adequately supported independently of the connecting raceways.

C. All wiring in panelboards shall be neatly formed, grouped, laced and identified to provide a neat and orderly appearance. A typewritten directory card identifying all circuits shall be placed in the card holder inside the front cover.

END OF SECTION

SECTION 16170

SAFETY SWITCHES

PART I- GENERAL

1.01 DESCRIPTION

A. Scope of Work:

1. Furnish and install all motor and circuit disconnects as hereinafter specified and as shown on the drawing.

B. General Design:

1. All switches shall be heavy duty and have stainless steel NEMA 4X enclosures and be horsepower rated.

2. All switches shall have metal nameplates, front cover mounted, that contain a permanent load, switch-type, catalog number and HP ratings, handle whose position is easily recognizable and is padlockable in the "off" position, visible blades, reinforced fuse clips, nonteasible, positive, quick make-quick break mechanism, switch assembly plus operating handle as an integral part of the enclosure base.

3. Switches shall have defeatable door interlocks that prevent the door from opening when the operating handle is in the "on" position. All switches shall have line terminal shields.

4. All current carrying parts shall be copper.

5. Auxiliary contacts rated 10 ampere at 240 volts shall be provided, for motor space heater interlock and position indication.

1.02 QUALITY ASSURANCE

A. Standards:

1. National Electrical Manufacturer's Association (NEMA).

2. Underwriter's Laboratories (UL).

3. Federal Specifications.

4. National Electrical Code (NEC).

B. Manufacturer:

1. Switches shall be as manufactured by Square D Co. Class 9422, Cutler-Hammer, or equal.

1.03 SUBMITTALS

A. Materials and Shop Drawings:

1. See Section 16050 - General Provisions.

1.04 PRODUCT DELIVERY, STORAGE AND HANDLING

A. All switches shall be stored indoors protected from damage.

1.05 WARRANTY AND GUARANTEES

A. All switches shall be warranted against defect, rusting or failure for a period of one year from date of acceptance.

PART 2 - PRODUCTS

2.01 MATERIALS AND EQUIPMENT

A. Where a six (6) pole weatherproof disconnect are called for on the drawings; the Contractor shall provide two (2) 600 Volt, 3-pole non-fusible switch in a single NEMA 4X stainless steel enclosure with a single operating handle mechanically interlocked to both disconnects.

B. All parts exposed to the weather or in hose down areas shall be stainless steel.

C. Short circuit rating - 10,000 RMS symmetrical amperes for non-fused switches.

D. Line and load lugs shall be front removable and suitable for copper, 60/75 degree C wire through 200A sizes, 75 degree C wire for 400-800A sizes.

PART 3 - EXECUTION

3.01 INSTALLATION

A. All switches shall be mounted as shown on the drawings.

B. Location of disconnect switches shall be per the N.E.C. and shall be verified with the Engineer before installation.

C. All mounting appurtenances shall be 316 stainless steel including fasteners.

END OF SECTION

SECTION 16216

DIESEL ENGINE DRIVEN GENERATOR

PART 1 - GENERAL

1.01 DESCRIPTION

A. Scope of Work

1. Furnish all labor, materials, and incidentals required to install, put into operation, and field test the Owner furnished diesel engine driven generator unit and appurtenances as shown on the Drawings and specified herein and per Table 16216-1.

Location	Size (kW/kVA)	Fuel Tank Size (Gal)
Plant	1000/1250	5000

2. These performance Specifications are intended to give a general description of what is required, but do not cover all details which will vary in accordance with the requirements of the equipment as offered. It is, however, intended to cover the furnishing, complete installation, and field testing, of all materials, equipment and appurtenances for the complete units as herein specified, whether specifically mentioned in these Specifications or not.

3. For all units there shall be furnished and installed all necessary and desirable accessory equipment and auxiliaries whether specifically mentioned in these Specifications or not. This installation shall incorporate the highest standards for the type of service including field testing of the entire installation and instruction of the regular operating personnel in the care, operation and maintenance of all equipment.

4. The generator unit shall be mounted as shown on the Drawings and shall be arranged for automatic starting and stopping, and load transfer upon failure of the normal source of power.

1.03 SUBMITTALS

A. Materials and Shop Drawings

1. Submit to the Engineer for approval installation drawings with pad dimensions and mean of anchoring. The mounting of the generator shall be approved by a Florida registered structure engineer.

1.04 PRODUCT, STORAGE AND HANDLING

A. All parts shall be properly protected so that no damage or deterioration will occur during a prolonged delay from the time of shipment until installation is completed and the units and equipment are ready for operation.

B. All equipment and parts must be properly protected against any damage during a prolonged period at the site.

C. Factory assembled parts and components shall not be dismantled for shipment unless permission is received in writing from the Engineer.

D. Finished surface of all exposed openings (exhaust, etc.) shall be protected by wooden blanks, strongly built and securely bolted thereto.

E. Finished iron or steel surfaces not painted shall be properly protected to prevent rust and corrosion.

F. Proper care shall be taken to protect parts from the entrance of water during shipment, storage, and handling.

G. Each box or package shall be properly marked to show its net weight in addition to its contents.

PART 2 - PRODUCTS

2.01 Not Required.

PART 3 - EXECUTION

3.01 INSTALLATION

A. The equipment manufacturer shall furnish the services of a competent and experienced representative who has complete knowledge of proper operation and maintenance of the equipment for period of not less than one (1) day to inspect the installed equipment, supervise the initial test run, and to provide instructions to the plant personnel. The visit will be for checking and inspecting the equipment after it is installed and shall be allocated solely to the instruction of plat personnel in operation and maintenance of the equipment. This instruction period shall be scheduled at least ten days in advance with the Owner and shall take place prior to plant start-up and acceptance by the Owner. The final six (6) copies of operation and maintenance manuals must have been delivered to the Engineer prior to scheduling the instruction period with the Owner.

B. The Contractor shall install suitable jacket water additives, including antifreeze, as furnished by the engine manufacturer and approved by the Engineer, for prevention of both scale formation and corrosion in the water jackets and cooling system components which are in contact with the engine jacket water. These additives shall be added to the cooling system prior to running the field acceptable test.

C. The Contractor shall install the complete exhaust system, together with the silencer, the piping and insulation, and the complete supporting system. Where the exhaust passes through the roof there shall be furnished and installed suitable "rain skirt."

3.02 PAINTING

A. The engine generator set and associated equipment shall be shop primed and finish coated in accordance with the manufacturer's standard practice prior to shipment.

3.03 INSPECTION AND TESTING

A. Prior to acceptance of the generator set all equipment furnished hereunder shall be tested to show it is free of any defects and the generator set can operate satisfactorily under full load test using resistance type load banks for 4-hours (brine tanks not acceptable). Any defects that become evident at this time shall be corrected before acceptance.

B. Owner will not provide fuel for testing.

END OF SECTION

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SECTION 16250

AUTOMATIC TRANSFER SWITCH

PART 1 - GENERAL

1.01 DESCRIPTION

A. Scope of Work:

1. Install two (2) Owner furnished automatic transfer switch including all appurtenances required as shown on the Drawing and specified herein.

1.04 PRODUCT STORAGE AND HANDLING

A. The equipment shall be stored indoors in a dry location at all times.

B. The equipment shall be maintained in an upright position at all times. Lifting shall be only at the floor sills or the top mounted lifting angles.

C. The equipment shall be protected against damage at all times. Any damage to the paint shall be carefully repaired using touch-up paint furnished by the ATS Manufacturer.

D. Each box or package shall be properly marked to show its net weight in addition to its contents.

PART 2 - PRODUCTS

2.01 AUTOMATIC TRANSFER SWITCH

A. Not Required

PART 3 - EXECUTION

3.01 INSTALLATION

A. The equipment manufacturer shall furnish the services of a competent and experienced representative who has complete knowledge of proper operation and maintenance of the equipment for period of not less than one (1) day to inspect the installed equipment, supervise the initial test run, and to provide instructions to the plant personnel. The visit will be for checking and inspecting the equipment after it is installed and shall be allocated solely to the instruction of plant personnel in operation and maintenance of the equipment. This instruction period shall be scheduled at least ten days in advance with the Owner and shall take place prior to plant start-up and acceptance by the Owner. The final six (6) copies of operation and maintenance manuals specified in Section 01730 must have been delivered to the Engineer prior to scheduling the instruction period with the Owner. These services may be combined with those provided under Article 1.06, Operating Instructions.

3.02 INSPECTION AND TESTING

A. Prior to acceptance of the automatic transfer switch all equipment furnished hereunder shall be tested to show it is free of any defects.

END OF SECTION

SECTION 16370
VARIABLE SPEED DRIVES

PART 1 GENERAL

1.01 DESCRIPTION

A. Scope of Work

1. Furnish and install variable speed drives including all appurtenances required as shown on the drawing and specified herein.
2. All equipment and accessories shall have approved manufacturer's shop drawings prior to installation and shall be tested in conformance with these Performance Specifications prior to acceptance and final payment by the Owner.

B. Related Work Described Elsewhere

1. Equipment: Division 11, Equipment.

1.02 QUALITY ASSURANCE

A. Variable speed drives shall be sufficient size for the duty to be performed and shall not exceed their full-rated capacity when the driven equipment is operating as specified. Variable speed drives driving pumps shall not be overloaded under any operating condition of the pump.

B. Standards

1. National Electrical Manufacturers Association (NEMA).
2. Institute of Electrical and Electronics Engineers, Inc. (IEEE).
3. American National Standards Institute (ANSI).
4. National Electric Code (NEC).

C. The variable frequency control shall operate satisfactorily when connected to a bus supplying other solid-state power-conversion equipment which may be causing up to 10% total harmonic voltage distortion and commutation. ASDs shall meet requirements as outlined in the latest edition of IEEE-519 for total harmonic voltage and current distortion. Individual or simultaneous operation of the ASDs shall not add more than 5% total harmonic voltage distortion to the normal bus, nor more than 10% while operating from standby generator. The

point of common coupling shall be the secondary side of the service transformer. Twelve-pulse (minimum) harmonic rectifier technology are required to meet these requirements, it is the responsibility of the VFD manufacturer to provide this harmonic technology within the VFD enclosure.

D. The controller shall be subject to, but not limited to, the following quality assurance controls, procedures and tests:

1. Power transistors, SCRs, and diodes shall be tested to ensure correct function and highest reliability.
2. All printed circuit boards shall be tested at 50 degree C for 50 hours. The VFD manufacturer shall provide certification that the tests have been completed.
3. Every controller will be functionally tested with a motor to ensure that if the drive is started up according to the instruction manual provided, the unit will run properly.
4. The VFD systems shall be fabricated by the same VFD manufacturer, items must not be fabricated in whole or in part by parties other than the VFD manufacturer. Third-party distributor or packager modifications to a standard product will not be allowed.
5. The VFD shall be fully designed and manufactured in the United States of America.

E. Approved Manufacturers

1. Danfoss

1.03 DRIVE MANUFACTURES'S RESPONSIBILITIES

A. The VFD manufacturer shall be responsible for the installation, testing and start-up of each drive.

B. The VFD manufacturer shall be responsible for the coordination of the drive with thier respective motor specfied in other Sections of the Project Specifications.

C. The VFD manufacturer shall be, at no additional cost to the Owner, responsible for mitigating any harmonic, and/or all RF and/or EMI and/or any electrical type noise created by the drive which adversly affect the proper operation of any and all electronic and/or electrical power and/or mechanical devices on this project.

D. The VFD manufacturer shall provide input and/or output filters and/or any other accessories on each drive to mitigate all electrical and mechanical noise to a limit which is not detrimental to the motor winding irregardless of the motor lead length and/or type of conduit or charecteristics to this installation.

E. The VFD manufacturer shall be responsible for all additionnal cost related to the installation of the drive that is above and beyond the scope of work shown on the drawings and specification.

F. The VFD manufacturer shall pay for all engineering fees and Owner costs related to the services required by the Consultant and Owner to assist in the mitigation of VFD-related problems.

1.04 PRODUCT DELIVERY, STORAGE AND HANDLING

A. The equipment shall be maintained in an upright position at all times. Lifting shall be only at the floor sills or the top mounted lifting angles.

B. The equipment shall be protected against damage at all times. Any damage to the paint shall be carefully repaired using touch-up paint furnished by the VFD Manufacturer.

C. Each box or package shall be properly marked to show its net weight in addition to its contents.

PART 2 PRODUCTS

2.01 VARIABLE FREQUENCY ADJUSTABLE SPEED DRIVES (VARIABLE TORQUE, PWM)

A. General

1. The variable frequency drive (VFD) motor controller shall convert 460-Volt, three-phase, 60 Hertz utility power to adjustable voltage (0-460V) and frequency (0-60 Hz.) three-phase, AC power for stepless motor speed control with a capability of 10:1 speed range. All general options and modifications shall mount within the standard adjustable frequency controller enclosure.
2. The adjustable frequency controller shall be a space vector sine-coded Pulse-Width Modulated (PWM) design. Modulation methods which incorporate "gear-changing" techniques are not acceptable. Distributor or packager modifications to a third-party standard product will not be

allowed. All drives shall be manufactured by a single manufacturer, and shall be of the same technology.

3. The controller(s) shall be suitable for use with any standard configuration squirrel-cage induction motor(s) having a 1.05 or better service factor, or with existing standard squirrel-cage induction motor(s) with nameplate data as shown on the plans. At any time in the future, it shall be possible to substitute any standard motor (equivalent horsepower, voltage and RPM) in the field.
4. The Contractor shall be responsible for the erection, installation and start up on the equipment covered by this Specification.
5. Complete drawings shall be furnished for approval before proceeding with manufacture and shall consist of master wiring diagrams, elementary or control schematics including coordination with other electrical control devices operating in conjunction with the Adjustable Frequency Drive, and suitable outline drawings with sufficient details for locating conduit stub-ups and field wiring.
6. The Adjustable Frequency Drive manufacturer shall maintain and staff engineering service and repair shops throughout the United States, including the State of Florida, trained to do start up service, emergency service calls, repair work, service contracts and training of customer personnel.

B. Construction

1. Each Adjustable Frequency Drives shall consist of a 460V, 6-pulse minimum rectifier and adjustable frequency inverter with features, functions and options as specified.

2. The controller shall produce an adjustable AC voltage/frequency output. It shall have an output voltage regulator to maintain correct output V/Hz. despite incoming voltage variations.

3. The controller shall have a continuous output current rating of 100% of motor nameplate current.

4. The VFD shall be of the Pulse-Width Modulated type and shall employ a 6-pulse (minimum) dual full-wave diode bridge converters to convert incoming fixed voltage/frequency to a fixed DC voltage, all components for 12-pulse converters must be integral to VFD enclosure and require no additional installation costs. The Pulse Width Modulation strategy shall be of the space vector type implemented in a microprocessor which generates a sine-coded output voltage.

5. The inverter output shall be generated by Insulated Gate Bipolar Ttransistors (IGBT) which shall be controlled by six identical base driver circuits. The VFD shall not induce excessive power losses in the motor. The worst case RMS motor line current measured at rated speed, torque and voltage shall not exceed 1.05 times the rated RMS motor current for pure sine wave operation.

6. The Adjustable Frequency Drives shall be rated for the HP, full load amperes and rpm of the motor. They shall be designed to provide continuous speed adjustment of three-phase motors. The Adjustable Frequency output voltage shall provide constant volts-per-Hertz excitation to the motor terminals up to 60 Hertz.

7. Controllers shall be rated for an ambient temperature of 0°C. to 40°C., an altitude of up to 3,300 feet above sea level and humidity of 0 to 95% non-condensing.

8. Controller enclosures shall be NEMA Type I floor-mounted, force ventilated above 25 HP. The inverters shall have complete front accessibility with easily removable assemblies.

9. The door of each power unit shall include a "POWER ON light, a VFD fault light, a VFD run light, stop push-button, start push-button, a fault reset push-button, a "HAND-OFF-AUTOMATIC" selector switch, and a manual speed control potentiometer.

10. The VFD shall be software programmable to provide automatic restart after any individual trip condition resulting from either overcurrent, overvoltage, undervoltage, or overtemperature. For safety, the drive shall shut down and require manual reset and restart if the automatic reset/restart function is not successful within a maximum of three attempts within a short time period.

11. A speed droop feature shall be included which reduces the speed of the drive on transient overloads. The drive is to return to set speed after transient is removed. If the acceleration or deceleration rates are too rapid for the moment of inertia of the load, the drive is to automatically compensate to prevent drive trip.

12. Automatic restart after drive trip or utility failure. Software selectable if not desired.

13. Process signal inverter. Software selectable to allow speed of drive to vary inversely with input signal.

14. Proportional and integral setpoint process controller with menu driven selection and programming via door-mounted keypad.

15. Pick up a spinning load. The VFD shall be able to determine the motor speed and resume control of a motor which is spinning in either direction without tripping.

16. A door-mounted membrane keypad with integral 2-line, 24-character LCD display shall be furnished, capable of controlling the VFD and setting drive parameters, and shall include the following features:

17. The digital display must present all diagnostic message and parameter values in English engineering units when accessed, without the use of codes.

18. The keypad module shall contain a "self-test" software program which can be activated to verify proper keypad operations.

19. The digital keypad shall allow the operator to enter exact numerical settings in English engineering units. A plain English user menu shall be provided in software as a guide to parameter setting, (rather than codes). Drive parameters shall be factory set in EEPROM and resettable in the field through the keypad. Six (6) levels of password security shall be available to protect drive parameters from unauthorized personnel. The EEPROM stored drive variables must be able to be transferred to new boards to reprogram spare boards.

    a. Normally the digital display shall simultaneously display:

        (1) Speed demand in percent.
        (2) Output current in amperes.
        (3) Frequency in hertz.
        (4) Control Mode: Manual/Automatic.
        (5) Total three-phase KW or output volts.

20. The controller shall include the following protective features:

    a. Single phase fault or 3-phase short circuit on VFD output terminals without damage to any power component.

b. Static instantaneous overcurrent and overvoltage trip with inverse overcurrent protection.
c. Static overspeed (overfrequency) protection.
d. Line or fuse loss and undervoltage protection.
e. Power unit overtemperature protection.
f. Electronic motor overload protection.
g. Responsive action to motor winding temperature detectors or thermostatic switches.
h. LED status indicators on regulator, printed circuit board face plates.
i. Isolated operator controls.
j. Input line fuses.
k. Be insensitive to incoming power phase sequence.
l. Have desaturation circuit to drive inverter section transistor base current to zero in event of controller fault.
m. Have DC bus discharge circuit for protection of operator and service personnel with an indicator lamp.
n. Input line noise suppression with line reactor.

21. The following system configuring settings shall be provided, without exception, field adjustable through the keypad/display unit or via the serial communication port only.

a. Motor Nameplate Data:

(1) Motor frequency.
(2) Number of poles.
(3) Full load speed.
(4) Motor volts.
(5) Motor full load amps.
(6) Motor KW.
(7) Current min.
(8) Current max.

b. ASD Limits:

(1) Independent accel/decel rates.
(2) No load boost.
(3) Vmin, Vmax, V/Hz.
(4) Full load boost.
(5) Overload trip curve select (Inverse or Constant).
(6) Min./max. speed (frequency).
(7) Auto reset for load or voltage trip select.
(8) Slip compensation.
(9) Catch-A Spinning-Load select.
(10) Overload trip time set.

c. ASD Parameters:

(1) Voltage loop gain.
(2) Voltage loop stability.
(3) Current loop stability.

d. Controller Adjustments:

(1) PID control enable/disable.
(2) Setpoint select.
(3) Proportional band select.
(4) Reset time select.
(5) Rate time select.
(6) Input signal scaling.
(7) Input signal select (4-20mA/0-5 Volts).
(8) Auto start functions: On/Off, Delay On/off, Level Select On/Off.
(9) Speed Profile: Entry, Exit, Point Select.
(10) Min., Max. Speed Select.

22. The VFD shall include a comprehensive microprocessor based digital diagnostic system which monitors its own control functions and displays faults and operating conditions. microprocessor systems must be products of the same manufacturer as the ASD.

23. A "FAULT LOG" shall record, store, display and print upon demand, the following for the 10 most recent events:

a. ASD mode (Auto/Manual).
b. Elapsed time (since previous fault).
c. Type of fault.

24. The fault log record shall be accessible via a RS232 serial link as well as line by line on the keypad display.

25. The following factory installed modifications shall be furnished with the controller:

a. Input circuit breaker, interlocked with the enclosure door, with through-the-door handle to provide positive disconnect of incoming AC power. The circuit breaker shall be rated for 65,000 AIC.

b. Door-mounted meters or keypad display shall be provided on all units as follows:

(1) Analog or digital ammeter (0–110%).
(2) Analog or digital speed/frequency meter (0–110% speed as well as Hz.).
(3) Analog or digital voltmeter (0–600 VAC).
(4) Analog or digital KW meter(0–110%).
(5) 5-digit elapsed time meter.
(6) HAND-OFF-REMOTE Selector Switch

c. The drive is to be provided with isolated 4-20mA DC output signals proportional to speed and current for remote monitoring of the ASD.

d. Relay output auxiliary contacts to indicate the position of all selector switches, drive failures and drive status.

e. Provide 120VAC and logic for motor space heater control.

f. Provide control of remote seal water solenoids

g. Provide for motor t-stat shut down.

h. Input line reactor within enclosure.

i. Output motor long lead dv/dt filter with enclosure.

j. Ethenet I/P interface card for remote SCADA

PART 3 EXECUTION

3.01 SYSTEM OPERATION

A. With the VFD H-O-R switch in the "HAND" position and the local START position, the drive shall start at minimum speed and adjust per a potentiameter.

B. With the VFD H-O-R switch in the "OFF" position the drive shall not start under any condition.

C. With the VFD H-O-R switch in the "REMOTE" position, the drive shall be controlled via the remote PLC.

3.02 INSTALLATION

A. Field wiring shall be per manufacturer's recommendation.

B. The manufacturer shall include in his bid one (1) normal work day per drive of a qualified service engineer's time. This time will be used to ensure proper connection and functioning of the equipment prior to startup and to train Owner personnel in the use of the equipment.

C. The manufacturer shall provide one spare for each type of plug-in type PC card. These spares will be color-coded or otherwise keyed to its original counterpart. In addition to the cards, the manufacturer shall provide two spares per drive all expendable items such as fuses, pilot lamps, etc.

3.03 INSPECTION AND TESTING

A. The drive manufacturer shall test the drive controller with a motor load prior to shipment.

B. The drive manufacturer shall furnish a certified field test report demonstrating installed compliance for voltage and current distortion at the required point of common coupling under both utility power and generator power. The test shall report shall be sealed by a Florida-Registered Professional Electrical Engineer.

C. A copy of all tests and checks performed in the field, complete with meter readings and recordings, where applicable, shall be submitted to the Owner.

END OF SECTION

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SECTION 16402

UNDERGROUND SYSTEM

PART 1 - GENERAL

1.01 DESCRIPTION

A. Scope of Work

1. Furnish and install a complete underground system of ducts, manholes and handholes all as hereinafter specified and shown on the Drawings.

B. Related Work Described Elsewhere

1. Excavation and backfilling is included in Division 2.

2. All concrete and reinforcing steel shall be included under Division 3.

3. Conduit for ducts shall be as specified under Section 16110.

4. Ground rods and other grounding materials and methods shall be as specified under other sections of Division 16.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Ducts shall be encased in concrete as indicated on the plans.

B. Cable racks, supports, pulling-in irons, manhole steps, and hardware shall be galvanized steel manufactured by Cope or equal.

C. Precast manholes and handholes shall be heavy duty type, designed for a Class H20 wheel load. Precast manholes and handholes shall be as manufactured by Brooks Products Co.

D. Handhole covers and frames shall be as shown on the Drawings.

E. Fireproofing tape shall be Irvington No. 7700 or be an approved equal product.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Ducts shall be installed to drain away from buildings; ducts between manholes or handholes shall drain toward the manholes or handholes. Duct slopes shall not be less than 3 inches per 100 feet.

B. Duct banks shall be reinforced as shown on the Drawings.

C. Duct lines shall be laid in trenches on a clean backfill bedding not less than 6 inches thick and well graded.

D. Plastic spacers shall be used to hold ducts in place. Spacers shall provide not less than 2-inch clearance between ducts.

E. The minimum cover for duct lines shall be 24 inches unless otherwise permitted by the Engineer.

F. Duct entrances to buildings and structures shall be made with steel conduit not less than 10 feet long.

G. PVC duct termination at manholes shall be with PVC end bells. Steel conduits shall be terminated with insulated, grounding-type bushings.

H. Where bends in ducts are required, long radius elbows, sweeps and offsets shall be used.

I. All ducts shall be rodded and a mandrel drawn through followed by a swab to clean out any obstructions which may cause cable abrasions. The mandrel shall be 12 inches in length and the diameter 1/2 inch less than the inside diameter of the duct.

J. Spare ducts shall be plugged and sealed watertight at all manholes, buildings and structures.

K. Ducts in use shall be sealed watertight at all manholes, buildings and structures.

L. Pulling-in irons shall be installed opposite all duct entrances to manholes, equal to Cope Catalog No. 311-9.

M. Cable racks shall be similar and equal to Cope Catalog 324-T, cut to length for one, two, three or four vertical tiers of cables. Racks shall be mounted with 1/2-inch by 4-inch expansion bolts on manhole walls. Arms similar and equal to Cope Catalog No. 325-T4, 325-T75 and/or 325-T10 for one, two and/or three cables, respectively, shall be furnished and installed with Catalog No. 326-T22 porcelain insulators for support of cables. Lock clips shall be furnished and installed to secure hooks in position.

N. Cables shall be trained in manholes and supported on racks and hooks at intervals not greater than 3 feet - 0 inches and supports shall be installed on each side of all splices. Furnish inserts on all manhole walls for mounting future racks as well as racks

required for present installation. Branch circuit conductors shall not be run in manholes.

O. Fireproofing shall be furnished for all 5-KV cables in manholes. Each individual 5-KV cable shall be wrapped with an arc-proofing tape. The tape shall be applied in accordance with the manufacturer's recommendations. The wrapping shall extend into the end bells.

P. Aluminim rigid conduit shall be used for risers.

Q. All risers from underground shall be given a heavy coat of bitumastic paint from a point 1 foot - 0 inches below grade to a point not less than 6 inches above grade or surface of slab.

R. All joints shall be made so as to prevent the passage of concrete inside the conduit to form obstructions or cause cable abrasions.

S. Manhole covers in streets shall finish flush with finished paving and in other areas shall finish 3 inches above crown of adjacent roadway. Floor elevations of manholes shall be so set that the center line of the lowest conduit entering will be not less than 1 foot above the floor and center line of the highest conduit entering will be not less than 1 foot below the roof slab.

T. Concrete monuments shall be provided at each stubbed conduit location. Monuments shall be as shown on the Drawings and shall be installed in the same manner outlined for manhole covers.

U. A #6 bare copper wire (stranded) shall be installed in each 4-inch PVC conduit.

V. A 5/8-inch by l0-foot copper clad ground rod shall be driven in the bottom of each manhole. All bond wires and galvanized steel conduits shall be bonded to the ground rod.

END OF SECTION

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SECTION 16445

TRANSIENT VOLTAGE SURGE SUPPRESSION

PART 1 - GENERAL

This section specifics internal mounted transient voltage surge suppression (TVSS) for electrical equipment as service entrance equipment, switchgear, switchboards, motor control centers, and panelboards.

Provide as per the same criteria specified herein for external TVSS where indicated on the drawings and with enclosures specified or indicated.

1.01 DESCRIPTION

A. SCOPE:

Provide TVSSs for service entrance equipment, switchgear, switchboards, motor control centers, and panelboards specified in the Division 16 electrical distribution equipment specification sections or indicated on the Drawings.

Provide TVSS with the same voltage, phase, 3 or 4 wire system as the equipment that the unit is protecting and with the specified ratings to protect the host electrical equipment.

B. EQUIPMENT LIST:

Item	Equipment No.
Motor Control Center	
Panelboard	
Switchboard	
Switchgear	

C. OPERATING CONDITIONS:

Verify the project conditions for seismic zone, elevation, ambient temperature, corrosive atmosphere, and humidity.

D. PERFORMANCE REQUIREMENTS:

TVSS performance parameters required:

1. National Electrical Code (NEC) Section 285.2 and 285.6:

   a. Limit transient voltage by diverting or limiting surge current.

   b. Prevent continued flow of current following transient event while remaining capable of repeating these functions.

c. Utilize fuses with repetitive surge capability to survive specified surge rating and meet UL 1449.

d. Marked with a short circuit current rating and not installed where the available fault current (AIC rating) is in excess of that rating.

2. UL 1449 stipulation for fused TVSS:

a. Certify that the TVSS system conforms to UL 1449 2nd Edition.

b. Indicate the type of internal or external fusing.

3. Maximum clamping voltage:

Service voltage	Phase and wire	L-N	L-G	N-G
120 / 240V	1Φ 3W	400	400	400
240 / 120V	3Φ 4W	400/700	400	400/700
208Y / 120 V	3Φ 4W	400	400	400
240V	3Φ 3W	NA	800	NA
480Y / 277V	3Φ 4W	800	800	800
480V	3Φ 3W	NA	1500	NA

E. DESIGN REQUIREMENTS:

1. TVSS equipment enclosure shall match the host electrical equipment NEMA-Type enclosure.

2. TVSS equipment shall provide the following local monitoring features:

a. Local status and alarm monitoring.

b. Digital surge event counter with battery back-up; alkaloid batteries are not acceptable.

3. TVSS equipment shall provide the following local monitoring features where specified or indicated on the drawings:

a. Status and alarm dry contacts for remote monitoring.

b. Audible alarm with alarm disable switch.

c. Field adjustable sensitivity

1.02 QUALITY ASSURANCE

A. REFERENCES:

This section contains references to the following documents. They are a part of this section as specified and modified. Where a referenced document contains references to other standards, those documents are included as references under this section as if referenced directly. In the event of conflict between the requirements of this section and those of the listed documents, the requirements of this section shall prevail.

Unless otherwise specified, references to documents shall mean the documents in effect at the time of Advertisement for Bids or Invitation to Bid (or on the effective date of the Agreement if there were no Bids).

If referenced documents have been discontinued by the issuing organization, references to those documents shall mean the replacement documents issued or otherwise identified by that organization or, if there are no replacement documents, the last version of the document before it was discontinued.

Where document dates are given in the following listing, references to those documents shall mean the specific document version associated with that date, regardless of whether the document has been superseded by a version with a later date, discontinued or replaced.

Reference	Title
Underwriters Laboratories 1449 2nd Edition	Transient Voltage Surge Suppressors
Underwriters Laboratories 1283 3rd Edition	Electromagnetic interference filter for noise attenuation
MIL STD 220A, Rev A, Change Notice #2	Method of Insertion Loss Measurement
National Electrical Code 2002 Article 285 and Article 250.56	TVSS Installation practice and Grounding
NEMA LS-1-1992	National Electrical Manufactures Association: Low Voltage Surge Protective Devices
CUL	Canadian Underwriters Laboratories
ANSI/IEEE C62.41 1991 and C62.45-1992	American National Standards Institute/Institute of Electrical and Electronic Engineering Inc.
Underwriters Laboratories 67	Listing for internal panelboard TVSS
Underwriters Laboratories 891	Dead Front Switch boards

B. TESTING BY 3RD PARTY:

Certify that TVSS furnished have passed the following tests per NEMA LS-1-1992:

1. The TVSS device is repetitive surge current capacity tested utilizing a 1.2x50ms, 20kV open circuit voltage, 8x20ms, 10kA short circuit Category C3 test waveform at one minute intervals with less than 5% degradation of components.

   a. TVSS at service entrance: 20,000 Category C3 impulses
   b. TVSS at distribution: 5,000 Category C3 impulses

2. The rating shall be based on testing of a complete TVSS unit including fuses and all components that make up the TVSS system are expressed per mode.

3. The fusing system shall be capable of allowing the rated maximum surge current to pass through without fuse operation. Systems utilizing a fusing system that opens below the maximum surge current level are unacceptable. The fusing system shall use thermal fuses and surge rated fuses, which shall be included in the surge current testing.

4. Use of plug-in modules, printed circuit boards in surge current-carrying paths, gas discharge devices or selenium rectifiers is unacceptable.

5. The maximum Continuous Operating Voltage (MCOV) for all voltage configurations shall be 115% of nominal.

6. The use of electronic grade MOV's is not acceptable. Systems using gas tubes, silicon avalanche diodes, selenium rectifiers, or printed circuit board technology in surge current path are not acceptable.

C FACTORY TESTING

TVSS shall be factory tested prior to shipment.

D. SHIPMENT, PROTECTION, AND STORAGE:

Ship the TVSS components with the electrical equipment in accordance with the requirements specified in Section 01610 and protect the equipment from damage, dirt, dust, rain, and other elements.

E. WARRANTY:

Provide a product warranty for a period of not less than five (5) years from date of installation. Warranty shall cover replacement of TVSS during the warranty period if operation of TVSS does not meet manufactures guide specification performance criteria and the requirements specified in this Section 16445. In addition to the warranty submitted as required in paragraph 16445-2.05, provide a copy of the warranty inside of each TVSS enclosure.

1.03 SUBMITTALS

Submittals and transmittal procedures for submittals are defined in Section 01300. Submittals should be required for the following conditions:

1. A copy of this specification section, with addendum updates included, and all referenced and applicable sections, with addendum updates included, with each paragraph check-marked to indicate specification compliance or marked to indicate requested deviations from specification requirements. Check marks shall denote full compliance with a paragraph as a whole.

2. If deviations from the specifications are indicated, and therefore requested by the Contractor, each deviation shall be underlined and denoted by a number in the margin to the right of the identified paragraph, referenced to a detailed written explanation of the reasons for requesting the deviation. The Construction Manager shall be the final authority for determining acceptability of requested deviations. The remaining portions of the paragraph not underlined will signify compliance on the part of the Contractor with the specifications.

3. Failure to include a copy of the marked-up specification sections, along with justification(s) for any requested deviations to the specification requirements, with the submittal shall be sufficient cause for rejection of the entire submittal with no further consideration.

4. A copy of the contract document control diagrams and process and instrumentation diagrams relating to the submitted equipment, with addendum updates that apply to the equipment in this section, marked to show specific changes necessary for the equipment proposed in the submittal. If no changes are required, the drawing or drawings shall be marked *"no changes required"*. Failure to include copies of the relevant drawings with the submittal shall be cause for rejection of the entire submittal with no further review."

5. Drawings: Electrical and mechanical drawings shall be provided by the manufacturer which show unit dimensions, weights, mounting provisions, connection notes, wire size and wiring diagram.

6. Installation instructions: Clearly state rating of an overcurrent device to maintain the system's UL 1449 listing.

PART 2-PRODUCTS

2.01 GENERAL REQUIREMENTS

A. The TVSS shall be 7 modes (connection paths) of protection using metal oxide varistors (MOV) technology; tested by UL (1449, 2nd Ed) Suppressed Voltage Rating (SVR).

B. Primary transient paths shall utilize copper wire, aluminum bus bar and lugs of equivalent capacity to provide equal impedance interconnection between phases. No plug-in module or components shall be used in surge current carrying paths.

C. Each protection module shall have a visual indicator that signifies that each phase is on line. The unit shall not be taken off-line to verify integrity of system. Redundant status indicators shall be mounted on the front of the door that monitors the system protection circuitry.

D. Replaceable modules are not acceptable. TVSS will be replaced in the event a phase indicating light has extinguished, alarm annunciation with the service alarm light on.

E. The TVSS device EMI-RFI noise rejection or attenuation value shall be measured in accordance with the procedures outlined in NEMA LS-1-1992/MIL STD 220A. Noise Filter Capability (100KHz, 1MHz, 10MHz and 100MHz) shall not be lower than –44db attenuation.

F. TVSS shall provide protection in the following modes.

1. Line to Neutral (L-N) (Wye)
2. Line to Ground (L-G) (Wye or Delta)
3. Neutral to Ground (N-G) (Wye)

G. Rate surge protective device for continuous operation under the following service conditions:

1. Altitude: 0-12,000 ft.
2. Humidity: 95% RH, non-condensing atmosphere.
3. Surface Temperature: less than 55°C.
4. Operating Temperature -40° C to +60°C.
5. Frequency 50-60 Hertz.
6. No Audible Noise

2.02 ELECTRICAL EQUIPMENT TVSS APPLICATIONS:

A. TVSS equipment shall be a multi-stage parallel protector rated for voltage, phase, and the wire, plus ground and be mounted by electrical equipment manufacturers.

B. The equipment's minimum surge current capacity shall be:

1. 200kA per mode (L-N, L-G, and N-G).

2.03 BRANCH CIRCUIT PANEL PROTECTION

A. TVSS equipment shall be a multi-stage parallel protector rated for voltage, phase, and the wire, plus ground and be bus-to-bus mounted by electrical equipment manufacturer or externally field mounted as indicated on the drawings provided by electrical equipment manufacturer of the branch panel board.

B. The equipment's minimum surge current capacity shall be:

1. 65kA per mode (L-N, L-G, and N-G).

2.04 MANUFACTURERS

A. Service Entrance System equipment, Switchboards, Switchgear, MCCs: Acceptable Manufacturers and Models:

1. General Electric Tranquell THE/TV20
2. Current Technology: TG200
3. LEA International equal product.
4. MTL Surge Technologies Zone Master equal product.
5. Electrical equipment manufacture's products that meet the specified criteria herein.
6. No other Manufacturers will be accepted.

B. Panelboards: Acceptable Manufacturers and Models:

1. General Electric Tranquell TME/TV65
2. LEA International equal product.
3. MTL Surge Technologies Zone Master equal product.
4. Electrical equipment manufacture's products that meet the specified criteria herein.
5. No other Manufacturers will be accepted.

2.05 PRODUCT DATA

The following information shall be provided in accordance with Section 01300:

1. Operation and maintenance information as specified in Section 01300.

2. Warranty specified in paragraph 16445-1.02 E.

PART 3--EXECUTION

3.01 GENERAL

Verify TVSS specified and ratings indicated are furnished. Manufacturer's representative shall visit the site, verify installation and testing, and verify that the TVSS equipment and TVSS installation meets intent of the Contract Documents and manufacturer's warranties and that the guarantees are in effect.

3.02 INSTALLATION

A. Install according to manufacturers recommendations.

B. Lead lengths shall not exceed 18"

C. Electrical equipment manufacturer shall provide integral TVSS.

D. Electrical equipment manufacturer shall authorize and perform all bus taps electrical connections, as necessary.

3.03 TRAINING

Provide a minimum of 1-hours of training for all similar TVSS systems and conforming to the requirements of Section 01664. Training shall be certified on Form 11000-B specified in Section 01999.

END OF SECTION

SECTION 16450

GROUNDING SYSTEM

PART 1 - GENERAL

1.01 DESCRIPTION

A. Scope of Work

1. Furnish and install a complete grounding system in strict accordance with Article 250 of the National Electrical Code and as hereinafter specified and shown on the Drawings.

B. Related Work Described Elsewhere

1. Wire: Section 16120.

2. Conduit: Section 16110.

1.02 QUALITY ASSURANCE

A. Qualifications:

1. The equipment shall be products of manufacturers who are fully experienced, reputable and qualified in the manufacture of the equipment to be furnished. The system components shall be designed, constructed, delivered and installed in accordance with the best practices and methods.

1.03 SUBMITTALS

A. Material and Shop Drawings:

1. Copies of all materials required to establish compliance with these specifications shall be submitted in accordance with the provisions of the General Conditions. Submittals shall include at least the following:

a. Certified shop drawings with performance data and physical characteristics.

b. Descriptive literature, bulletins, and/or catalogs of each item of equipment.

c. All information required by Section 01300.

d. Complete wiring diagrams and schematics of all power and control systems showing wiring requirements between system and connections to work of other sections.

1.04 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Deliver a complete system ready to install as job progress requires.

PART 2 - PRODUCTS

2.01 GENERAL

A. The specifications are intended to give a general description of what is required, but do not cover all details which may vary in accordance with the exact requirements of the equipment as offered. They are, however, intended to cover the furnishings, delivery, installation and field testing of all materials, equipment and apparatus as required. Any additional auxiliary equipment necessary for the proper operation of the proposed installation not mentioned in these specifications, or shown on the Drawings shall be furnished and installed.

B. The material covered by these specifications is intended to be standard equipment of proven ability and as manufactured by reputable concerns having experience in the production of such equipment. The equipment furnished shall be designed, constructed, and installed in accordance with best practice and methods and shall operate satisfactorily when installed as shown on the Drawings.

2.02 MATERIALS AND EQUIPMENT

A. Ground rods: Ground rods shall be copper clad steel 3/4 inch x 20 foot, minimum depth. Ground rods shall be copperweld or equal.

PART 3 - EXECUTION

3.01 INSTALLATION

A. The 480 volt switchgear ground bus shall be grounded to a ground loop system. The protecting conduits shall be bonded to the grounding conductor at both ends.

B. All steel building columns shall be bonded together and connected to the building ground grid.

C. Motors shall be grounded as hereinafter specified.

D. Lighting transformer neutrals shall be grounded to the nearest grounding electrode.

E. Grounding electrodes shall be driven as required. Where rock is encountered, grounding plates may be used in lieu of grounding rods.

F. All equipment enclosures, motor and transformer frames, conduits systems, cable armor, exposed structural steel and similar items shall be grounded.

G. Exposed connections shall be made by means of approved grounding clamps. Exposed connections between different metals shall be sealed with No-Oxide Paint

Grade A or equal. All buried connections shall be made by welding process such as Cadweld or equal.

H. For reasons of mechanical strength, grounding conductors shall be No. 10 AWG minimum copper, minimum size.

I. All underground conductors shall be laid slack and where exposed to mechanical injury, shall be protected by pipes or other substantial guards. If guards are iron pipe or other magnetic material, conductors shall be electrically connected to both ends of the guard.

J. The Contractor shall exercise care to insure good ground continuity, in particular between the conduit system and equipment frames and enclosures. Where necessary, jumper wires shall be installed.

3.02 INSPECTION AND TESTING

A. The Contractor shall obtain the services of an NETA recognized testing firm to measure the ground resistance of the system. All test equipment shall be provided by the Contractor and approved by the Engineer. Dry season resistance of the system shall not exceed 5 ohms. If such resistance cannot be obtained with the system as shown, the Contractor shall provide additional grounding as directed by the Engineer, without additional payment.

END OF SECTION

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SECTION 16460

GENERAL PURPOSE TRANSFORMERS

PART 1 - GENERAL

1.01 DESCRIPTION

A. Scope of Work:

1. Furnish and install general purpose transformers and all necessary accessories and appurtenances required as here-in-after specified and shown on the drawings.

B. Related Work Described Elsewhere:

1. Raceways and Fittings Section 16110.

C. General Design:

1. General purpose transformers shall be dry type, two-winding type, self cooled, 600V class transformers.

2. Transformers shall be designed for continuous operation at rated KVA, with normal life expectancy as defined in ANSI C57.96.

1.02 QUALITY ASSURANCE

A. Standards

1. National Electrical Manufacturers (NEMA)

2. American National Standards Institute (ANSI)

3. Underwriters Laboratories, Inc. (UL)

B. Equipment Manufacturer

1. Cutler-Hammer

2. Square D. Co.

1.03 SUBMITTALS

A. Materials and Shop Drawings:

1. Copies of all materials to establish compliance with these specifications shall be submitted in accordance with the provisions of the general conditions. Submittals shall include at least the following:

a. Shop drawings with performance data and physical characteristics.

b. Complete wiring diagrams and schematics of all power connections.

1.04 PRODUCT DELIVERY, STORAGE AND HANDLING:

A. General purpose transformers shall be stored indoors and protected against damage at all times.

1.05 WARRANTY AND GUARANTEES:

A. The equipment manufacturer shall warrant the units being supplied to the Owner against defects in workmanship and materials for a period of one (1) year from the date of equipment startup and acceptance. In the event that the equipment fails to perform as specified, the equipment manufacturer shall promptly repair or replace the defective equipment without any cost to the owner

PART 2 - PRODUCTS

2.01 GENERAL:

A. Insulation System:

1. Transformers shall be insulated as follows:

· 150°C insulation with 80°C rise for 2 KVA and below.

· 185°C insulation with 15°C rise for 3 KVA to 30 KVA

· 220°C insulation with 150°C rise for 45 KVA to 112.5 KVA

2. All insulation materials shall be flame retardant and shall not support combustion as defined in ASTM D635.

B. Coil Assemblies:

1. Transformer cone shall be constructed with high grade, non-aging, grain-oriented silicon steel with high magnetic permeability and low hysteresis and eddy current losses. The core volume shall allow efficient transformer operation at 10% above the highest tap voltage. Coils shall be wound of electrical grade aluminum with continuous wound construction.

2. Non-ventilated unit coil assembly shall be completely encapsulated in a mixture of resin and aggregate.

3. Four full capacity taps shall be furnished, two 2-1/2 percent above and two 2-1/2 percent below rated primary voltage.

C. ENCLOSURES:

1. The enclosures shall be made of heavy gauge steel and shall be degreased, cleaned, primed, and finished with ANSI 61 color weather-resistant enamel.

2. All ventilation openings shall be protected against falling dirt.

3. The maximum temperature of the enclosure shall not exceed 90°C.

4. The core of the transformer shall be visibly grounded to the enclosure.

5. Enclosure for Lime Building transformer shall be non-ventilating.

PART 3 - EXECUTION

3.01 INSTALLATION:

A. All floor mounted transformers shall be installed on 4-inch concrete housekeeping pads.

B. All conduit entries to the transformer shall utilize sealtight flexible connectors.

3.02 INSPECTION:

A. The transformer interior shall be cleaned and free of all foreign materials.

END OF SECTION

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SECTION 16490
SWITCHBOARDS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

A. Section Includes:

1. Distribution switchboards rated 600 V and less.
2. Disconnecting and overcurrent protective devices.
3. Instrumentation.
4. Accessory components and features.

1.03 SUBMITTALS

A. Product Data: For each type of switchboard, overcurrent protective device, transient voltage suppression device, ground-fault protector, accessory, and component indicated. Include dimensions and manufacturers' technical data on features, performance, electrical characteristics, ratings, accessories, and finishes.

B. Shop Drawings: For each switchboard and related equipment.

1. Include dimensioned plans, elevations, sections, and details, including required clearances and service space around equipment. Show tabulations of installed devices, equipment features, and ratings.
2. Detail enclosure types for types other than NEMA 250, Type 1.
3. Detail bus configuration, current, and voltage ratings.
4. Detail short-circuit current rating of switchboards and overcurrent protective devices.
5. Include descriptive documentation of optional barriers specified for electrical insulation and isolation.
6. Include evidence of NRTL listing for series rating of installed devices.
7. Detail features, characteristics, ratings, and factory settings of individual overcurrent protective devices and auxiliary components.
8. Include time-current coordination curves for each type and rating of overcurrent protective device included in switchboards. Submit on translucent log-log graft paper; include selectable ranges for each type of overcurrent protective device.
9. Include schematic and wiring diagrams for power, signal, and control wiring.

C. Qualification Data: For qualified Installer.

D. Operation and Maintenance Data: For switchboards and components to include in emergency, operation, and maintenance manuals. In addition to items specified in Division 01 Section "Operation and Maintenance Data," include the following:

1. Routine maintenance requirements for switchboards and all installed components.

2. Manufacturer's written instructions for testing and adjusting overcurrent protective devices.

3. Time-current coordination curves for each type and rating of overcurrent protective device included in switchboards. Submit on translucent log-log graft paper; include selectable ranges for each type of overcurrent protective device.

1.04 QUALITY ASSURANCE

A. Installer Qualifications: An employer of workers qualified as defined in NEMA PB 2.1 and trained in electrical safety as required by NFPA 70E.

B. Source Limitations: Obtain switchboards, overcurrent protective devices, components, and accessories from single source from single manufacturer.

C. Product Selection for Restricted Space: Drawings indicate maximum dimensions for switchboards including clearances between switchboards and adjacent surfaces and other items. Comply with indicated maximum dimensions.

D. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

E. Comply with NEMA PB 2.

F. Comply with NFPA 70.

G. Comply with UL 891.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Deliver switchboards in sections or lengths that can be moved past obstructions in delivery path.

B. Handle and prepare switchboards for installation according to NEMA PB 2.1.

1.06 PROJECT CONDITIONS

A. Environmental Limitations:

1. Do not deliver or install switchboards until spaces are enclosed and weathertight, wet work in spaces is complete and dry and work above switchboards is complete.

1.07 COORDINATION

A. Coordinate layout and installation of switchboards and components with other construction that penetrates walls or is supported by them, including electrical and other types of equipment, raceways, piping, encumbrances to workspace clearance requirements, and adjacent surfaces. Maintain required workspace clearances and required clearances for equipment access doors and panels.

B. Coordinate sizes and locations of concrete bases with actual equipment provided. Cast anchor-bolt inserts into bases. Concrete, reinforcement, and formwork requirements are specified in Division 03.

1.08 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace transient voltage suppression devices that fail in materials or workmanship within specified warranty period.

1. Warranty Period: Five years from date of Substantial Completion.

1.09 EXTRA MATERIALS

A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Potential Transformer Fuses: Equal to 10 percent of quantity installed for each size and type, but no fewer than two of each size and type.
2. Control-Power Fuses: Equal to 10 percent of quantity installed for each size and type, but no fewer than two of each size and type.
3. Fuses and Fusible Devices for Fused Circuit Breakers: Equal to 10 percent of quantity installed for each size and type, but no fewer than three of each size and type.
4. Fuses for Fused Power-Circuit Devices: Equal to 10 percent of quantity installed for each size and type, but no fewer than three of each size and type.
5. Indicating Lights: Equal to 10 percent of quantity installed for each size and type, but no fewer than one of each size and type.

PART 2 - PRODUCTS

2.01 MANUFACTURED UNITS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

B. Basis-of-Design Product: Subject to compliance with requirements, provide Square D; a brand of Schneider Electric or comparable product by one of the following:

1. Eaton Electrical Inc.; Cutler-Hammer Business Unit.
2. Square D; a brand of Schneider Electric.

C. Front-Connected, Front-Accessible Switchboards:

1. Main Devices: Fixed, individually mounted.
2. Branch Devices: Panel mounted.
3. Sections front and rear aligned.

D. Nominal System Voltage: 480Y/277 V.

E. Main-Bus Continuous: As indicated on the drawings.

F. Indoor Enclosures: Steel, NEMA 250, Type 1.

G. Enclosure Finish for Indoor Units: Factory-applied finish in manufacturer's standard gray finish over a rust-inhibiting primer on treated metal surface.

H. Barriers: Between adjacent switchboard sections.

I. Insulation and isolation for main bus of main section and main and vertical buses of feeder sections.

J. Bus Transition and Incoming Pull Sections: Matched and aligned with basic switchboard.

K. Hinged Front Panels: Allow access to circuit breaker, metering, accessory, and blank compartments.

L. Pull Box on Top of Switchboard:

1. Adequate ventilation to maintain temperature in pull box within same limits as switchboard.

2. Set back from front to clear circuit-breaker removal mechanism.

3. Removable covers shall form top, front, and sides. Top covers at rear shall be easily removable for drilling and cutting.

4. Bottom shall be insulating, fire-resistive material with separate holes for cable drops into switchboard.

5. Cable supports shall be arranged to facilitate cabling and adequate to support cables indicated, including those for future installation.

M. Buses and Connections: Three phase, four wire unless otherwise indicated.

1. Phase- and Neutral-Bus Material: Hard-drawn copper of 98 percent conductivity, with tin-plated aluminum or copper feeder circuit-breaker line connections.

2. Load Terminals: Insulated, rigidly braced, runback bus extensions, of same material as through buses, equipped with mechanical connectors for outgoing circuit conductors. Provide load terminals for future circuit-breaker positions at full-ampere rating of circuit-breaker position.

3. Ground Bus: Minimum-size required by UL 891, hard-drawn copper of 98 percent conductivity, equipped with mechanical connectors for feeder and branch-circuit ground conductors.

4. Main Phase Buses and Equipment Ground Buses: Uniform capacity for entire length of switchboard's main and distribution sections. Provide for future extensions from both ends.

5. Neutral Buses: 100 percent of the ampacity of phase buses unless otherwise indicated, equipped with mechanical connectors for outgoing circuit neutral cables. Brace bus extensions for busway feeder neutral bus.

2.02 DISCONNECTING AND OVERCURRENT PROTECTIVE DEVICES

A. Molded-Case Circuit Breaker (MCCB): Comply with UL 489, with interrupting capacity to meet available fault currents.

1. Thermal-Magnetic Circuit Breakers: Inverse time-current element for low-level overloads, and instantaneous magnetic trip element for short circuits.

Adjustable magnetic trip setting for circuit-breaker frame sizes 250 A and larger.

2. Adjustable Instantaneous-Trip Circuit Breakers: Magnetic trip element with front-mounted, field-adjustable trip setting.

3. Electronic trip circuit breakers with rms sensing; field-replaceable rating plug or field-replicable electronic trip; and the following field-adjustable settings:

   a. Instantaneous trip.

   b. Long- and short-time pickup levels.

   c. Long- and short-time time adjustments.

   d. Ground-fault pickup level, time delay, and I^2t response.

4. Current-Limiting Circuit Breakers: Frame sizes 400 A and smaller; let-through ratings less than NEMA FU 1, RK-5.

5. GFCI Circuit Breakers: Single- and two-pole configurations with Class A ground-fault protection (6-mA trip).

6. Molded-Case Circuit-Breaker (MCCB) Features and Accessories:

   a. Standard frame sizes, trip ratings, and number of poles.

   b. Lugs: Mechanical style, suitable for number, size, trip ratings, and conductor material.

   c. Application Listing: Appropriate for application; Type SWD for switching fluorescent lighting loads; Type HID for feeding fluorescent and high-intensity discharge (HID) lighting circuits.

   d. Shunt Trip: 120-V trip coil energized from separate circuit.

2.03 INSTRUMENTATION

A. Instrument Transformers: IEEE C57.13, NEMA EI 21.1, and the following:

1. Potential Transformers: IEEE C57.13; 120 V, 60 Hz, double secondary; disconnecting type with integral fuse mountings. Burden and accuracy shall be consistent with connected metering and relay devices.

2. Current Transformers: IEEE C57.13; 5 A, 60 Hz, secondary; bar or window type; double secondary winding and secondary shorting device. Burden and accuracy shall be consistent with connected metering and relay devices.

3. Control-Power Transformers: Dry type, mounted in separate compartments for units larger than 3 kVA.

4. Current Transformers for Neutral and Ground-Fault Current Sensing: Connect secondary wiring to ground overcurrent relays, via shorting terminals, to provide selective tripping of main and tie circuit breaker. Coordinate with feeder circuit-breaker, ground-fault protection.

B. Multifunction Digital-Metering Monitor: Microprocessor-based unit suitable for three- or four-wire systems and with the following features:

1. Switch-selectable digital display of the following values with maximum accuracy tolerances as indicated:

a. Phase Currents, Each Phase: Plus or minus 1 percent.

b. Phase-to-Phase Voltages, Three Phase: Plus or minus 1 percent.

c. Phase-to-Neutral Voltages, Three Phase: Plus or minus 1 percent.

d. Megawatts: Plus or minus 2 percent.

e. Megavars: Plus or minus 2 percent.

f. Power Factor: Plus or minus 2 percent.

g. Frequency: Plus or minus 0.5 percent.

h. Accumulated Energy, Megawatt Hours: Plus or minus 2 percent; accumulated values unaffected by power outages up to 72 hours.

i. Megawatt Demand: Plus or minus 2 percent; demand interval programmable from five to 60 minutes.

j. Contact devices to operate remote impulse-totalizing demand meter.

k. Current and Voltage Total Harmonic Distortion per phase.

2. Mounting: Display and control unit flush or semi-flush mounted in instrument compartment door.

2.04 CONTROL POWER

A. Control Circuits: 120-V ac, supplied through secondary disconnecting devices from control-power transformer.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Receive, inspect, handle, and store switchboards according to NEMA PB 2.1.

B. Examine switchboards before installation. Reject switchboards that are moisture damaged or physically damaged.

C. Examine elements and surfaces to receive switchboards for compliance with installation tolerances and other conditions affecting performance of the Work.

D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION

A. Install switchboards and accessories according to NEMA PB 2.1.

B. Equipment Mounting: Install switchboards on concrete base, 4-inch nominal thickness. Comply with requirements for concrete base specified in Division 03 Section "Cast-in-Place Concrete."

1. Install dowel rods to connect concrete base to concrete floor. Unless otherwise indicated, install dowel rods on 18-inch centers around the full perimeter of concrete base.

2. For supported equipment, install epoxy-coated anchor bolts that extend through concrete base and anchor into structural concrete floor.

3. Place and secure anchorage devices. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.

4. Install anchor bolts to elevations required for proper attachment to switchboards.

C. Temporary Lifting Provisions: Remove temporary lifting eyes, channels, and brackets and temporary blocking of moving parts from switchboard units and components.

D. Operating Instructions: Frame and mount the printed basic operating instructions for switchboards, including control and key interlocking sequences and emergency procedures. Fabricate frame of finished wood or metal and cover instructions with clear acrylic plastic. Mount on front of switchboards.

E. Install filler plates in unused spaces of panel-mounted sections.

F. Install overcurrent protective devices, transient voltage suppression devices, and instrumentation.

1. Adjust circuit breaker trip and time delay settings to values as instructed by switchboard manufacturer.

G. Comply with NECA 1.

3.03 IDENTIFICATION

A. Identify field-installed conductors, interconnecting wiring, and components; provide warning signs complying with requirements for identification specified in Division 26 Section "Identification for Electrical Systems."

B. Switchboard Nameplates: Label each switchboard compartment with a nameplate complying with requirements for identification specified in Division 26 Section "Identification for Electrical Systems."

C. Device Nameplates: Label each disconnecting and overcurrent protective device and each meter and control device mounted in compartment doors with a nameplate complying with requirements for identification specified in Division 26 Section "Identification for Electrical Systems."

3.04 FIELD QUALITY CONTROL

A. Perform tests and inspections.

1. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect components, assemblies, and equipment installations, including connections, and to assist in testing.

B. Acceptance Testing Preparation:

1. Test insulation resistance for each switchboard bus, component, connecting supply, feeder, and control circuit.

2. Test continuity of each circuit.

C. Tests and Inspections:

1. Perform each visual and mechanical inspection and electrical test stated in NETA Acceptance Testing Specification. Certify compliance with test parameters.

2. Correct malfunctioning units on-site, where possible, and retest to demonstrate compliance; otherwise, replace with new units and retest.

3. Perform the following infrared scan tests and inspections and prepare reports:

   a. Initial Infrared Scanning: After Substantial Completion, but not more than 60 days after Final Acceptance, perform an infrared scan of each switchboard. Remove front panels so joints and connections are accessible to portable scanner.

   b. Follow-up Infrared Scanning: Perform an additional follow-up infrared scan of each switchboard 11 months after date of Substantial Completion.

   c. Instruments and Equipment:

      1) Use an infrared scanning device designed to measure temperature or to detect significant deviations from normal values. Provide calibration record for device.

4. Test and adjust controls, remote monitoring, and safeties. Replace damaged and malfunctioning controls and equipment.

D. Switchboard will be considered defective if it does not pass tests and inspections.

E. Prepare test and inspection reports, including a certified report that identifies switchboards included and that describes scanning results. Include notation of deficiencies detected, remedial action taken, and observations after remedial action.

3.05 ADJUSTING

A. Adjust moving parts and operable components to function smoothly, and lubricate as recommended by manufacturer.

B. Set field-adjustable circuit-breaker trip ranges as indicated.

3.06 DEMONSTRATION

A. Train Owner's maintenance personnel to adjust, operate, and maintain switchboards, overcurrent protective devices, instrumentation, and accessories**,** and to use and reprogram microprocessor-based trip, monitoring, and communication units.

END OF SECTION

SECTION 16500

LIGHTING SYSTEM

PART 1 - GENERAL

1.01 DESCRIPTION

A. Scope of Work:

1. Furnish and install complete lighting systems including panelboards, transformers, lighting fixtures, receptacles, switches, contractors, and all necessary accessories and appurtenances required as hereinafter specified and shown on the Drawings.

B. Related Work Described Elsewhere

1. Panelboards: Section 16160.

2. Transformers: Section 16108.

3. Conduit: Section 16110.

4. Wire: Section 16120.

1.02 QUALITY ASSURANCE

A. Qualifications:

1. The equipment shall be a product of manufacturers who are fully experienced, reputable and qualified in the manufacture of the equipment to be furnished. The system components shall be designed, constructed, delivered and installed in accordance with the best practices and methods.

2. The system shall be furnished by a single manufacturer who shall be responsible for the coordination of the system design and who shall assume complete responsibility for the proper operation of the system including equipment supplied but not of his manufacture.

B. Standards:

All lighting fixtures shall be in accordance with the National Electrical Code and shall be constructed in accordance with the latest edition of the Underwriters Laboratories "Standards for Safety, Electrical Lighting Fixtures". All lighting fixtures shall be Underwriters Laboratories labeled.

1.03 SUBMITTALS

A. Material and Shop Drawings:

1. Copies of all materials to establish compliance with these specifications shall be submitted in accordance with the provisions of the General Conditions. Submittals shall include at least the following:

   a. Certified shop drawings with performance data and physical characteristics.

   b. Descriptive literature, bulletins, and/or catalogs of each item of equipment.

   c. A complete total bill of materials for all equipment.

   d. Complete wiring diagrams and schematics of all power and control systems showing wiring requirements between system and connections to work of other sections.

2. In the event that it is impossible to conform with certain details of the specifications, describe completely all non-conforming aspects of the Shop Drawing transmittal.

PART 2 - PRODUCTS

2.01 GENERAL

A. The specifications are intended to give a general description of what is required, but do not cover all details which may vary in accordance with the exact requirements of the equipment as offered. They are, however, intended to cover the furnishing, delivery, installation and field-testing of all materials, equipment and apparatus as required. Any additional auxiliary equipment necessary for the proper operation of the proposed installation not mentioned in these specifications, or shown on the Drawings shall be furnished and installed.

B. The material covered by these specifications is intended to be standard equipment of proven ability and as manufactured by reputable concerns having experience in the production of such equipment. The equipment furnished shall be designed, constructed, and installed in accordance with best practice and methods and shall operate satisfactorily when installed as shown on the Drawings.

2.02 MATERIALS AND EQUIPMENT

A. Lighting Fixtures:

1. Lighting fixture types shall be as shown on the "Lighting Fixture Schedule" on the Drawings. The catalog numbers listed are given as a guide to the design and quality of fixture desired. Equivalent designs and equal quality fixtures of other manufacturers will be acceptable.

B. Lamps:

1. LED lamps shall be 4000K, with drivers, all as indicated on the "Fixture Schedule".

C. Flexible Fixture Hangers:

1. Flexible fixture hangers used in nonhazardous areas shall be Type ARB and flexible fixture supports used in hazardous areas shall be Type ECHF as manufactured by the Crouse-Hinds Company or equal.

2. FRP channel shall be used to span for mounting of fixtures when required by fixture location or as indicated on the Drawings.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Each fixture shall be a complete finished unit with all components, mounting and/or hanging devices necessary, for the proper installation of the particular fixture in its designation location and shall be completely wired ready for connection to the branch circuit wires at the outlet.

B. When fixtures are noted to be installed flush, they shall be complete with the proper accessories for installing in the particular ceiling involved. All flush mounted fixtures shall be supported from the structure and shall not be dependent on the hung ceilings for their support.

C. Flexible fixture hangers shall be used for all pendant mounted fixtures.

D. Conduit run in areas with hung ceilings shall be installed in the space above the hung ceiling as close to the structure as possible. Conduit shall be supported from the structure.

3.02 REPLACEMENT

A. Lamps used during the building construction, prior to two weeks from completion of the work, shall be removed and replaced with new lamps.

3.03 CLEANING UP

A. All fixtures shall be left in a clean condition, free of dirt and defects, before acceptance by the Engineer.

END OF SECTION

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SECTION 16601

LIGHTNING PROTECTION SYSTEM

PART 1 - GENERAL

1.01 DESCRIPTION

A. Scope of Work:

1. Furnish all labor, materials, equipment and incidentals required and install a complete lightning protection system for the generator structure and electrical building. The system shall include grounding all handrail and platform structures.

2. Material requirements shall be as listed for Class I buildings.

B. Applicable Publications: The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

1. American National Standards Inst., Inc. (ANSI)
   C-135.30 Galvanized Ferrous Ground Rods.

2. National Fire Protection Association (NFPA)
   70-1987 National Electrical Code (NEC)
   78-1986 Lightning Protection Code

3. Underwriters Laboratories, Inc. (UL)
   UL-96 Lightning Protection Components
   UL-96A Installation Requirements for Lightning Protection Systems
   UL-467 Grounding and Bonding Equipment

1.02 QUALITY ASSURANCE

A. Equipment Manufacturer: The material furnished under this specification shall consist of the standard products of a manufacturer regularly engaged in the production of lightning protection systems.

B. Supervision: The system shall be installed under supervision of, or by, a person specifically trained for installation of lightning protection systems.

C. Lightning protection system shall include a master label per UL.

1.03 SUBMITTALS

A. Shop Drawings: Shop drawings shall be submitted in accordance with Section 01300 and shall consist of a complete list of materials, including manufacturer's descriptive and technical literature; catalog cuts; drawings; and installation instructions. Shop drawings shall contain details to demonstrate that the system has been coordinated and will function as a unit. Drawings shall show proposed layout and mounting and relationship to other parts of the work.

B. Proof of Compliance: Where materials or equipment are specified to comply with requirements of the UL, proof of such compliance shall be submitted. The label of or listing in the UL Electrical Construction Materials Directory will be acceptable evidence. In lieu of the label or listing, a written certification may be submitted from an approved nationally recognized testing organization equipped to perform such services, stating that the items have been tested and conform to the requirements and testing methods of Underwriters' Laboratories.

PART 2 - PRODUCTS

2.01 MATERIALS AND EQUIPMENT

A. General Requirements:

1. The system furnished shall be complete with all air terminals, fittings, clamps, supports, roof conductors, down conductors, and horizontal grounds required. The system shall be interconnected with the building ground grid. All conductors, fittings, clamps, and air terminals furnished shall be of the highest quality.

2. System shall be an exposed conductor system. Care shall be taken that the materials used will not discolor roofs or walls. Down conductors shall be protected to 10 feet above grade and shall be located so that visual impact will be minimal.

3. No combination of materials shall be used that form an electrolytic couple of such nature that corrosion is accelerated in the presence of moisture unless moisture is permanently excluded from the junction of such metals. Where unusual conditions exist which would cause corrosion of conductors, conductors with protective coatings or oversize conductors shall be used. Where a mechanical hazard is involved, the conductor size shall be increased to compensate for the hazard or the conductors shall be protected by covering them with molding or tubing made of wood or non-magnetic material.

B. Aluminum conductors shall not be less than #6 AWG for main conductor and #8 for secondary conductor. Below grade conductors shall be #2/0 bare copper.

C. Air Terminals: Air terminals shall be OSHA impalement protected, 3/8 inch diameter stainless steel and a minimum 24 inches in length. Air terminals over 24 inches shall be supported.

D. Ground Rods: Ground rods shall be 3/4 inch by 10 feet copper-clad steel, with the top of the rod, 12 inches below grade minimum and a minimum of 2 feet from building foundation and footings.

E. Clamp-Type Connectors: Clamp-type connectors shall be of aluminum, bronze, or stainless steel. Clamps shall be secured with at least two (2) bolts or cap screws.

F. Metal Bodies: Metal bodies of conductance shall be bonded to the system if not within the zone of protection on an air terminal. Metal bodies of inductance shall be bonded to the system at their closest point to the system if within 6 feet of the system at their closest point to the system if within 6 feet of the system main conductor or other bonded metal body. The main lightning conductor shall be bonded to the main potable service water pipe.

PART 3 - EXECUTION

3.01 INSTALLATION

A. General Requirements: The lightning protection system shall consist of air terminals, roof conductors, down conductors, ground connections, and grounds, electrically interconnected to form the shortest distance to ground without passing through any non-conducting parts of the structure. All conductors on the structures shall be exposed except where conductors are in protective sleeves exposed on the outside walls. Exposed down-conductors shall not be allowed on the outside face of any building. Secondary conductors shall interconnect with grounded metallic parts within the building. Interconnections made within side-flash distances shall be at or above the level of the grounded metallic parts.

B. Air Terminals: Air terminal design and support shall be in accordance with NFPA 78. Terminals shall be rigidly connected to, and made electrically continuous with, roof conductors by means of pressure connectors or crimped joints with of T-shaped malleable metal and connected to the air terminal by a dowel or threaded fitting. Air terminals at the ends of the structure shall be set not more than 2 feet from the ends of the ridge or edges and corners of roofs. Spacing of air terminals 2 feet in height on ridges, parapets and around the perimeter of buildings with flat roofs shall not exceed 25 feet. In specific instances where it is necessary to exceed this spacing, the specified height of air terminals shall be increased not less than 2 inches for each foot of increase over 25 feet. On large, flat or gently sloping roofs, as defined in NFPA 78, air terminals shall be placed at points of the intersection of imaginary lines dividing the surface into rectangles having sides not exceeding 50 feet in length. Air terminals shall be secured against overturning either by attachment to the object to be protected or by means of a substantial tripod or other braces permanently and rigidly attached to the building or structure. Metal projections and metal parts of buildings,

smokestacks, and other metal objects that do not contain hazardous materials and that may be struck but not appreciably damaged by lightning, need not be provided with air terminals. However, these metal objects shall be bonded to the lightning conductor through a metal conductor of the same unit weight per length as the main conductor. Where metal ventilators are installed, air terminals shall be mounted thereon, where practicable. Any air terminal erected by necessity adjacent to a metal ventilator shall be bonded to the ventilator near the top and bottom thereof. Where nonmetallic spires, steeples, or ventilators are present, air terminals shall be mounted thereon or to the side. In addition, where spires or steeples project more than 10 feet above the building, the conductor between the air terminal and metal roof shall be continued to the nearest down conductor and securely connected thereto. Provide impalement protected air terminals as approved by OSHA.

C. Roof Conductors: Roof conductors shall be connected directly to the roof or ridge roll. Sharp bends or turns in conductors shall be avoided. Necessary turns shall have a radius of not less than 8 inches. Conductors shall preserve a downward or horizontal course and shall be rigidly fastened every 4 feet along the roof and down the building to ground. Metal ventilators shall be rigidly connected to the roof conductor at three places. All connections shall be electrically continuous. Roof conductors shall be coursed along the contours of flat roofs, ridges, parapets, and edges; and where necessary, over flat surfaces, in such a way as to join each air terminal to all the rest. Roof conductors surrounding tank tops, decks, flat surfaces, and flat roofs shall be connected to form a closed loop.

D. Down Conductors: Down conductors shall be electrically continuous from air terminals and roof conductors to grounding electrodes. Down conductors shall be coursed over extreme outer portions of the building, such as corners, with consideration given to the location of ground connections and air terminals. Each building or structure shall have not less than two (2) down conductors located as widely separated as practicable, at diagonally opposite corners. On irregularly shaped structures, the total number of down conductors shall be sufficient to make the average distance between them along the perimeter not greater than 100 feet. Additional down conductors shall be installed when necessary to avoid "dead ends" or branch conductors exceeding 16 feet in length, ending at air terminals. Down conductors shall be equally and symmetrically spaced about the perimeter of the structure. Down conductors shall be protected where necessary, to prevent mechanical injury to the conductor.

E. Interconnection of Metallic Parts: Metal doors, windows, and gutters shall be connected directly to the grounds or down conductors using not smaller than No. 6 copper conductor, or equivalent. Conductors placed where there is probability of unusual wear, mechanical injury, or corrosion shall be of greater electrical capacity than would normally be used, or shall be protected. The ground connection to metal doors and windows shall be by means of mechanical ties under pressure, or equivalent.

F. Ground Connections: Ground connections Comprising continuations of down conductors form the structure to the grounding electrode shall securely connect the down conductor and ground in a manner to ensure electrical continuity between the two. All connections shall be of the clamp type. There shall be a ground connection for each down conductor. Metal water pipes and other large underground metallic objects shall be bonded together with all grounding mediums. Ground connections shall be protected from mechanical injury. In making ground connections, advantage shall be taken of all permanently moist places where practicable, although such places shall be avoided if the area is wet with wastewater that contains chemical substances, especially those corrosive to metal.

G. Grounding Electrodes: A grounding electrode shall be provided for each down conductor located as shown. A driven ground shall extend into the earth for a distance of not less than 10 feet. Ground rods shall be set not less than 2 feet, nor more than 10 feet, from the structure. The complete installation shall have a total resistance to ground of not more than 10 ohms (if a counterpoise is not used). When two of any three ground rods, driven not less than 10 feet into the perimeter, give a combined value exceeding 50 ohms immediately after driving, a counterpoise shall be used. A counterpoise, where required, shall be of No. 2/0 copper cable or equivalent material having suitable resistance to corrosion and shall be laid around the perimeter of the structure in a trench not less than 2 feet deep at a distance not less than 2 feet nor more than 10 feet from the nearest point of the structure. All connections between ground connectors and grounds or counterpoise, and between counterpoise and grounds shall be electrically continuous. Where so indicated on the drawings, an alternate method for grounding electrodes in shallow soil shall be provided by digging trenches radially from the building. The lower ends of the down conductors (or their equivalent in the form of metal strips or wires) are then buried in the trenches.

H. Interconnection of Metal Bodies: Metal bodies of conductance shall be protected if not within the zone of protection of an air terminal. All metal bodies of conductance having an area of 400 square inches or greater or a volume of 1000 cubic inches or greater shall be bonded to the lightning protection system using main size conductors and a bonding plate having a surface contact area of not less than 3 square inches. Provisions shall be made to guard against the corrosive effect of bonding dissimilar metals. Metal bodies of inductance shall be bonded at their closest point to the lighting protection system using secondary bonding conductors and fittings. A metal body that exceeds 5 feet in any dimension, that is situated wholly within a building, and that does not at any point come within 6 feet of a lightning conductor or metal connected thereto shall be independently grounded.

3.02 TESTING

A. System shall be installed so that tests of the grounds may be performed upon completion of the installation of the system and in the future.

B. As soon as practicable after award of contract, the Contractor shall submit for approval complete details of the system including a layout drawing so that the system furnished can be coordinated in the refurbishing of the building.

END OF SECTION

SECTION 16915

REMOTE TELEMETRY

PART 1 - GENERAL

1.01 DESCRIPTION

A. Scope of Work:

1. Furnish all labor, materials, equipment, and incidentals required for a complete telemetry system as hereinafter specified and shown on the Drawings, whether specifically shown or called for.

2. The work, apparatus and materials which shall be furnished under these Specifications and accompanying Drawings shall include all items listed hereinafter an/or shown on the Drawings. All materials necessary for the complete installation shall be furnished and installed by the Contractor to provide complete power, generator, lighting systems, instrumentation, wiring and control systems as indicated on the Drawings and/or as specified herein whether specifically shown or called for. Certain equipment will be furnished as specified in other Section of this specification which will require conduit and wire to complete the installation as required.

3. The Contractor shall furnish and install the necessary cables, protective devices (surge protection), conductors, exterior electrical system, etc., as indicated on the Drawings and/or as specified hereinafter.

4. The work shall include complete testing of all equipment and wiring at the completion of the work and making any minor connection changes or adjustments necessary for the proper functioning of the system and equipment. All workmanship shall be of the highest quality; substandard work will be rejected.

1.02 SUBMITTALS

A. Material and Shop Drawings:

1. Prior to submittal by the Contractor, all shop drawings shall be checked for accuracy and contract requirements. Shop drawings shall bear the date checked and shall be accompanied by a statement that the shop drawings have been examined for conformity to Specifications and Drawings. This statement shall also list all discrepancies with the Specifications and Drawings. Shop drawings not so checked and noted shall be returned.

5. The Engineer's check shall be only for conformance with the design concept of the project and compliance with the Specifications and Drawings. The responsibility of, or the necessity of, furnishing materials and workmanship

required by the Specifications and Drawings which may not be indicated on the shop drawings is included under the work of this Section.

6. The responsibility for all dimensions to be confirmed and correlated at the job site and for coordination of this work with the work of all other trades is also included under the work of this Section.

7. No material shall be ordered, or shop work started until the Engineer's approval of shop drawings has been given.

B. Manufacturer's Services

1. Provide manufacturer two (2) days services for testing and start-up of the following equipment:

a. MCS-RTU

PART 2 - PRODUCTS

2.01 MATERIALS AND EQUIPMENT

A. The materials used in all systems shall be new, unused, and as hereinafter specified. All materials where not specified shall be of the absolute best of their respective kinds. Samples of materials or manufacturer's specifications shall be submitted for approval as required by the Engineer.

B. Materials and equipment used shall be Underwriters Laboratories, Inc., listed.

C. Electrical equipment shall, at all times during construction, be adequately protected against mechanical injury or damage by water. Electrical equipment shall not be stored out-of-doors. Electrical equipment shall be stored in dry permanent shelters. If any apparatus has been damaged, such damage shall be repaired by the Contractor at his own cost and expense. If any apparatus has been subject to injury by water, it shall be thoroughly dried out and put through such special tests as directed by the Engineer, at the cost and expense of the Contractor, or shall be replaced by the Contractor at his own expense.

D. RTU:

1. Digital inputs: 8 onboard digital inputs (dry) with selectable wire fault supervision, or direct attach current sensing switch (for easiest pump run indication); expandable to 16 with expansion modules; 3 configurable for pump run summary reporting (number of starts and run time each hour); simultaneous runtimes reported when 2 pumps are monitored.
2. Analog inputs: two onboard, 4–20 mA isolated or 0–5 VDC; four alarm set points each; expandable to 6 with expansion module.
3. Relay outputs: three remotely and locally controllable, form C, dry contact relay outputs, 5 A at 30 VDC, 120 VAC, SPDT, N/O or N/C.
4. AC power: supervised 120 VAC to 12 VAC, 1.2 A, UL-recognized class II/class III transformer.

5. Environment: operating temperature -20—75°C, non-condensing.
6. Antenna: omnidirectional antenna with 11' cable, SMA termination, universal mounting bracket.
7. Cellular radio: radios make live, continuous, encrypted TCP socket connections; payload is end-to-end acknowledged; Penta band (850, 900, 1700, 1900, 2100 mHz); AT&T and partners—LTE, HSPA+ 3G; Verizon and partners—LTE, EVDO, 1XRTT, dual SIM carrier capable.
8. Manufacturer:
   a. Mission Communications MyDro 850 with expansion modules.

E. Enclosure shall be free standing, 48x48x8 (min) with legs, NEMA 12 with aluminum backplate and print pocket, 3-point latch door.

F. Interposing relays shall be provided for all field wiring I/O to the RTU. Allen-Bradly or Sq-D. shall manufacture relays

G. All field wiring shall include surge protector by Phoenix Contact. Incoming power shall include a circuit breaker and surge protection. All 4-20mA signals shall include signal isolators.

H. RTU panel shall be UL rated for 5 k SCCR. All wire shall be copper, identified at each end. Terminal blocks by Phoenix Contact.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Prior to installation, Contractor complete and submit the RTU Setup Forms associated with the units to be installed to setupforms@123mc.com. The Contractor shall additionally receive the Account Setup Form and Notification Setup Form, which shall be submitted before installing RTUs.

B. The following field signals shall be configured for monitoring including spares:

1. CL2 Residual
2. Turbidity
3. ATS in Emergency
4. Generator Running
5. Master Lift Station High Level
6. Master LS#1 Run
7. Master LS#2 pump run
8. Effluent Pump Station High Level
9. Plant in Reject Mode
10. Plant in Normal Mode
11. Aeration #1 Dissolved Oxygen
12. Aeration #2 Dissolved Oxygen
13. Return Sludge Flow #1
14. Return Sludge Flow #2
15. Influent Flow
16. Effluent Flow

17. Bar Screen Trouble
18. Bar Screen Run
19. Blower #1 Run
20. Blower #2 Run
21. Blower #3 Run
22. Blower #4 Run
23. Eq Pump #1 Run
24. Eq Pump #2 Run
25. Eq. High Level
26. Anoxic Mixer #1 Run
27. Anoxic Mixer #2 Run
28. Nutrient Return Pump #1 Run
29. Nutrient Return Pump #2 Run
30. Clarifier #1 Run
31. Clarifier #2 Run
32. Post Anoxic Mixer #1 Run
33. Post Anoxic Mixer #2 Run
34. RAS Pump #1 Run
35. RAS Pump #2 Run
36. Filter Feed Pump #1 Run
37. Filter Feed Pump #2 Run
38. Filter BW Pump #1 Run
39. Filter BW Pump #2 Run
40. Filter Feed Trouble
41. Filter BW Trouble
42. Filters Trouble
43. Chorine Contact High Level
44. Eight (8) Spare AI
45. Twelve (12) Spare DI

3.02 INSPECTION AND TESTING

A. Evaluate and test all systems and repair or replace all defective work. Make all necessary adjustments to the systems and instruct the Owner's personnel in the proper operation of the systems.

END OF SECTION

SECTION 16921

480-VOLT MOTOR CONTROL CENTERS

PART 1 - GENERAL

1.01 DESCRIPTION

A. Scope of Work:

1. Furnish, install and test the motor control centers as hereinafter specified and as shown on the Drawings.

1.02 QUALITY ASSURANCE

A. Standards:

1. The motor control centers shall be the product of a manufacturer who shall also be the manufacturer of all the circuit breakers, fused switches and motor starters included in the motor control centers.

2. All units and sections shall be U.L. labeled when possible. Motor control centers containing service entrance equipment shall be U.L. labeled "Suitable For Use As Service Equipment".

3. Motor control centers shall be built and tested in accordance with:

a. National Electrical Manufacturers (NEMA).

b. American National Standards Institute (ANSI).

c. Underwriters Laboratories, Inc. (U.L.).

B. Equipment Manufacturer:

1. The motor control centers shall be Model 6 as manufactured by the Square D. Co., Cutler/Hammer, or General Electric.

1.03 SUBMITTALS

A. Complete master wiring diagrams and elementary or control schematics, including coordination with other electrical control devices operating in conjunction with the motor control centers and suitable outline drawings shall be furnished for approval before proceeding with manufacture. Due to the complexity of the control functions, it is imperative the above drawings be clear and carefully prepared to facilitate interconnections with other equipment. Standard preprinted sheets or drawings simply marked to indicate applicability to this Contract will not be acceptable.

B. Submittals shall include a bill-of-material listing conductor material and insulation type as well as other hardware and equipment to be furnished.

C. Where it is not explicitly shown and completely obvious from the outline drawings, the following items shall be verified in a written statement accompanying the shop drawings:

1. Type of terminal blocks used and that the removal of plug-in compartments can be performed without disconnecting or removing wires.

2. Tin plating of bus.

3. Insulation and isolation of vertical bus.

4. U.L. approval.

PART 2 - PRODUCTS

2.01 RATING

A. The motor control centers shall be designed for 480 volt, 3 phase, 3 wire, 60 Hz service and shall have short-circuit rating of not less than 42,000 amperes RMS, symmetrical.

2.02 CONSTRUCTION

A. Structure:

1. The motor control centers shall be a standard metal-enclosed, free-standing, deadfront structure, not more than 90-inches in height, and fabricated from formed sheet steel of not less than No. 14 gauge thickness. The enclosure shall be NEMA 1. The motor control centers shall consist of vertical sections of equal height and 20 inches deep containing individual plug-in compartments. Compartments shall be isolated from each other by separate horizontal steel plates or by steel plates without openings that are a part of the compartment itself.

2. Plug-in compartments shall totally isolate enclosed equipment. All unused openings to the adjacent vertical wiring space shall be plugged. All openings used for wiring shall have insulating grommets.

3. Vertical sections shall be mounted on steel channel sills continuous on four sides, or with steel channel sills on two sides and end cover plates. Each compartment shall be provided with a hinged door of pan construction on the front and a door opening of sufficient size to permit ready removal of any of the equipment in the compartment. Interlocks shall be provided to prevent opening the compartment door when the disconnect device in the compartment is in the closed position. An interlock bypass device shall be furnished. Means of locking the disconnect device in the "Off" position shall be provided. Disconnect device operating mechanism shall not be attached to the compartment door.

4. All sections shall have the same structural features with provisions for the addition of similar sections at either end. Each compartment shall meet NEMA Standards for the control equipment installed and units of similar size shall be interchangeable.

5. Each section shall be provided with a horizontal wiring space which shall line up with a similar space in the adjacent section or sections, with openings between so that wires may be pulled the entire length of the control centers. There shall also be provided in each section a vertical wiring space with separate full height door.

6. The motor control centers shall be designed for against-the-wall mounting. All wiring, bus joints and other mechanical parts requiring tightening or other maintenance shall be accessible from the front or top.

7. The motor control centers shall have engraved laminated nameplates screwed to the doors of each individual compartment and wiring diagrams pasted inside each door. Compartments containing motor starters shall each have an overload heater selection table pasted inside the door.

8. The motor control centers shall provide equipment of type, capacity, trip ratings for the loads shown on the Drawings or otherwise specified.

9. Construction shall be NEMA Class 11, Type B or C. Insofar as possible, all devices and components used shall be of one manufacturer. The motor control centers shall be furnished as a completely factory assembled unit where transportation facilities and installation requirements permit.

10. The motor control centers shall be finished with ANSI Z55.1, No. 61 light gray enamel over a rust resistant primer.

11. The insulation level of the complete motor control assembly shall be such that it will meet the field tests required under Paragraph 3.92.

B. Buses:

1. All buses shall be tin-plated copper. A continuous main horizontal bus shall be furnished. Main buses shall be rated as shown on the Drawings, but shall be not less than 600 amperes.

2. Each vertical section shall have a full height vertical bus rated not less than 300 amperes. Vertical buses shall be insulated and isolated with glass polyester or equivalent continuous insulation. Taped buses will not be acceptable. Unused stab openings shall be plugged. Lower ends of vertical buses shall be insulated.

3. A 1/4 inch x 2 inch ground bus shall be furnished the entire length of the motor control centers.

4. Buses shall be braced for 65,000 amperes RMS, symmetrical, short circuit current.

5. All buses except neutral and ground buses shall be completely isolated by steel plates or insulating material.

C. Wiring

1. All wiring shall be copper.

2. Compartment wiring shall be to compartment mounted, plug-in terminal blocks that allow compartment to be withdrawn without having to remove wires from fixed terminal blocks.

3. Power wiring shall be black. Control wiring shall be red. Wiring energized from sources other than the starter control power transformer shall be yellow. All wiring shall be identified at each termination.

D. Signage:

1. Each motor control center shall be furnished with a sign marked "DANGER - HIGH VOLTAGE". Letters shall be not less than l-inch high, 114 inch stroke. Signs shall be laminated plastic, engraved red letters with a white background. Signs shall include voltage (i.e. 480v, 120v, etc..) and be fastened to with stainless steel screws and epoxy cement.

2. All compartments with voltages from sources outside of the compartment, not disconnected by the motor circuit protector, shall have a sign on the compartment door marked "CAUTION - THIS UNIT CONTAINS A VOLTAGE FROM A SOURCE OUTSIDE OF THIS UNIT". Letters shall be black on a high visibility yellow background. Background shall be laminated plastic approximately 3 inches x 5 inches.

2.03 COMPONENTS

A. Combination Motor Starters:

1. All motor starters shall be a combination motor circuit protector and contactor, 3-pole, 60 Hz, 600-volt, magnetically operated, of the types shown on the Drawings. NEMA sizes shall be as required for the horsepower shown on the Drawings, but shall be not less than NEMA Size 1.

2. All motor starters shall have a 120-volt operating coil, overload relay in each phase and control power transformer.

3. All motor starters shall have 1-N.O. and 1-N.C. auxiliary contacts. Additional auxiliary contacts shall be furnished where shown on the Drawings or as required by the control scheme.

4. Full voltage, non-reversing starters, NEMA Size 4 and smaller shall be of plug-in type design with stab-on connectors engaging the vertical buses. Larger units shall be of fixed design.

5. Reduced-voltage starters shall be solid state type with isolation contactor and surge protection.

   A. Construction

      1. The power section shall be three phase, 60 hertz, and rated for the HP, current, and voltage as shown on the drawings. It shall consist of three sets of back-to-back phase-controlled power semi-conductors. Maximum current-limit shall be 500% for standard units.

      2. Resistor/Capacitor snubber networks shall be used to prevent false firing of SCR's due to dv/dt characteristics of the electrical system.

      3. Fan cooled units shall be supplied with thermal sensors on the heat sink to trip the control protective logic for over temperature condition. Thermal sensors shall be rated 90 degree C maximum.

      4. The one piece logic board shall be mounted for easy testing, service and replacement.

      5. Three-phase current sensing via current transformers for closed loop control to insure motor stability shall be provided.

      6. A contactor shall be placed on the line side of the starter to automatically isolate the solid state starter from the line when starter is not energized.

   B. The logic circuitry shall include as a minimum:

      1. Short circuit electronic trip overcurrent protection. Time not to exceed 1/2 cycle.

      2. Inverse time running overcurrent protection.

      3. Auxiliary trip circuitry.

      4. Gate firing circuit lockout protection on trip.

      5. Fault relay lockout protection.

      6. 250% - 500% current limit adjustment

      7. Minimum and maximum voltage adjustments.

      8. Voltage stability adjustment.

      9. Adjustable ramp time (0.5 to 30 seconds)

10. HAND-OFF-REMOTE selector wwitch

C. The logic board shall include, as standard, current and voltage sensing circuitry that continually monitor motor load and regulate motor voltage to minimize motor kWh energy consumption.

D. External interface circuitry shall include 120 volt relay logic interface capability.

E. Tripped functions shall be designed to be cleared by removing power from the solid state logic board.

F. The solid state logic shall provide phase sequence protection.

G. Two ground lugs shall be furnished, one for incoming and one for outgoing ground connections.

H. Power terminations shall consist of pressure type terminals for top or bottom entrance.

I. Testing

1. The manufacturer shall supply certified test results, upon request, to confirm that the controller has been tested to substantiate designs according to applicable ANSI and NEMA Standards. The tests shall verify not only the performance of the unit and integrated assembly, but also the suitability of the enclosure venting, rigidity and bus bracing. In addition, the unit shall be factory tested in accordance with ANSI standards.

2. Manufacturer shall be prepared to show proper evidence of having tested for noise immunity on both input and output power connections. Noise testing shall be performed in accordance with NEMA ICA 2-230.40.

5. Reduced-voltage starters shall be auto-transformer type with closed circuit transition. Auto-transformers shall be dry type with 50, 65 and 80 percent voltage taps. Auto-transformers shall have over-temperature protection. Timing relays shall be pneumatic, adjustable.

6. Overload relays shall be adjustable and manually reset by push button in compartment door. Replaceable individual overload relay heaters of the proper size shall be installed in each phase.

7. Control power transformers shall be sized for additional load where required. Transformer secondary shall be equipped with time-delay fuses.

8. Motor circuit protectors shall be molded case with adjustable magnetic trip only. They shall be specifically designed for use with magnetic motor starters. Motor

circuit protectors shall have auxiliary disconnect contacts when used with starters having external control circuits.

B. Circuit Breakers:

1. Circuit breakers shall be thermal-magnetic, molded case, 480 volt, with not less than 65,000 amperes, RMS interrupting capacity. All circuit breakers with 225 amperes frames and larger shall have interchangeable trips. Circuit breakers shall have auxiliary disconnect contacts when used with starters having external control circuits.

C. Control Stations:

1. Control stations shall be standard size, heavy-duty, oiltight.

D. Indicating Lights:

1. Indicating lights shall be standard size, heavy duty, low voltage transformer operated as manufactured by Square-D type SK-Class 9001 or equal.

E. Running Time Meters:

1. Running time meters shall be 3-1/2 inch square case; non-reset, 99,999.9 hour range; Type 236 as manufactured by the General Electric Co., or equal.

1. Voltmeters, amp meters, and wattmeter’s shall be 4-1/4-inch square, 250-degree scale, plus or minus l-percent accuracy switchboard instruments; General Electric Co.'s Type AB-40, or equal.

2. A four-position selector switch shall be furnished and installed for selection of three phases and off.

G. Instrument Transformers:

1. Instrument transformers shall be indoor, 600-volt, butyl-rubber molded, metering class designed in accordance with ANSI and NEMA standards.

H. Surge Protection:

1. Surge protection equipment shall be a three-phase surge capacitor and three-phase lightning arrester. The lightning arrestor shall be General Electric Company's M.O.V. type, Catalog No. 9L15ECC001, or equal. Surge capacitor shall be General Electric Company Catalog No. 9L18BBB301, or equal.

2. Control Relays:

3. Control relays shall be heavy-duty, machine tool type with suitable rated convertible contacts. Time delay relays shall be pneumatic, adjustable.

4. Relays shall be CR2810 and CR2920 as manufactured by General Electric Co., or equal.

I. Nameplates:

1. Unit nameplates shall be black and white laminated plastic having engraved letters approximately 3/16-inch high extending through the black face into the white layer. Nameplates shall identify equipment controlled or circuit designation as applicable.

2.04 SPARE PARTS

A. The following spare parts shall be furnished:

1. One (1) box of power fuses of each size furnished.

2. One (1) set of starter contacts for each NEMA size installed.

3. One (1) starter coil for each NEMA size installed.

4. One (1) box of pilot lights.

PART 3 - EXECUTION

3.01 INSTALLATION

A. The motor control center housings shall be bolted to angle iron sills imbedded in the concrete on the two longest sides. The sills shall be the full length of the motor control center housing and shall be installed level in all directions.

B. Field installed interior wiring shall be neatly grouped by circuit and bound by plastic tie wraps. Circuit groups shall be supported such that circuit termination are not stresses.

C. The motor control centers shall be maintained in an upright position at all times. Lifting shall be only at the floor sills or the top mounted lifting angle.

D. The motor control centers shall be protected against damage at all times. Any damage to the paint shall be carefully repaired using touch-up paint furnished by motor control centers manufacturer.

3.02 TESTS AND CHECKS

A. The following minimum tests and checks shall be made after the assembly of the motor control centers, but prior to the termination of any field wiring.

1. Megger terminals and buses after disconnecting devices sensitive to megger voltage.

2. A 1,000 VDC megger shall be used for these tests.

3. The first test shall be made with main circuit breaker closed and all remaining breakers open. A second test shall be made with all circuit breakers closed.

4. The test results shall be recorded and forwarded to the Engineer for his review. Minimum megger readings shall be 100 megohms in both tests.

5. Test failures will be the Contractors responsibility to correct at no charge to the Owner.

B. The following shall be done before energizing the motor control centers:

1. Remove all current transformer shunts after completing the secondary circuit.

2. Install overload relay heaters based on actual motor nameplate current. If capacitors are installed between starter and motor, use overload relay heaters based on measured motor current.

3. Check all mechanical interlocks for proper operation.

4. Vacuum clean all interior equipment.

END OF SECTION

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SECTION 313116

TERMITE CONTROL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Soil treatment.

B. Related Requirements:

1. Section 061000 "Rough Carpentry" for wood preservative treatment by pressure process.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include construction details, material descriptions, dimensions of individual components, and profiles for termite control products.
2. Include the EPA-Registered Label for termiticide products.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For qualified Installer.

B. Product Certificates: For each type of termite control product.

C. Soil Treatment Application Report: After application of termiticide is completed, submit report for Owner's records and include the following:

1. Date and time of application.
2. Moisture content of soil before application.
3. Termiticide brand name and manufacturer.
4. Quantity of undiluted termiticide used.
5. Dilutions, methods, volumes used, and rates of application.
6. Areas of application.
7. Water source for application.

D. Sample Warranties: For special warranties.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: A specialist who is licensed according to regulations of authorities having jurisdiction to apply termite control treatment and products in jurisdiction where Project is located and who is accredited by manufacturer.

1.7 FIELD CONDITIONS

A. Soil Treatment:

1. Environmental Limitations: To ensure penetration, do not treat soil that is water saturated or frozen. Do not treat soil while precipitation is occurring. Comply with requirements of the EPA-Registered Label and requirements of authorities having jurisdiction.
2. Related Work: Coordinate soil treatment application with excavating, filling, grading, and concreting operations. Treat soil under footings, grade beams, and ground-supported slabs before construction.

1.8 WARRANTY

A. Soil Treatment Special Warranty: Manufacturer's standard form, signed by Applicator and Contractor, certifying that termite control work consisting of applied soil termiticide treatment will prevent infestation of subterranean termites, including Formosan termites (Coptotermes formosanus). If subterranean termite activity or damage is discovered during warranty period, re-treat soil and repair or replace damage caused by termite infestation.

1. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 SOURCE LIMITATIONS

A. Obtain termite control products from single source from single manufacturer.

2.2 SOIL TREATMENT

A. Termiticide: EPA-Registered termiticide acceptable to authorities having jurisdiction, in an aqueous solution formulated to prevent termite infestation.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

   a. Bayer Environmental Science
   b. Ensystex, Inc
   c. Master Builders Solutions; brand of MBCC Group
   d. Syngenta Crop Protection, LLC

2. Service Life of Treatment: Soil treatment termiticide that is effective for not less than five years against infestation of subterranean termites.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Applicator present, for compliance with requirements for moisture content of soil per termiticide label, interfaces with earthwork, slab and foundation work, landscaping, utility installation, and other conditions affecting performance of termite control.

B. Proceed with application only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. General: Prepare work areas according to the requirements of authorities having jurisdiction and according to manufacturer's written instructions before beginning application and installation of termite control treatment(s). Remove extraneous sources of wood cellulose and other edible materials, such as wood debris, tree stumps and roots, stakes, formwork, and construction waste wood from soil within and around foundations.

B. Soil Treatment Preparation: Remove foreign matter and impermeable soil materials that could decrease treatment effectiveness on areas to be treated. Loosen, rake, and level soil to be treated, except previously compacted areas under slabs and footings. Termiticides may be applied before placing compacted fill under slabs if recommended in writing by termiticide manufacturer.

1. Fit filling hose connected to water source at the site with a backflow preventer, according to requirements of authorities having jurisdiction.

3.3 APPLYING SOIL TREATMENT

A. Application: Mix soil treatment termiticide solution to a uniform consistency. Distribute treatment uniformly. Apply treatment at the product's EPA-Registered Label volume and rate for maximum specified concentration of termiticide to the following so that a continuous horizontal and vertical termiticidal barrier or treated zone is established around and under building construction.

1. Slabs-on-Grade Slabs: Under ground-supported slab construction, including footings, building slabs, and attached slabs as an overall treatment. Treat soil materials before concrete footings and slabs are placed.
2. Foundations: Soil adjacent to and along the entire inside perimeter of foundation walls; along both sides of interior partition walls; around electric conduit penetrating the slab; and along the entire outside perimeter, from grade to bottom of footing.
3. Masonry: Treat voids.
4. Penetrations: At expansion joints, control joints, and areas where slabs and below-grade walls will be penetrated.

B. Post warning signs in areas of application.

C. Reapply soil treatment solution to areas disturbed by subsequent excavation, grading, landscaping, or other construction activities following application.

3.4 PROTECTION

A. Avoid disturbance of treated soil after application. Keep off treated areas until completely dry.

B. Protect termiticide solution dispersed in treated soils and fills from being diluted by exposure to water spillage or weather until ground-supported slabs are installed. Use waterproof barrier according to EPA-Registered Label instructions.

3.5 MAINTENANCE SERVICE

A. Maintenance Service: Beginning at Substantial Completion, maintenance service shall include 12 months' full maintenance by skilled employees of termite-control-treatment Installer. Include annual maintenance as required for proper performance according to the product's EPA-Registered Label and manufacturer's written instructions. Parts and supplies shall be manufacturer's authorized replacement parts and supplies.

B. Continuing Maintenance Proposal: Provide from termite-control-treatment Installer to Owner, in the form of a standard yearly (or other period) maintenance agreement, starting on date initial maintenance service is concluded. State services, obligations, conditions, and terms for agreement period and for future renewal options.

1. Include annual inspection for termite activity and effectiveness of termite treatment according to manufacturer's written instructions.

END OF SECTION

APPENDIX A

GEOTECHNICAL DATA

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END OF SECTION

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APPENDIX “A”

Project Number: 07572857
June 2, 2023

Professional Service Industries, Inc.
1748 33rd Street, Orlando, FL 32839
Phone: (407) 304-5560
Fax: (407) 304-5561

Mr. Robbie Gonzalez, P.E.
Senior Project Manager
CPH, Inc.
1117 East Robinson Street
Orlando, Florida 32801

Re: Report
Geotechnical Engineering Services
Ocoee Wastewater Treatment Plant Improvements
1800 A D Mims Road
Ocoee, Orange County, Florida.

Dear Mr. Gonzalez:

In accordance with your authorization of PSI Proposal No. 0757-357521, **Professional Service Industries, Inc. (PSI), an Intertek company,** has completed a subsurface exploration program at the site of the referenced project. The subsurface exploration was conducted to provide geotechnical engineering recommendations for site preparation and foundation design for the new proposed improvements.

PROJECT INFORMATION

The project site is located within the Ocoee Wastewater Treatment Plant (WWTP) in Ocoee, Orange County, Florida. The site of the proposed improvements is bordered by an existing building and pavement areas to the northeast and existing wastewater treatment systems (above ground storage tanks, treatment tanks, etc.) to the east, south and west. Based on a review of aerial images available through Google Earth Pro, the site is vacant with the ground cover comprising grass and asphalt pavement. Planned improvements for this facility include one new electrical building, a generator pad, transformer pad and swale area. The generator pad will have an approximate plan area of 255± square feet. The electrical building will have a plan area of approximately 792± square feet. The transformer pad will have a plan area of approximately 36± square feet.

PSI was provided with an *Electrical Room Site Plan* (dated June 21, 2022). Based on the information provided, we assume the generator and transformer pads will be designed as structural slab on grade systems. For the new electrical building, we expect it to be relatively light with maximum column and wall foundation loads of less than 50 kips and 3 to 5 kips per linear foot, respectively. We anticipate the building will be supported on conventional shallow footings or a post-tensioned slab.

The listed information/assumptions have been used for the purpose of preparing this report. Adjustments to our recommendations may be necessary if the planned development differs from the noted information/ assumptions.

REVIEW OF PUBLISHED DATA

USGS Topographic Map

The topographic survey map published by the USGS entitled "Orlando, Florida" was reviewed for ground surface features in the area of the proposed development. Based on this review, the natural ground surface elevation is on the order of +130 to +140 feet National Geodetic Vertical Datum (NGVD) of 1929.

SCS Soil Survey

The "Soil Survey of Orange County, Florida," published by the USDA SCS, was reviewed for general near-surface soil information within the project vicinity. The SCS indicates two soil mapping units in the project area. The typical characteristics of the mapped soil units provided by the SCS are summarized in the following table.

Soil Series	Depth (inches)	Unified Soil Classification	USDA Seasonal High Groundwater Table
			Depth (feet)
5—Candler fine sand, 5 to 12 percent slopes	0 to 80	SP, SP-SM	>6.0
20—Immokalee fine sand	0 to 80	SP, SP-SM, SM	0 to 1.0

FIELD EXPLORATION

General

To evaluate subsurface conditions for the project, we performed and sampled three (3) Standard Penetration Test (SPT) borings within the area of the planned improvements. The SPT borings were drilled using rotary wash procedures and sampled following Standard Penetration Test (SPT) techniques in general accordance with ASTM D-1586. An automatic hammer was used to obtain the SPT samples. The upper 4 feet of the SPT borings were augered by hand to confirm utility clearance. Below 4 feet, sampling was performed continuously to 10 feet below the existing ground surface with the sampling frequency thereafter being at 5-foot intervals to boring termination. The SPT borings were advanced to a depth of 10 feet below existing grade in the proposed generator pad and stormwater swale area, and to 15 feet below existing grade in the footprint of the new electrical building. The SPT borings were drilled at the approximate locations shown on **Sheet 1** in the **Appendix.** Borings B-1 and B-3 had to be offset to the northwest and southwest respectively, due to the presence of dense underground utilities in the original requested locations.

The soil samples recovered from the borings were returned to our Orlando laboratory for visual stratification. Subsoils were visually stratified following the guidelines contained in the Unified Soil Classification System (USCS). Records of the materials encountered in the borings are presented as soil profiles on **Sheet 2** in the **Appendix**. **Sheet 2** includes a legend describing the subsoils in USCS format, laboratory test results and measured groundwater levels.

The stratification presented is based on visual observation of the recovered soil samples, laboratory testing and interpretation of field logs by a geotechnical engineer. It should be noted that variations in the subsurface conditions are expected and may be encountered between and away from the borings. Also, whereas the individual boring logs indicate distinct strata breaks, the actual transition between the soil layers may be more gradual than shown on the soil profiles.

Soil Conditions

Based on the borings PSI completed for the project, subsurface conditions at the site are relatively consistent in the depth interval explored. The borings encountered a varying sequence of fine sands grading relatively clean to slightly silty and silty in composition (i.e., SP, SP-SM and SM materials). Silty sands were encountered in the bottom 1.5 feet of boring B-1. Based on the SPT blow counts recorded during our field exploration, the sands generally appear to be in a loose to medium-dense condition. Detailed descriptions of the individual borings are shown as soil profiles on **Sheet 2** in the **Appendix.**

Groundwater Conditions

At the time of our field exploration (June 6, 2023), groundwater was encountered in the range 6.7 to 6.8 feet below existing grade. Groundwater levels will fluctuate seasonally in response to rainfall or lack thereof. Additionally, water levels will to some degree be influenced by drainage improvements and irrigation practices in any given area. The estimated normal seasonal high groundwater levels presented herein are based on the observed soil stratigraphy, conditions observed in the borings, USDA Soil Survey information, and our past experience in the project vicinity. In this regard, we estimate the normal seasonal high groundwater table (SHWT) will occur within 3.5feet of the existing grades.

In general, the normal seasonal high groundwater level is not intended to define a limit or ensure that future seasonal fluctuations in groundwater levels will not exceed the estimated levels. Groundwater conditions will vary with environmental changes and seasonal conditions, such as the frequency and magnitude of rainfall patterns, as well as man-made influences, such as swales, drainage ponds, underdrains and areas of covered soil (buildings, paved parking lots, sidewalks, etc.)

SITE SUITABILITY

Based on the results of PSI's borings, it is our opinion that the site is generally suitable for the proposed improvements from a geotechnical engineering perspective. Following completion of site preparation as recommended herein, shallow spread foundations or a post-tension slab can be used for support of the building. Such foundations can be designed for a net allowable bearing pressure of 2,500 pounds per square foot (psf). The generator and transformer pads can be designed as grade supported structural slabs.

More detailed recommendations regarding site preparation and foundation design for the project are provided in the following sections of this report.

SITE PREPARATION CONSIDERATIONS

General

The following recommendations have been developed on the basis of the previously described project characteristics and subsurface conditions encountered. If there is any change in the project criteria, including the location or orientation of the development, a review must be made by PSI to determine if additional fieldwork and/or any modifications to our recommendations will be required. Once final design plans and specifications are available, a general review by PSI is strongly recommended as a means to check that the evaluations made in preparation of this report are correct and that earthwork and foundation recommendations are properly interpreted and implemented.

Site Clearing/Stripping

Clearing and grubbing including root raking and removal of any organic-laden topsoil should be completed. This normally includes removing the surface vegetation, stripping topsoil, grubbing major root systems, and removing any miscellaneous debris and/or other deleterious materials. At a minimum, it is recommended that the clearing/stripping operations extend at least ten feet beyond the proposed pavement and structure perimeters, where possible. Material generated during stripping operations should be disposed of off-site in a proper manner as directed by the Owner or used in non-building and pavement areas. Initial site clearing and preparation work should be carried out under the observation of a representative of PSI's Geotechnical Engineer.

Fill Placement and Subgrade Preparation

Following the clearing operations, the exposed subgrade should be evaluated as directed by representatives of PSI to confirm that all unsuitable materials have been removed. Building and structural slab areas should then be proof rolled to provide a stable/unyielding subgrade prior to placing fill. Proof rolling should consist of compaction with a large diameter, vibratory drum roller. The roller should have a drum weight of at least ten tons. Proof rolling should consist of a minimum of ten overlapping coverages of the roller in a crisscross pattern with a maximum travel speed of 2 feet per second.

Compaction can be completed in vibratory or static mode in order to meet the minimum density requirements stated below. Based on experience, the roller should be operated in the static mode when within 75 feet of existing structures to reduce transmission of vibrations that could cause structure damage and disturb building occupants. Careful observations should be made during proof rolling to help identify any areas of soft/yielding soils that may require over-excavation and replacement filling.

For the building and structural slab areas, we recommend that the existing soils, to a minimum depth of one foot below stripped grade, be compacted to at least 95 percent of the material's modified Proctor (ASTM D-1557) maximum dry density. Following satisfactory completion of initial compaction of the stripped subgrade, the proposed development areas may be brought up to finished grades as required.

Engineered Fill

Fill for the project should consist of clean fine sand with less than 12 percent by dry weight passing the U.S. Standard No. 200 sieve and be free of rubble, organics, clay, debris and other deleterious material. Fill should be tested and approved prior to import and placement. Each lift should have a loose thickness not exceeding 12 inches. Density tests should be performed to confirm the required compaction is being achieved prior to placing the next lift.

Prior to beginning compaction, soil moisture conditioning may be required. Soil moisture contents should be controlled in order to facilitate proper compaction. A moisture content within two percentage points of the material's optimum indicated by the modified Proctor test (ASTM D-1557) is recommended prior to compaction of the natural ground and fill. All engineered fill should be compacted to at least 95 percent of the material's modified Proctor (ASTM D-1557) maximum dry density.

DESIGN RECOMMENDATIONS

Foundations

Based on the anticipated construction and recommended site preparation, shallow foundations can be used for building support. Such foundations may be designed for a net allowable bearing pressure of 2,500 pounds per square foot (psf). The foundations and floor slabs should bear on properly placed and compacted cohesionless (sand) fills or on compacted native soils. All footings should be embedded so that the bottom of the foundation is a minimum of 18 inches below adjacent finished grades on all sides. Strip, wall and turndown foundations should be a minimum of 18 inches wide, while column footings should be at least 30 inches square.

The subgrade soils should be compacted to a minimum density requirement of 95 percent of the material's modified Proctor (ASTM D-1557) maximum dry density for a minimum depth of two feet below the bottom of footings, as determined by field density compaction tests.

All foundation excavations should be observed by PSI's Geotechnical Engineer or his representative to explore the extent of any fill, excessively loose, soft, or otherwise undesirable materials. If soft or undesirable materials are encountered in the footing excavations, then such materials should be removed and the subgrade re-established by backfilling. This backfilling may be done with a well-compacted, suitable fill such as clean sand (Engineered Fill), gravel, or crushed FDOT No. 57 or FDOT No. 67 stone. Sand backfill should be compacted to at least 95 percent of the material's modified Proctor maximum dry density (ASTM D-1557), as previously described. Gravel/stone should be compacted to a firm/unyielding condition. Immediately prior to placement of reinforcing steel, it is suggested that the bearing surfaces of all footing and floor slab areas be re-compacted using hand operated mechanical tampers. In this manner, any localized areas that have been loosened by excavation operations should be adequately recompacted.

Provided the recommended subgrade preparation operations presented herein are properly performed, total foundation settlement should be on the order of one inch. Differential settlements should be approximately 50 percent of the total movements. These estimates are based on foundation loads being on the order of magnitude discussed herein. The settlement of shallow foundations supported primarily on sandy soils should occur relatively quickly after initial loading. Thus, the majority of expected settlement should occur during construction as dead loads are imposed.

Lateral loads that are applied to the foundations may be resisted by earth pressure mobilized on the buried vertical faces of the footings and by shearing forces acting along the footing-subgrade interface. Earth pressure resistance may be determined using an equivalent fluid density of 360 pounds per cubic foot for moist soil and 180 pounds per cubic foot for submerged soil below the water table. A friction factor of 0.4 should be used to determine base shearing resistance. The noted values are based on the assumption that the footings are surrounded by compacted sand fill.

To develop passive resistances, the foundations must be able to tolerate some lateral movement. We estimate lateral movements in the range of one-quarter to three-eighths of an inch to fully develop the passive resistance. In order to minimize the movement required to develop resistance, the pressure values presented above can be halved. A factor of safety of at least 1.5 is recommended for design.

Floor Slabs

Floor slabs can be safely supported as slab-on-grade systems provided the final subgrade elevation is densified and prepared as recommended herein. We further recommend that the upper one foot of the subgrade soils within the building pad be compacted to at least 95 percent of the maximum dry density of the soil's modified Proctor (ASTM D-1557).

We recommend the floor slab bearing soils be covered by lapped polyethylene sheeting in order to reduce the potential for floor dampness which can affect the performance of floor coverings. This membrane should consist of a minimum six mil thick, single layer of non-corroding, non-deteriorating sheeting material placed to minimize seams and to cover all of the soil below the building floor slabs. Seams should be overlapped a minimum of 12 inches.

For slab design, we recommend a subgrade modulus of 100 pounds per cubic inch (pci) for subgrade prepared as noted herein.

OTHER CONSIDERATIONS

Site Dewatering

If groundwater is encountered, excavations that are only a few feet below the water table can likely be dewatered with a sump pump. Deeper excavations will most likely require well-pointing or sock drains to achieve adequate drawdown. In either case, the dewatering system should be designed and operated to lower the groundwater table to a depth at least 2 feet below the bottom of surfaces to be compacted in any given area. The design and discharge of the dewatering system should be in accordance with current regulatory criteria.

Excavations

In Federal Register, Volume 54, No. 209 (October 1989) the United States Department of Labor, Occupational Safety and Health Administration (OSHA) amended its “Construction Standards for Excavations, 29 CFR, part 1926, Subpart P”. This document was issued to better ensure the safety of workmen entering trenches or excavations. It is mandated by this federal regulation that excavations, whether they be utility trenches, general construction excavations or footing excavations, be constructed in accordance with the new OSHA guidelines. It is our understanding that these regulations are being strictly enforced and if they are not closely followed the Owner and the contractor could be liable for substantial penalties.

The contractor is solely responsible for designing and constructing stable, temporary excavations and should shore, slope, or bench the sides of the excavations as required to maintain stability of both the excavation sides and bottom. The contractor’s “responsible person”, as defined in 29 CFR Part 1926, should evaluate the soil exposed in the excavations as part of the contractor’s safety procedures. In no case should slope height, inclination, or excavation depth, including utility trench excavation depth, exceed those specified in local, state, and federal safety regulations.

PSI is providing this information solely as a service to our client. PSI does not assume responsibility for construction site safety or the contractor’s or other parties’ compliance with local, state, and federal safety or other regulations.

LIMITATIONS

Our professional services have been performed, our findings obtained, and our recommendations prepared in accordance with generally accepted geotechnical engineering principles and practices. This company is not responsible for the conclusions, opinions or recommendations made by others based on these data.

The scope of our exploration was intended to evaluate soil conditions within the influence of the proposed structure foundations and does not include an evaluation of potential deep soil problems such as sinkholes. The analysis and recommendations submitted in this report are based upon the data obtained from the soil borings performed at the locations indicated. If any subsoil variations become evident during the course of this project, a re-evaluation of the recommendations contained in this report will be necessary after we have had an opportunity to observe the characteristics of the conditions encountered. The applicability of the report should also be reviewed in the event significant changes occur in the design, nature or location of the proposed development.

The scope of our services provided herein does not include any environmental assessment or investigation for the presence or absence of hazardous or toxic materials in the soil, groundwater, or surface water within or beyond the site studied. Any statements in this report regarding odors, staining of soils, or other unusual conditions observed are strictly for the information of our client.

CLOSURE

PSI appreciates the opportunity to provide our services to CPH, Inc. and the City of Ocoee on this project. If you have any questions regarding the contents of this report, or if we may be of further service, please contact the undersigned.

Sincerely,

PROFESSIONAL SERVICE INDUSTRIES, INC.
Certificate of Authorization No. 3684

Paola Castillo, MS.c, M.eng
Staff Engineer

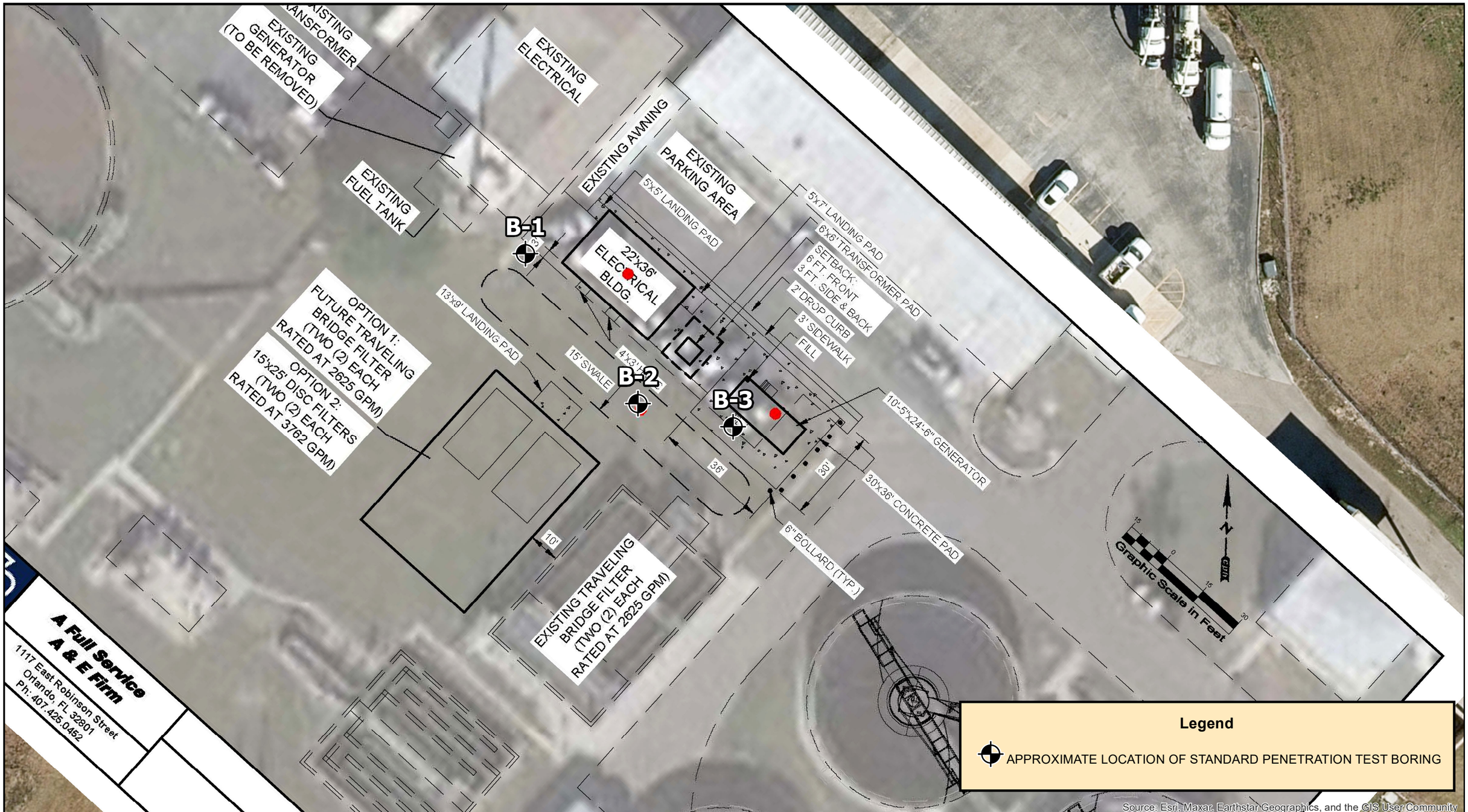
Robert A. Trompke, P.E.
Principal Consultant/Florida Geotechnical Practice Leader
Florida License No. 55456

07572857 Report(Ocoee Wastewater Treatment Plant Improvements).Docx

Appendix:

- Sheet 1 – Boring Location Plan
- Sheet 2 – Boring Profiles

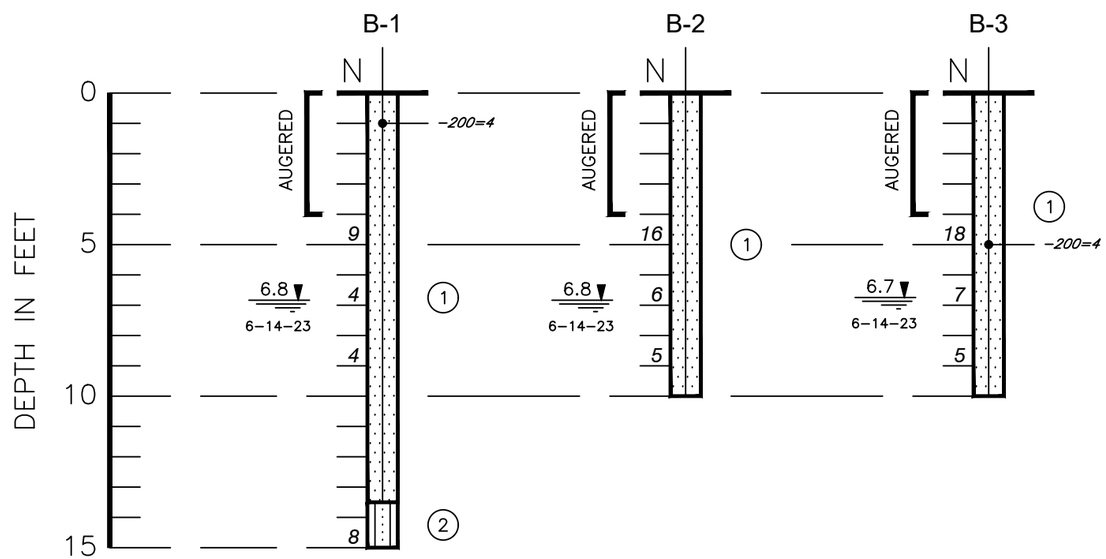
Appendix



REFERENCE: THE 2017 AERIAL PHOTOGRAPH WAS OBTAINED FROM ESRI. THE PRESENTED DATA IS FOR INFORMATIONAL PURPOSES ONLY. IT IS NOT MEANT FOR DESIGN, LEGAL, OR ANY OTHER USES. INTERTEK-PSI ASSUMES NO RESPONSIBILITY FOR ANY DECISIONS MADE OR ANY ACTIONS TAKEN BY THE USER BASED UPON INFORMATION OBTAINED FROM THE ABOVE DATA.

PROJECT NO. 07572857	intertek psi	1748 33rd Street Orlando, FL 32839 (407)304-5560 (407)304-5561 fax	GEOTECHNICAL ENGINEERING SERVICES **OCOEE WASTEWATER TREATMENT PLANT** **1800 A D MIMS ROAD** OCOEE, FLORIDA
SCALE: NOTED			SHEET: 1
DATE CREATED 6-20-23			DRAWN: DJW
			CHECKED: PC

0 15 30 Feet
1 inch = 30 feet
N



SOIL PROFILES

SCALE: 1"=5'

LEGEND

(1)	*LIGHT GRAY TO GRAY FINE SAND TO SLIGHTLY SILTY FINE SAND, (SP), (SP-SM)*
(2)	*GRAY SILTY FINE SAND, (SM)*
(SP)	*UNIFIED SOIL CLASSIFICATION GROUP SYMBOL*
N	*STANDARD PENETRATION RESISTANCE IN BLOWS PER FOOT USING AN AUTOMATIC HAMMER*
6.8 / 6-14-23	*DEPTH TO GROUNDWATER LEVEL IN FEET WITH DATE OF READING*
-200	*FINES PASSING #200 SIEVE IN PERCENT*

PROJECT NO. 07572857	intertek psi	1748 33rd Street Orlando, FL 32839 (407)304-5560 (407)304-5561 fax	GEOTECHNICAL ENGINEERING SERVICES **OCOEE WASTEWATER TREATMENT PLANT** **1800 A D MIMS ROAD** OCOEE, FLORIDA
SCALE: NOTED			SHEET: 2
DATE CREATED: 6-20-23			DRAWN: DJW
			CHECKED: PC

APPENDIX “B”

SECTION 02100
SPECIFIC TECHNICAL SPECIFICATION
(Engineering Standards Manual)

PART 1 - GENERAL

1.01 DESCRIPTION

A. The City of Ocoee Engineering Standards Manual, a separately covered document, shall be an integral part of the Contract Documents for this project.

B. Engineering Standards Manual has been included as part of the bid documents in PDF format. Contractor may obtain an additional PDF formatted Engineering Standards Manual from the City of Ocoee Utilities Department.

C. The Engineering Standards Manual (latest version at the time of bidding the project) is intended to provide construction and material standards, material and systems testing procedures, and construction requirements.

D. It shall be the Contractor's responsibility to provide/perform all labor, work and material in conformance with the requirements of Engineering Standards Manual.

E. References to the development community within the Engineering Standards Manual shall not be germane to this project.

END OF SECTION

City of Ocoee
Engineering Standards Manual

MISSION

This Engineering Standards Manual is a firm technical guideline for engineering materials' design, construction, and layout for all improvements that shall be dedicated, owned, and/or maintained by the City of Ocoee.

INTRODUCTION

The provisions of this Manual are established in order to effectively carry out the purposes of the **Land Development Code of the City of Ocoee,** in the interests of public health, safety, and welfare of the citizens and inhabitants of Ocoee, Florida.

Should there be any discrepancy or conflict between the Engineering Standards Manual and any applicable City Codes, such as the Land Development Code, the most stringent and restrictive specification, condition and/or directive shall apply. If any item is not specifically addressed in this manual, good engineering standards shall be practiced and is subject to the City Engineer's approval.

DISCLAIMER

The City of Ocoee, in the form of this manual, its attachments and documents referenced herein, is attempting to provide the best available information in an electronic format. It is the responsibility of the recipient to ensure that this information is the most recent, up to date, and in its entirety, as was originally provided by the City. This information is provided as is, without warranty or guarantee of any kind. The entire risk, as to quality, performance, and accuracy, are with the recipient. In no event, is the City of Ocoee or its Staff liable for any direct, indirect, incidental, special, consequential, punitive or other damages whatsoever (including loss of profit, loss of information, interruptions, or other pecuniary losses) arising from the use of or inability to use this data.

I agree to the terms and conditions set forth in this document, take me to the
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I Agree

Engineering Standards Manual

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February 20, 2012

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ARTICLE 1

GENERAL PROVISIONS

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1.03 PRE-CONSTRUCTION CONFERENCE
1.04 UTILITY COORDINATION
1.05 UTILITY CONSTRUCTION
1.06 START OF CONSTRUCTION
1.07 CONSTRUCTION COMPLETION
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Section 1.01 GENERAL

The Standards set forth in this Manual are meant to provide minimum Standards for the design and construction of facilities which meet the following conditions:

1) Public and private facilities, to be constructed within the City's corporate limits.

2) Facilities to be dedicated to the City for ownership.

3) Facilities to become future additions to the City's utilities and transportation systems.

This Manual is not meant to be totally restrictive in nature; that is, it does not depict the only acceptable method of design. Rather, its purpose is to describe minimum acceptable Standards of construction and to promote uniformity. The individual requirements of the Manual shall be superseded by the requirements established for Specially Planned Areas and the Comprehensive Plan, where applicable.

Should any design be submitted which varies appreciably from the Standards set herein or uses materials other than those recommended, it must be accompanied by appropriate supporting documentation or engineering studies for review and is subject to the approval of the City Engineer or his Designee.

All plans submitted for review must be in conformance with all Federal, State and City regulations and codes. In no case shall minimum standards be less than those established by recognized governmental agencies, unless stated otherwise in these Specifications.

Where a certain manufacturer is specified for a particular piece of equipment, non-specified product equals may be approved by the City Engineer or his Designee after submittal of a request in writing and accompanied by supporting documentation. An approved Manufacturer's List is attached as part of this Manual to assist the Engineer and the Contractor.

Pre-application meetings are recommended and pre-Construction conferences are mandatory between the Owner/Developer, their Engineer, their Contractor(s), all utilities, and the City Staff when City facilities are involved.

Section 1.02 REFERENCE MATERIALS

Unless otherwise stated, the most recent publications of the following organizations shall be referred to as required. Other publications may be used in the implementation of the Standards.

A) Water Environment Federation (WEF)

B) American Society for Testing Materials (ASTM)

C) United States Occupational Safety and Health Administration (USOSHA)

D) American Association of State Highway and Transportation Officials (AASHTO)

E) American National Standards Institute (ANSI)

F) American Water Works Association (AWWA)

G) National Fire Protection Association (NFPA)

H) National Science Foundation (NSF)

I) American Society of Civil Engineers (ASCE)

J) Florida Department of Transportation (FDOT)

K) Institute of Transportation Engineers (ITE)

L) Federal Highway Administration (FHWA)

M) American Asphalt Institute (AAI)

N) Portland Cement Association (PCA)

O) American Concrete Institute (ACI)

P) Underwriters Laboratories, Inc. (UL)

Q) Insurance Services Office (ISO)

R) Environmental Protection Agency (EPA)

S) National Pollutant Discharge Elimination System (NPDES)

T) Sunshine State One Call System Of Florida (SSOCSOF)

U) Federal Specification (FS)

Section 1.03 PRE-CONSTRUCTION CONFERENCE

It shall be required that a pre-construction conference between the Owner/Developer, their Engineer, their Contractor, all utilities, and the City Staff be held at least 5 days before commencement of any construction within the corporate limits of the City of Ocoee. All applicable City, State and Federal Agency permits are required to be in the possession of the Owner/Developer prior to the pre-construction meeting.

Section 1.04 UTILITY COORDINATION

It shall be up to the Owner/Developer to coordinate all utilities concerning development. All utilities shall be given notice prior to commencement of construction in accordance with F.S. 553 and F.S.556 and guidelines of SSOCOF.

Section 1.05 UTILITY CONSTRUCTION

Utility lines of any kind, including, but not limited to, traffic signal systems, street lighting, those of franchised utilities, electric power and light, telephone and telegraph, cable television, water, sewer, and gas, shall be constructed and installed beneath the surface of the ground unless it is determined by the City Engineer, and approved by the City Commission, that soil, topographical, or any other compelling conditions make the installation of such utility lines as prescribed herein unreasonable or impractical. It shall be the Owner's/Developer's responsibility to make the necessary arrangement with each utility in accordance with the utility's established policies. The underground installation of incidental appurtenances such as transformer boxes, pedestal mounted boxes for electricity, or similar service hardware necessary for the provision of electric and communication utilities may be required at the discretion of the City Engineer. When appropriate, all materials shall be Listed for the purpose for which it is used.

Section 1.06 START OF CONSTRUCTION

The City Engineer or his Designee shall be notified, in writing, at least 5 days in advance of the proposed date of the beginning of construction. Any time that work is to stop for a period of time in excess of 5 working days, other than stoppage beyond the Contractor's control, and holidays, the City Engineer shall be notified in writing of such interruption. The Engineering Plans, as approved by the City, and all revisions shall be readily accessible to City personnel during all periods of activity. No activity shall be permitted without these documents on-site. Someone of responsible charge must be on-site during all construction activities.

Section 1.07 CONSTRUCTION COMPLETION

All requirements stated in the LDC shall be complied with by the Owner/Developer prior to any occupancy of any private or public improvements.

Section 1.08 OFF-SITE POLLUTION PROTECTION

It shall be the Owner's/Developer's responsibility to provide, in accordance with the LDC, all associated Ordinances and State and Federal Agencies, and the NPDES regulations, all downstream and offsite water quality and siltation protection required during construction. In any event, it shall be the Owner's/Developer's responsibility to remove any downstream siltation prior to the time of final inspection. Air pollution, such as dust, shall also be controlled at all times.

Section 1.09 INSPECTION

1.09.01 Periodic

Representatives of the City shall periodically visit the project site to make a visual inspection of the progress of the work and methods of construction. Upon observation of work not done in accordance with the Plans and Specifications, the City will notify the Owner's/Developer's Contractor and the Owner/Developer or his Designee and request that the necessary corrections be made. All inspections shall be scheduled a minimum of 24 hours in advance. Special inspections requested by Owner/Developer. The City can come out at any time without prior notice.

1.09.02 Substantial Completion

Substantial Completion inspection may be provided when the project justifies the need for the process prior to the issuance of a Certificate of Completion. The Owner/Developer must submit a written request for a formal Substantial Completion inspection and shall include the following;

a) Exclude wall, landscaping, irrigation, and other amenities.

b) Include water, sewer, reuse, storm roads, rough grading and signage (FDEP Water and Sanitary clearances shall have been issued).

c) Require a written document from developer requesting formal inspection.

d) Reference that developer has already punch listed project and all items completed.

e) State that project is built in accordance with plans and specifications and include an initial set of As-Built Drawings.

f) Engineering Department will schedule an all department formal inspection with written punch list back to Engineering Department.

g) Engineering Department will coordinate with OCPW, OCUD and FDOT as applicable.

Engineering will review all punch lists and make determination of Substantial Completion. A written response to developer on substantial completion including all punch lists will be provided to the Owner Developer. If deemed to be Substantially Complete the developer can start construction of production homes.

1.09.03 Final

The City shall be notified when the project is complete. Upon receiving at least a 48 hour prior request, excluding weekends and holidays, for final inspection of the completed work, the City's representatives, together with the representatives of other interested agencies, shall perform the final inspection. The following submittals shall be required prior to Final Inspection: Payment for any failed material tests, all applicable Certifications of Completion from other agencies, Clearances for Utility Systems and Final Record Drawings, including digital and hard copies.

Section 1.10 TRANSFER OF PRIVATE OWNERSHIP

When transfer of private facilities to public ownership is desired and the City Engineer concurs, all such private facilities shall be brought up to the current City Standards at no cost to the City, in so far as construction and maintenance are concerned, before the City will accept such facilities. Proof of satisfactory completion of the facilities, approved construction plans as Record Drawings, the 2 year maintenance bond with itemized construction costs, Bill of Sale for improvements dedicated to the City, and the appropriate legal documents shall be furnished to the City Engineer prior to acceptance.

Section 1.11 PROPERTY OWNERSHIPS

All facilities to be owned and maintained by the City shall be located on City property, within City rights-of-way, or in easements dedicated to the City for the uses intended.

Section 1.12 PLANS AND SPECIFICATIONS

1.12.01 General

All submitted plans shall be standard size sheet (24" x 36" or 11" x 17") with title block. Graphic scale(s) shall be provided on each sheet and all lettering shall be 0.08 x scale (Leroy 80) or larger to permit photographic reproduction. Color aerial photography plan sheet(s) is/are required for the property/project area and shall include an area 100’ outside the limits of the proposed project improvements. Submittal of Specifications shall only be required when special facilities outside the scope of this Manual are proposed. All Plan sheets, detail sheets and the title page of submitted and Bound Specifications must be signed, sealed and dated by the Engineer of Record licensed in the State of Florida.

1. 12.02 Master Plan

Whenever possible, the entire water, reuse, and wastewater systems shall be shown on a single Master Plan. The Master Plan shall indicate the general locations of all mains, manholes, valves, hydrants, services and service laterals with respect to the proposed development improvements and the existing water and wastewater systems. Main sizes shall be indicated on the Master Plan.

1. 12.03 Plan and Profile

All utilities including gravity sewers, all wastewater force mains, storm sewers and off-site water mains shall be drawn in plan and profile. On-site water and reuse mains may be shown in plan view only.

Whenever possible, on-site water and wastewater systems shall be shown on the same Plans sheet. As a minimum, the plan and profile drawings shall include the following information:

A) General information such as north arrow, names of Designer and Engineer, revision block with dates, graphic scale(s) and sheet number.

B) Plan and profile with elevations at 100 foot intervals, or more frequently if required by good design practice.

C) Development layout with horizontal and vertical controls.

D) All conflicts with other utility and drainage systems.

E) All manhole locations and rim elevations for manholes outside of paved areas.

F) Pipe data including size, lengths, material, and slopes.

G) Size, type, and locations of fittings, valves, hydrants, air release/vacuum relief, and other related appurtenances.

H) Limits of pipe deflection. (Would not recommend allowing – require fittings)

I) Limits of special exterior coatings.

J) Limits of special bedding requirements.

K) Pipe restraint requirements and limits of restrained joints.

L) Details of connection to existing systems.

M) Location(s) and general layout of wastewater pumping stations.

N) Construction notes regarding cover, horizontal and vertical control, special construction requirements, and references to standard and special details.

O) Point of Service for fire sprinkler system and location of fire department connection.

1. 12.04 Details

The Plans shall include all applicable Standards as identified in this Manual with appropriate Details. Special details shall be prepared by the Engineer for aerial and underwater crossings of rivers, streams, canals and ditches. Other special details shall be prepared by the Engineer as required.

1. 12.05 Scale

The Master Plan shall be prepared at a scale not to exceed l" to 200'. Plan and profile sheets shall not exceed a scale of l" to 50' horizontally and 1' to 5' vertically. Special details shall be of sufficiently large scale to show pertinent construction information.

1. 12.06 Complete Submittals

Plans for any review and submittal shall be complete. The Owner shall be responsible for payment of fees when the City provides reviews more extensive than reasonably expected due to the submittal being incomplete and/or inadequate.

ARTICLE 2

DEFINITIONS

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Except where specific definitions are used within a specific ARTICLE or Section of this resolution or the purpose of such Sections, the following terms, phrases, words, and their derivation shall have the meaning given herein when not inconsistent with the context. Words used in the present tense include the future tense, words in the plural number include the singular number and words in the singular number include the plural number. The word "shall" is mandatory, and the word "may" is permissive.

AASHTO - means American Association of State Highway and Transportation Officials. Any reference to AASHTO Standards shall be taken to mean the most recently published revision unless otherwise specified.

ANSI - means American National Standards Institute. Any reference to ANSI Standards shall be taken to mean the most recently published revision unless otherwise specified.

ASTM - means American Society for Testing Materials. Any reference to ASTM Standards shall be taken to mean the most recently published revision unless otherwise specified.

AWWA - means American Water Works Association. Any reference to AWWA Standards shall be taken to mean the most recently published revision unless otherwise specified.

City - means the City of Ocoee, Florida.

City Engineer - means the Engineer or his designee or other appointed officer of Ocoee, Florida, acting directly or through an assistant or other appointed representative, acting only within the scope of the particular duties assigned by the Land Development Code.

Construction Inspector - means the construction representative of the Engineering Department or other field appointed representative, acting only within the scope of the particular duties assigned by the City Engineer.

Contractor -means the person, firm, or corporation with whom the contract for work has been made by the Owner/Developer or the City.

Developer - means any person or legal entity who is responsible for any undertaking that requires an administrative or regulatory permit.

DIPRA - means Ductile Iron Pipe Research Association.

Drawings - means engineering drawings prepared by an ENGINEER to show proposed construction.

ENGINEER - means a Professional Engineer or engineering firm registered with the Florida State Board of Professional Engineers, other than direct employees of the City of Ocoee, retained to provide professional engineering services for a project.

FDOT - means the Florida Department of Transportation.

Geotechnical/Soils Engineer - means a Registered Florida Engineer who provides services related to terrain evaluation and site selection, subsurface exploration and sampling, determination of soil and rock properties, foundation engineering, settlement and seepage analysis, design of earth and earth retaining structures; as well as the design of subsurface drainage systems and the improvement of soil properties and foundation conditions; as well as testing and evaluation of construction materials.

ISO - means Insurance Services Office. Any reference to ISO Standards shall be taken to mean the most recently published revision unless otherwise specified.

Landscape Architect - means a Landscape Architect registered in the State of Florida who provides professional services related to the planning and development of land and incidental water areas, where the purpose of these consulting services is the preservation, conservation, enhancement, or determination of land uses, natural and man-made features, siting of buildings and structures, grounds and approaches, the setting of grades, contouring of land and water forms, determination of stormwater drainage, and irrigation systems. (From Florida Statute Chapter 481, Part II.)

LDC - means the Land Development Code of the City of Ocoee, Florida.

Listed - means equipment, materials, or services included in a list published by an organization acceptable to the authority having jurisdiction and concerned with evaluation of products or services that maintains periodic inspection of production of listed equipment or materials or periodic evaluation of services, and whose listing states either that the equipment, material, or service meets identified standards or has been tested and found suitable for a specified purpose.

Manual - means this City of Ocoee Engineering Standards Manual.

MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) - means the United States Department of Transportation Manual on Traffic Control Devices, latest edition, unless otherwise specified.

NEMA - means National Electrical Manufacturers Association. Any reference to NEMA Standards shall be taken to mean the most recently published revision unless otherwise specified.

NSF - means National Sanitation Test Laboratory Foundation. Any reference to NSF Standards shall be taken to mean the most recently published revision unless otherwise specified.

OSHA - means the Federal Occupational Safety and Health Administration. Any reference to OSHA Standards shall be taken to mean the most recently published revision unless otherwise specified.

Owner - means any person or legal entity having sufficient proprietary interest to undertake development pursuant to the Land Development Code.

Plans - means Drawings as defined herein above.

Public Works Director - means the Engineer or other appointed officer of Ocoee, Florida, acting directly or through an assistant or other appointed representative, acting only within the scope of the particular duties assigned by the Land Development Code.

Specifications - means the specifications contained in this Manual.

Standards - means the minimum design Standards contained in this Manual.

Standard Specifications - means the Department of Transportation, State of Florida, Standard Specification for Road and Bridge Construction, latest edition, unless otherwise specified.

Substantially Completed - means that date when the work is completed in accordance with this Manual or the Projects Contract Documents, with the exception of the minor items identified during the inspection process. Upon substantial completion, the work can be utilized for the purposes for which it is intended if the public's health, safety, and welfare will not be endangered.

Typical City Details - means the detailed drawings in this Manual related to general civil engineering materials and installation.

ARTICLE 3

DESIGN STANDARDS

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3.01 GENERAL
3.02 STREETS AND OTHER PAVEMENTS
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3.07 DECORATIVE ENTRANCES
3.08 OWNER/DEVELOPER CONTROL DURING CONSTRUCTION
3.09 EROSION CONTROL
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Section 3.01 GENERAL

The lands included within the development shall be suitable for the various purposes proposed and shall not be subject to poor drainage, erosion or other conditions detrimental to the health, safety and general welfare of the public. Further, no development plan shall be approved unless the City finds, after full consideration of all pertinent data, that the development can be served adequately with such normal public facilities and services as are suitable in the circumstances of the particular case. The Owner/Developer shall be responsible for the acquisition of all materials, installation and construction costs, and legal documentation for all on-site and off-site activities of the proposed development.

A Professional Engineer, registered in the State of Florida and qualified by virtue of training and experience to practice the engineering discipline involved, shall be employed to design all required improvements such as streets, traffic control, drainage structures, bridges, bulkheads, and utility facilities, and to provide such professional services during construction as are generally considered to be part of a complete engineering service. Upon request, the Owner/Developer shall submit to the City Engineer signed documentation to this effect. All plans for improvements shall be prepared and sealed by such Engineer and approved by all appropriate regulatory agencies and the City prior to the commencement of the improvements. Street lighting plans for the development shall be prepared by the power company supplying service to the development. Florida Statute shall govern the preparation of all site plans and related engineering drawings submitted to the City.

3.01.01 Conformance with City Policy

The subdividing and/or development of any areas shall conform to the adopted general goals and objectives of the City with respect to the physical development of the City as set forth in various documents including, but not limited to:

A) The Ocoee Comprehensive Plan.

B) City policies and Services and Facilities as enunciated by applicable City Ordinances.

C) The Land Development Code of the City of Ocoee.

D) The Engineering Standards Manual.

E) Ordinances of the City of Ocoee.

3.01.02 Use of Natural Features

The arrangement of structures, stormwater systems, lots and blocks, and the street system shall make the most advantageous use of topography and preserve mature trees, wetlands, and other natural features wherever possible.

3.01.03 Consideration of Soil and Flood Hazards

All land intended for use in a development plan for building sites must be able to be used safely for building purposes without danger from flood or other inundation, or from adverse soil or foundation conditions or from any other menace to health, safety, or public welfare. No filling or grade level change shall be permitted which will reduce the flood storage volume available between the base flood elevation and the normal ground water elevation to adversely affect any surrounding area. No development shall be permitted in the 100 year flood plain. The Orange County Soil Survey is to be used as a guideline in identifying soil properties and interpretations for various uses in terms of soil limitations and soil features adversely affecting a particular use.

The following Standards shall be followed in areas of low and very low potential soils:

A) Soils with either very low potential or low potential for proposed uses, as identified in the Soil Survey, shall not be developed unless such soils are removed or modified to accommodate the intended use, as approved by the City Engineer.

B) Public facilities shall not be constructed where the soil performance for said public facility is of low or very low potential, except in cases of overriding public interest.

C) Dedication shall not be accepted for public ownership or maintenance of utilities or roads constructed in areas where soil performance for said facilities is of low or very low potential.

3.01.04 Special Considerations

Special consideration shall be given in the layout of streets, lots, blocks, buildings, and easements to the preservation of large and specimen individual trees as identified by the Ocoee Comprehensive Plan. Special consideration shall also be given to preserving natural drainage methods and natural topography and landscape. Special consideration shall be given to providing special screening, landscaped or natural buffers, or landscaped berms where developments abut non-compatible land uses in accordance with the LDC. Special consideration shall be given to conformance with streets and driveway spacing Standards in accordance with the LDC and this document. Special consideration shall be given during the development design process to not only make the site accessible to the public through the use of handicap parking and ramps, off-site sidewalks/bikeways, and interconnection of adjacent sites; but also where possible encourage the use of alternative mode of travel by providing transit stops and shelters, on-site sidewalks/bikeways, bike racks, and signed and marked reserved employee ride share parking spaces.

3.01.05 Record Drawing Requirements

All "as-built" information submitted to the engineer shall be sufficiently accurate, clear and legible to satisfy the engineer that the information provides a true representation of the improvements constructed. Upon completion of construction, the contractor shall submit to the engineer of record complete sets of "as-built" construction drawings as required for submittal and approval. These drawings shall be marked to show "as-built" construction changes and dimensioned locations and elevations of all improvements and GPS data table and shall be signed and sealed by a Florida registered land surveyor. The following information shall be included in the "as-built" submittal at a minimum:

A) Sanitary Sewer:

1. Top elevation of each manhole frame and cover.
2. Invert of each line entering and leaving each manhole/structure.
3. Length of each run of main between manholes (center to center).
4. Actual grade of pipe between manholes.
5. Locate all service wyes from downstream manhole with depth at lot line and distance from the main line.
6. Field measurements for location from permanent visible objects all fitting/accessories not visible from the surface (minimum two point ties) (including clean-outs).

B) Storm Drainage:

1. Top elevation of each manhole frame and cover/grate as well as all other structures (headwalls, control structures, etc.).
2. Invert elevation of each line entering and leaving each structure, including underdrain pipes.
3. Inverts of all mitered end sections.
4. Actual grade of pipe between the structures.

5. Invert elevation and two horizontal ties from permanent visible objects to all storm stub-outs, underdrain cleanouts, yard drains, etc.

C) Water and Reuse System and Force Main

1. Actual lengths between all fittings and valves along the main run.
2. Locate with measurements from permanent visible objects all fittings/accessories not visible from the surface (minimum two point ties).
3. As-built information on water systems shall include locations of all fire hydrants, water services, blow-off assemblies, and top of pipe elevations at all fittings and at a minimum of 100 feet spacing along the length of the mains.
4. All sample points shall be shown in the "as-built" drawings and shall be sequentially numbered throughout the entire project without duplication between plan sheets. The numbering shall conform with those indicated in the samples for fdep clearances.

D) Utility Crossing Separation Information for that on the Plans Verifying:

1. Size and material of crossing pipes.
2. Top elevation of bottom pipe.
3. Bottom elevation of top pipe.
4. Finish surface elevation over utility crossing.

E) Pavement Grades and Drainage Patterns

1. Pavement profiles and critical points shall have verified elevations indicating the constructed finished grade.
2. Drainage patterns indicated by the design drawings shall have verified spot elevations indicating the finished grade.

F) GPS Data:

The x, y and (z) location based on the coordinate system Florida east zone state plane coordinate feet NAD 83, of all manholes (rim elevation), lift stations (rim elevation), cleanouts (grade), sample points (grade), fittings (center of pipe) and meter boxes (grade), etc. Shall be clearly shown. Acceptable position accuracy shall be sub-meter or better for compatibility with global positioning system (GPS) equipment.
The GPS data shall be provided in an asset table incorporated as a section of the final "as-built" drawings and shall include the headings as follows:

Asset #; utility system (water, sewer, reclaimed water, force main, stormwater); description; X-Coord.; Y-Coord.; Z-Coord.

Asset #	Utility System	Feature	X-Coordinate	Y-Coordinate	Z-Coordinate
001					
002					
003					
004					

Section 3.02 STREETS AND OTHER PAVEMENTS

3.02.01 General

The design character, width, grade and location of all streets and bridges shall conform to the Standards in this Section and shall be considered in their relation to existing and planned streets, to topographical conditions, to public convenience and safety, and in their appropriate relation to the proposed uses of the land to be served by such streets. Whenever not modified by these Standards, the guidelines of the Manual of Uniform Minimum Standards for Design, Construction and Maintenance for Streets and Highways, (FDOT), and the Standards of the American Association of State Highways and Transportation Officials, referred to therein, shall be the minimum acceptable standard.

3.02.02 Minimum Standards For Right-of-Way Improvement

A) Sidewalks/Bikeways: It is the intent of the City that every new residential lot or non-residential development shall construct its portion of the city wide pedestrian/bikeway system. If a variance to these provisions is granted, the Owner/Developer shall execute a sidewalk agreement with the City to ensure the future installation of the facilities.

B) Driveway Approaches: Driveway approaches shall be 3,000 psi concrete, at least 6 inches thick, with break and/or expansion joints at property line. Sidewalk/bikepath shall be constructed with the driveway section. Expansion joints shall be installed at the tie-in point with sidewalks and curbing. All installations to maintain a slope of ¼ inch per 1 foot horizontal.

C) Streets: Abutting rights-of-way shall be paved as hereinafter specified.

1) Design Specifications

Streets shall be classified based on the definitions and with consideration of vehicle trip generation ratios unless superseded by alternative ratios adopted by the City. Where the City has adopted a higher classification than the classification based on projected traffic volumes, the higher classification shall be used. All streets shall be designed in accordance with the Manual of Uniform Minimum Standards for Design, Construction and Maintenance for Streets and Highways (FDOT), LDC, and the following minimum specifications, except that greater requirements must be met when imposed by an agency having jurisdiction of a particular road. Horizontal alignments shall be based on a minimum design speed of 35 MPH except for local residential streets. Local residential streets shall have a minimum back of curb horizontal curvature of 50 feet without superelevation.

2) Minimum Street Grade Specifications

Percent Grade of Roadway

Table 3-1			
Centerline:	Arterial Street	Collector Street	Local Street
Maximum	10%	10%	10%
Minimum	0.50%	0.50%	0.50%

Slopes less than 0.50% shall require special approval by the City Engineer.

The minimum cross slope shall be 2% except in necessary transitions.

3) Intersection Design

a) Streets and driveways shall be laid out to intersect as nearly as possible at right angles (90°) or radial, however, in no case shall the angle of the intersection be less than 60°. Multiple intersections involving the juncture of more than 2 roadways and driveway approaches shall be prohibited. The gradient within 100 feet of the intersection and driveway shall not exceed 3%. The design shall comply with the Specifications contained in the Manual of Uniform Minimum Standards for Design, Construction and Maintenance for Streets and Highways (FDOT).

b) A minimum sight distance of 250 feet from any intersection shall be maintained on the intersecting streets. Greater distances may be required to satisfy FDOT and the Manual of Uniform Minimum Standards for Design, Construction and Maintenance for Streets and Highways (FDOT). In all cases, clear sight distance from any intersection shall be maintained on the adjoining streets.

4) Radii at Intersections

The minimum intersection radii of back of curb at all typical intersections approximating a right angle shall be as follows:

Table 3-2	
Category	Minimum Radius
Local to Local - Residential	25'
Local to Local - Non-Residential	35'
Local to Collector	35'
Local or Collector to Arterial	50'
Collector to Collector	30'

A deceleration lane and taper shall be required as outlined in ARTICLE 24 of this Manual. A minimum radius of 30 feet shall be provided at all intersecting right-of-way lines.

The design and construction of larger or smaller radii maybe required by the City Engineer based upon the type of design vehicles and design speed of the roadway.

5) Pavement Specifications

Improvements designed as above shall be provided as required by the following schedule:

a) For residential developments, improvements shall conform to STANDARD A., For Standard configuration see, Typical City Details attached as part of this Manual.

b) For all other developments, improvements shall conform to STANDARD B., For Standard configuration see, Typical City Details attached as part of this Manual

c) Where the proposed development includes or abuts an existing full or half right-of-way street, said street shall also be improved as required to conform to the following Standards.

d) When a modification to the width of an existing roadway is necessary, a minimum of 1 1/2 inch of asphaltic concrete overlay with leveling shall be installed the full length and width of the entire affected section of the adjacent roadway.

STANDARD

TABLE 3-3		
A	B	1) Grading and centerline gradients shall be provided on the plans and as approved by the City. (See Section 3.02)
		2) Curb and gutters shall be provided as follows:
A		a) Standard 24 inch wide Miami Residential or FDOT Type F curb and gutter.
	B	b) Standard 24 inch wide FDOT Type F curb and gutter.
A	B	c) Standard Type A concrete curb shall be used on center medians and islands.
A	B	d) Density under curb and gutter shall be to a minimum density of 98% of the maximum density determined by AASHTO T-180
A	B	3) Subbase shall be approved by the City Engineer as being suitable material prepared in accordance with Standards established by this Manual. Twelve inches shall be the minimum thickness unless otherwise stated in this ARTICLE.
		4) Pavement base shall be improved as follows:
A	B	a) Arterial Streets: 10 inch compacted limerock / soil cement
	B	b) Collector and Commercial Streets: 10 inch compacted limerock / soil cement
A		c) Local Streets: 8 inch compacted limerock / soil cement
		Note: an equivalent type or alternate base material may be approved by the City Engineer if field situation dictates.
		5) Wearing surface shall be improved as follows:
A	B	a) Arterial, Collector and Commercial Streets: 1-¾ inch structure course and 1 inch friction course. Non-skid surfaces may be required. FDOT-applicable asphaltic concrete shall be used unless otherwise approved by the City Engineer
A	B	b) Local Streets: Minimum of 2 inch asphaltic concrete surface course or the equivalent as meeting Standards established by the City. Non-skid surfaces may be required. FDOT-applicable asphaltic concrete shall be used unless otherwise approved by the City Engineer. City Engineer may require surface treatment to be applied in two (2) layers with final top layer being installed after build-out.
A	B	6) Grassing and mulching of flat areas, or sodding of swales, parkway medians, percolation areas, and planting strips shall be in accordance with City Standards. In no case shall mulching of driveways be permitted.

A	B	7) Street name signs in accordance with City specifications and appropriate block numbers shall be installed on all public streets at all intersections. The street name signs will be installed by the City upon notification from the Developer in writing that the roads are complete. The Owner/Developer shall order and pay for all such signage, including installation cost, prior to issuance of any building permits. The signs shall be in place prior to the City's final acceptance of the roadway.
A	B	8) Street lighting shall be installed at the expense of the Developer, and includes payment of 2 years worth of up-front fees. All utilities are to be installed underground. Poles shall not be placed in medians or directly adjacent to the roadway or within sidewalks/bikeways. Wherever practical, poles shall not be installed immediately adjacent to sidewalks/bikeways. The poles shall be placed either in an easement or adjacent to the right-of-way line to allow a minimum 5 foot clearance from the nearest edge of pavement. Location modification shall be specifically approved by the City Engineer prior to installation.
A	B	9) Traffic control devices such as signs and pavement markings and traffic signalization devices shall be installed by the Owner/Developer at the Owner's/Developer's expense within the project area and on abutting streets and highways in accordance with the MUTCD and as approved by the City Engineer. Modification requests shall be specifically approved by the City Engineer prior to installation.
A	B	10) For two years from City Commission's project acceptance, the Owner/Developer shall warranty all constructed facilities in public rights-of-way and easements by Surety document approved by the City being either a Letter of Credit or Cash.

3.02.03 Additional Right-of-Way and/or Pavement Width

Whenever any street shows future need for improvement within the area to be developed, the appropriate right-of-way or pavement width, in conformance with minimum City Standards shall be required to be dedicated as outlined in the LDC.

Half streets and substandard rights-of-way and pavement widths shall be prohibited. Where a previously dedicated incomplete or substandard street, improved or unimproved, abuts or is within a tract to be developed, the remainder of the right-of-way shall be dedicated and the full street improved according to City Standards.

3.02.04 Access

Vehicular access shall be provided as follows and as outlined in the LDC.

A) Minimum number of access points to adequately serve the development without decreasing the safety and capacity of the public rights-of-way. Joint-use driveways may be required by the City. All developments shall also be evaluated by the City of Ocoee Fire Rescue Department for emergency access.

B) In order to provide ease and convenience for ingress and egress to private property, with maximum safety and the least interference to the traffic flow on public streets, the number and location of driveways for roadways with classification of collector and above, shall be regulated by the dedication of access rights to the City in accordance with the LDC.

C) Deceleration and acceleration lanes, left-turn lanes, bypass lanes, and tapers are required on all roads with a classification of collector and above unless exempted by the City Engineer. Median relocations and modifications or other design features may be required at the discretion of the City Engineer to protect and maintain the safe and efficient operation of the public rights-of-way.

D) All buildings, when constructed, shall be accessible to fire department apparatus by way of access roadways with an all weather driving surface of not less than 20 feet of unobstructed width and a turning radius of 40 feet capable of supporting the imposed loads of fire apparatus. This access shall also have a minimum vertical clearance of 13 feet 6 inches. All hydrants shall remain serviceable during project construction, unless otherwise approved by the City of Ocoee Fire Rescue Department.

E) Driveways shall be installed as depicted in ARTICLE 25 of this Manual.

3.02.05 Paved Access to Nearest Paved Public Road

A development shall abut or have as its primary access onto a street designed and paved to standard requirements of the authority having jurisdiction (City, County, State). The Owner/Developer shall install or upgrade the street from the entrance of the development to the nearest public paved road of proper functional classification as determined by the City Engineer.

3.02.06 Commercial/Industrial Driveways and Internal Circulation

A) Vehicular circulation must be completely contained within the property. Vehicles located within one portion of the development must have access to all portions without using the adjacent street system and be capable of accommodating the vehicles associated with the development.

B) Acceptable plans must illustrate that proper consideration has been given to the surrounding street plan, traffic volumes, proposed street improvements, vehicular street capacities, pedestrian movements, and safety.

1) Driveways directly accessing thoroughfares or accessing local streets adjacent to thoroughfares shall meet the design requirements of the LDC.

2) Driveways accessing other local streets shall not intersect or be nearer than 50 feet (20 feet for residential) to the adjacent driveway without the approval of the City Engineer. Where possible, driveways shall be located a minimum of 200 feet (50 feet for residential) from public intersections. Measurement is based on nearest edge of pavement to nearest edge of pavement.

C) Deceleration lane and tapers shall be required as outlined in ARTICLE 24 of this Manual.

D) Appropriate special radii shall be designed, subject to the approval of the City Engineer for other than right-angle (90°) intersections.

Section 3.03 EASEMENTS

Easements shall be centered on rear or side-lot lines where necessary. Easements shall be provided as determined by the LDC. "Vehicular Access Easements" shall be located as approved by the City Engineer.

Where necessary for safety and convenience, "Construction Easements" of suitable width shall be required as determined by the City. No public easement shall be occupied without first obtaining a Right-of-Way Utilization Permit. When encroachment is desired, the applicant shall contact all utilities doing business within the City, prior to the City granting permit.

"Joint-Use Access Easements" shall be required, as necessary, to provide safe and adequate access to a site and for the protection of the capacity and safety of the adjacent roadway.

Any off-site easements, needed to make the system function, shall be included in the proposal for development and made a criteria for plan approval.

Easements for all facilities must be shown on construction drawings and approved by the City. The easement documents and rights-of-way deeds must be executed, accepted and recorded by the City. All recording fees shall be paid to the City prior to recording in the Public Records or issuance of a building permit. All easements for private developments shall be provided at no expense to the City.

Section 3.04 SURVEY MONUMENTS

Permanent Reference Monuments (PRMs) and Permanent Control Points (PCPs) shall be placed as required by Florida Statutes. A letter from a Florida registered Land Surveyor certifying that all monuments, PCPs, PRMs are in place as of the date of the project acceptance shall be required of all developments. The Contractor shall be responsible for re-establishing all disturbed survey markers and/or monuments. All survey work shall be performed in accordance with pertinent memoranda and shall comply with Minimum Technical Standards, as adopted by the Florida Board of Land Surveyors, pursuant to Florida Statutes.

Section 3.05 CURBS AND GUTTERS

All streets shall be paved and drained in accordance with FDOT Standard curb-and-gutter (or Miami curb in residential areas), unless otherwise specifically approved by the City Engineer. Curbing shall be used for stormwater conveyance, traffic control channelization, and the protection of landscaped areas.

The width of the curb and gutter shall be a minimum of 24 inches and shall be as outlined by this Manual. Simple vertical curbing within rights-of-way will not be acceptable to the City. Approved mountable median curb, of the FDOT type, may be used, as approved by the City Engineer. All curbing designed to handle water shall incorporate an approved gutter design.

No water valve boxes, meters, portions of manholes, or other appurtenances of any kind relating to any underground utilities shall be located in any portion of a curb-and-gutter section. The minimum allowable flow line grade of curbs and gutters shall be 0.40% except in intersections where flatter grades shall be allowable. Cross-street valley gutters shall not be allowed.

Section 3.06 STORMWATER MANAGEMENT

3.06.01 General Requirements

Protection of water resources is critical to the public health, safety, and welfare. Innovative approaches to stormwater management shall be encouraged and the concurrent control of erosion, sedimentation, and flooding shall be mandatory. No site alteration shall cause siltation of wetlands, pollution of downstream wetlands, or reduce the natural retention or filtering capabilities of wetlands.

3.06.02 Stormwater Management

A complete stormwater management system shall be provided in all areas of the project and for handling stormwater runoff that flows into or across the project area from the outside, without undesired additional flooding of any other land. The system shall be designed for long life, low maintenance cost, and ease of maintenance by normal maintenance methods. Soil types shall be considered and full development of the basin assumed for selection of proper runoff coefficients within the basins involved. Refer to ARTICLE 34 of this Manual for design specifications. Should the proposed development area contain an existing natural watercourse drainageway, channel, etc., such natural watercourse and the vegetation inherent therewith shall be maintained and the proposed development designed so as to preserve same unless otherwise permitted.

3.06.03 Guidelines for Berms

Slopes are preferred to be 5:1 or less on berms and other applications. Slopes 3:1 shall be the maximum permissible slope, unless specifically addressed elsewhere in this Manual, but shall be stabilized with sod or other stabilizing material. Retaining walls require the approval of the City Engineer or his Designee and must be signed and sealed by the Engineer for any walls exceeding 2 feet in height. Where berms or slopes are specifically addressed in other ARTICLES of this Manual, they shall conform to that ARTICLE.

Section 3.07 DECORATIVE ENTRANCES

Where an Owner/Developer is specifically permitted by the City to construct decorative landscaping within the right-of-way of any street, the Owner/Developer shall provide a maintenance agreement acceptable to the City for perpetual maintenance of such landscaping and shall provide for removal of such landscaping on order by the City for cause. The City shall not accept liability or responsibility for maintenance of landscaping in rights-of-way and shall be held harmless for any damage done to same in work performed by the City in such right-of-way. The design and maintenance of the landscaping shall comply with the City's set back regulations for fixed object hazards and for driver clear sight distance. Private signs are prohibited within public rights-of-way.

A minimum sight distance per the LDC must be maintained at all public road intersections including those with driveways. Structures are prohibited in the rights-of-way except as permitted by the City Engineer in accordance with the LDC.

Section 3.08 OWNER/DEVELOPER CONTROL DURING CONSTRUCTION

The Owner/Developer shall be required during the entire construction period to control, regulate, and maintain the development in such a manner as to prevent the accumulation of trash and debris, resulting from the Owner's/Developer's construction activities, on both the site and adjacent public and private property, which would detract from the enjoyment and pleasure in the natural scenic beauty of the City, and, in turn, injuriously affect the economic well-being of the public. The use of residential lots in nearby developments or Substantially Completed phases of the same development, under the ownership and control of said Owner/Developer, for the bulk storage of construction materials substantially unrelated to the development of those residential lots is prohibited. A development shall be deemed to be Substantially Completed when 70% of the planned units are completed and ready for occupancy, or are actually occupied.

Section 3.09 EROSION CONTROL

All development shall follow erosion control methods as described in this section, FDOT Design Standards, and FDEP Stormwater, Erosion and Sediment Control Program and Manual.

Seeding, mulching, sodding, and/or other acceptable methods shall be used to prevent erosion during all construction activities per requirements as specified in the LDC.

The Owner/Developer of commercial and residential lots shall be required to maintain curbs and gutters free of accumulations of sand and earth. Temporary siltation basins may be required during construction. Maintenance shall be provided by the Owner/Developer for the 2 year period of the maintenance period and for each lot until final inspection is passed. All actions to prevent erosion or pollution shall be done in accordance with this Manual.

3.09.01 Stormwater Pollution Prevention Plan (SWPPP)

If required by the City Engineer, the SWPPP, details, and calculations shall document all the measures necessary to limit the transport of sediments outside the limits of the project to the volume and amount that existed prior to the commencement of construction. This condition shall be satisfied for both the total anticipated construction period at a minimum and for the 2.3 year frequency, 6 hour duration storm event. Provisions must be made to preserve the integrity and capacity of check weirs, sediment basins, slope drains, grading patterns, etc. required to meet this provision throughout the life of the construction. Submittal of a Stormwater Pollution Prevention Plan shall comply with the requirements of the FDEP and SJRWMD.

3.09.02 Stockpiling Material

No excavated material shall be stockpiled in such a manner that directs runoff directly off the project site or into any adjacent water body or stormwater collection system. No building construction or landscaping materials shall be stored within public rights-of-way or on the streets.

3.09.03 Exposed Area Limitation

The surface area of open, raw, erodible soil exposed by clearing and grubbing operations or excavation and filling operations shall not exceed 10 acres. This requirement may be waived for large projects with an erosion control plan, which demonstrates that opening of additional areas will not significantly affect off-site deposit of sediments.

3.09.04 Inlet Protection

Inlets and catch basins shall be protected from sediment laden storm runoff until the completion of all construction operations that may contribute sediment to the inlet.

3.09.05 Temporary Seeding

Areas opened by construction operations that are not anticipated to be dressed and receive final grassing treatment within 30 days shall be seeded with a quick growing grass species which will provide an early cover during the season in which it is planted, and will not later compete with the permanent grassing. The rate of seeding shall be a minimum of 30 lb per acre.

3.09.06 Temporary Seeding and Mulching

Slopes steeper than 6:1 that fall within the category established in 3.09.05 above, shall be mulched using a minimum of 2 inches, loosely measured, mulch material, cut into the soil of the seeded area to a total depth of 4 inches.

3.09.07 Temporary Grassing

The seeded or seeded and mulched area(s) shall be rolled and watered as required to assure optimum growing conditions for the establishment of a good grass cover.

3.09.08 Temporary Regrassing

If, after 14 days, the temporary grassed areas have not attained a minimum of 75% good grass cover, the area will be reworked sufficiently to establish the desired vegetative cover.

3.09.09 Maintenance

All features of the project designed and constructed to prevent erosion and sediment shall be maintained during the life of the construction so as to function as they were originally designed and constructed.

3.09.10 Permanent Erosion Control

The erosion control facilities of the project shall be designed to minimize the impact on off-site facilities. All stormwater discharge from the project limits shall be routed through detention basins to trap suspended sediments. Discharge facilities from these basins shall be provided with a skimming device to trap floatable debris.

3.09.11 Permanent Seeding

All areas which have been disturbed by construction shall, as a minimum, be fertilized and seeded. The fertilizer shall be of 12-8-8 proportions and shall be uniformly spread at a rate of 400-500 lb per acre and mixed with the soil to a uniform depth of 4 inches. Included with the fertilizing operation will be the application of amendments, if necessary, such as dolomitic limestone of aluminum sulfate to correct the pH factor to within the limits of 6.0-7.0. The grass seed shall be uniformly spread at the rate of 100 lb per acre while the soil is moist. The grass seed mixture shall be of 20 parts bermuda and 80 parts bahia, with the addition of 30 parts rye in the winter season.

3.09.12 Permanent Seeding and Mulching

In addition to the minimum requirements of 3.09.11 above, slopes of from 6:1 to 4:1 inclusive shall be mulched using a 2 inches, loosely measured, mulch material cut into the soil of the seeded area to a total depth of 4 inches.

3.09.13 Permanent Sodding

All retention/detention basins shall be solid sodded within their limits. All exposed areas within public rights-of-way shall be solid sodded. Other areas with slopes steeper than 4:1 shall be solid sodded.

3.09.14 Strip Sodding

Strip sod shall be placed adjacent to all curbs, walks and pavements to the dimensions indicated in the Typical Cross-section provided in the approved plans.

3.09.15 Regrassing

All grassed areas shall be maintained to assure a good stand and sufficient ground cover to minimize erosion. If, after 60 days, an adequate ground cover has not been established, the area will be regrassed.

3.09.16 Additional Fertilization

Grassed areas not accepted within 90 days of their completion shall be refertilized at an application rate of 250 lb per acre.

Section 3.10 PHASED DEVELOPMENT

Each phase of any development shall be capable of standing on its own as if subsequent areas planned for development are not developed.

Residential Developers and Builders shall follow the erosion and sediment control principles and practices above and the following during construction on individual lots:

A) Silt fences/barriers shall be installed on lot lines adjacent to pond, natural, and conservation areas to minimize erosion. Silt fences/barriers shall also be installed as needed to prevent erosion/flooding of adjacent built-out lots and streets.

B) During construction, streets shall be kept free of excessive dirt and construction debris. Hay bales, sand bags or other approved erosion and sediment control devices shall be installed and maintained at stormwater inlets. Streets shall not be used for storage of construction materials. Containers shall be provided for holding trash and construction debris.

C) Prior to final acceptance, erosion and sediment control provisions (sodding and seeding/mulching) on adjacent vacant lots shall be restored. Erosion and sediment control precautions shall be taken where erosion and/or washouts can be anticipated, particularly along side lot lines. All construction debris and excess dirt shall be removed from adjacent vacant lots (including those across the street).

Section 3.11 TRAFFIC CONTROL DURING CONSTRUCTION

The Owner/Developer shall prohibit public traffic from using newly constructed roadways until they are accepted and approved to be opened by the City Engineer or his Designee. Barricades and other safety devices shall remain in place until such time as deemed appropriate to remove them, or until such time as the hazard to health and safety of the general public has been reduced to minimal acceptable standards.

The Owner/Developer shall be required to provide work zone traffic control during construction within the public rights-of-way until approval is given by the City Engineer or his Designee to remove the controls as established in accordance with the MUTCD.

Section 3.12 TRAFFIC SIGNAL PRE-EMPTION SYSTEM

All traffic signals shall be equipped with an Opticom Traffic Signal Pre-Emption System. The system shall be usable by an emergency vehicle approaching from all intersection directions. Before installation, the system plans shall be reviewed and approved by the City of Ocoee Fire Rescue Department and Orange County's Traffic Engineering.

ARTICLE 4

RIGHT-OF-WAY UTILIZATION

Index

4.01 GENERAL
4.02 DEFINITIONS
4.03 EXCLUSIONS
4.04 GENERAL REGULATIONS
4.05 RESTORATION AND MAINTENANCE
4.06 UTILITY ACCOMMODATION
4.07 INSPECTION
4.08 OPERATIONAL SAFETY
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Section 4.01 GENERAL

The purpose of this ARTICLE, in the interest of public health, safety and welfare of the citizens and inhabitants of the City of Ocoee, Florida, is to control, by the issuance of Right-of-Way Utilization Permits, the utilization of the public rights-of-way and public easements lying within the City of Ocoee. It is the intent of this ARTICLE to promote good engineering practices which will assure the maximum utilization of the public rights-of-way and public easements by all the citizens, with the lowest life cycle cost to all due safety, operation and maintenance. Right-of-way Utilization Permits shall be obtained as prescribed in the City of Ocoee Code of Ordinances. All activities within the jurisdiction of this Manual shall be reported to all Utilities in the area at least 48 hours prior to commencement. Permits from other entities may be required in addition to the City permit.

Section 4.02 DEFINITIONS

The term "right-of-way" and the term "easement" as used in this ARTICLE, unless otherwise designated, shall be deemed public rights-of-way and public easements.

Section 4.03 EXCLUSIONS

All construction and maintenance performed within the public rights-of-way and public easements lying within the City of Ocoee, Florida, unless specifically exempt, are within the purview of this ARTICLE, regardless of size or extent. Exclusion from any part in this ARTICLE does not provide exclusion (applicability of) of any other provisions.

Section 4.04 GENERAL REGULATIONS

Pre-application meetings are recommended and pre-Construction conferences are mandatory between the Owner/Developer, their Engineer, all utilities, and the City Staff when City facilities or improvements to be dedicated to the City are involved.

In all cases, full consideration shall be given to sound engineering principles and economic factors. Final determination of the types of facilities permitted shall be based on a cost/benefit analysis of the feasible alternatives. Consideration shall be given to aesthetics by all right-of-way users avoiding unnecessary appurtenances.

All construction and maintenance shall be performed with proper shoring, barricades, and maintenance of traffic signage in accordance with the MUTCD, the regulations of the Florida Industrial Safety Board, and the FDOT Safety Manual. All street closures will be restricted to the limits of rights-of-way with necessary traffic control devices and markings. A Right-of-Way Utilization Permit shall be required.

Shoring shall be required where necessary to protect existing pavement, and must be properly protected and removed.

All side drains, side ditches and storm sewers shall be referenced as to grade and location prior to construction.

Where direct burial of utilities is not required, only single-pole support systems shall be permitted within the rights-of-way. Any exception must be amply justified and approved by the City Engineer. Where it is necessary to place aerial crossings which may interfere with traffic, careful planning of work with regard to the safety of vehicular traffic is mandatory. No temporary supports shall be allowed closer than the minimum clearance unless they are incorporated with a suitable barrier system. Such temporary construction shall be completed in the minimum time possible as approved in the Permit.

Where feasible, all longitudinal underground facilities shall be placed outside of the pavement of main-traveled lanes. Where encasement is used, the encasement pipe shall have strength equal to or exceeding the carrier pipe. Encasement shall be in accordance with ARTICLE 26 of this Manual. PVC pipe used in roadway crossings for use as non-pressure conduit intended for direct burial, or concrete encasement, unless otherwise specified, shall have a minimum pipe stiffness of 120 psi at a deflection of 0.2 inch, when tested in accordance with ASTM D-2412. Casing shall normally be required for paved roadway crossings of underground utilities where the carrier is of insufficient strength due to composition or depth of cover in accordance with this Manual.

All gas piping to be maintained by public and private utilities must comply with the Federal Standards as listed in the Florida Public Service Commission Rule 25-12.05, as amended by Order No. 5221, with any subsequent modifications thereto.

All jack and bore crossings shall be a continuous operation at each location at the proper location and depth. Any deviation from the above will be sufficient grounds for work stoppage, plugging the line with concrete, and replacing the line at the proper location. All operations shall be in accordance with ARTICLE 26 of this Manual.

Open cutting of existing roadway pavement shall generally not be allowed, but may be considered under one or more of the following conditions upon the City Engineer's approval:

A) Subsurface obstructions.

B) Limited space for jacking pits.

C) Condition of roadway surface, including imminent resurfacing and rebuilding.

D) Where facility design prohibits.

E) Extreme economic hardship.

In any analysis of a request for open cutting, primary consideration shall be given to the safety and convenience of the public. Permitted open cuts shall be in accordance with the Typical City Details attached as part of this Manual. The City Engineer will consider use of other methods where conditions warrant.

Where an open cut is considered, a smooth all-weather surface must be provided and maintained all times. Permanent replacements of the temporary patch shall be made within 5 days of completion of the crossing. Proper repairs of open cuts shall be in accordance with this Manual.

The City shall establish control of access based upon location, geometric design, and traffic operations controls (in accordance with this Manual), all of which shall encourage safe and efficient operations, as well as provide suitable and sufficient access.

Any construction and maintenance performed within the rights-of-way and public easements of the City that encroach or affect in any way a primary drainage canal, lake, drain well, and/or drainage easement or right-of-way under the jurisdiction of Orange County shall also obtain a Right-of-Way Utilization Permit from the County complying with the existing ordinances of Orange County, Florida and its Right-of-Way Utilization Regulations.

Section 4.05 RESTORATION AND MAINTENANCE

All public rights-of-way and public easements shall be restored to their original condition or better, in keeping with this Manual, and in a manner satisfactory to the City Engineer.

All excavated material in excess of the quantity required for backfill, and unusable material shall be disposed of at the Permitee's expense, and not placed within the limits of the public right-of-way or easement unless so directed by the City Engineer or his Designee.

At such locations where City signs and reflectors will interfere with proposed construction, the Permitee or their Consultant shall notify the City 48 hours in advance of starting work. All signs and reflectors will be removed or relocated only by City forces. Any signs or reflectors damaged, destroyed, removed, or relocated shall be replaced at the expense of the Permitee. No private signs of any type shall be permitted within the right-of-way.

Sodding operations are to begin as soon as fine grading and weather conditions permit, as directed by the City. Any private yards or part of the right-of-way in front of private property that has a grass mat shall be resodded with like sod.

All debris shall be removed and properly disposed of by the Permitee at the Permitee's expense. Dust control shall be mandatory.

All vegetation shall be provided the maximum protection as required by the LDC. The indiscriminate cutting of trees or disfiguring of any feature of scenic value, including methods such as herbicide treatment, shall not be permitted. Trees and/or shrubs destroyed during construction are subject to replacement at the Permitee's expense as directed by the City. The necessary trimming or cutting of trees by utility companies, in the interest of public safety or continuity of utility service, shall not be considered indiscriminate where such utilities cannot bypass the obstruction without violating the clear roadside policy. This shall not be construed to mean that existing pole lines must be relocated to comply with the above. City tree removal permits shall be obtained from the City Building Department.

All landscaping within public rights-of-way and public easements shall comply with the following provisions:

A) The City Engineer or his Designee may request line of sight calculations and details to determine the permissibility of various landscaping and signage in areas of ingress and egress per the requirements of this Manual.

B) In order for the City to allow the non-City installation of right-of-way or easement landscaping, a statement in writing as to who will be responsible for the maintenance of the project including watering, fertilizing, pruning, etc., shall be required. This statement shall come from the adjacent property Owner/Developer, the appropriate homeowners association, or civic organization.

C) The Permitee shall not hold the City responsible for any damage to the plants during subsequent right-of-way construction.

D) Landscaping within State and County rights-of-way within the limits of the City of Ocoee shall comply with Orange County or FDOT highway beautification and planting regulations and the City of Ocoee requirements.

E) Plants between 2 and 7 feet above the ground, in a median island within 100 feet of a crossover nose, shall provide a clear drivers sight distance. Conditions may require the above 100 foot length to be extended for safety considerations.

F) A 4 foot mowing strip shall be maintained between the plants and the curb or sidewalks/bikepaths. If plants are desired in this mowing strip they shall be kept under 24 inches.

G) No rock boulders, utility facilities, stationary signs, or above ground monuments shall be allowed in the medians.

H) Persons and equipment maintaining the project are to carry out their work in such a manner as not to obstruct vision or traffic flow.

I) Plantings shall be maintained at all times to prevent being a hazard in the safe operation of a vehicle, which includes the sight distance of drivers.

J) Trees planted within the right-of-way on high speed (50 MPH and above) and high volume roadways shall be 30 feet from the edge of the pavement or at the right-of-way line. Each location will be reviewed for any special requirements by the City.

K) Sprinkler heads and irrigation systems installed adjacent to public roadways and sidewalks shall be designed to insure public safety and shall not spray water over or on the roadway or sidewalk area. They shall not be operated during high pedestrian or vehicular travel times. On non-curbed streets, the sprinkler heads shall be located adjacent to the right-of-way line or on private property to prevent damage from any vehicles, parked or otherwise.

Section 4.06 UTILITY ACCOMMODATION

4.06.01 General

The placement of utilities within the public rights-of-way and public easements shall be placed in accordance with all applicable Codes, and current industry standards. All accommodations within the FDOT maintained right-of-way shall be in accordance with FDOT's Utility Accommodation Guide. All accommodations within the Orange County maintained roadways shall be in accordance with Orange County regulations. All other installations within the City maintained roadways shall be in accordance with this Manual.

As far as mechanically possible, the accommodations shall be followed for public right-of-way and public easement utilization within the City with the exception above.

All utilities are to be installed in accordance with the latest editions of the Federal Standards, as listed in the Florida Public Service Commission Rule 25.12.05, as amended by Order No. 5221 issued by the Commission on September 17, 1971, with any subsequent modifications thereto, the National Electrical Safety Code, FDOT's Safety Manual, MUTCD, LDC, this Manual, and any City Codes and Ordinances.

The criteria identified in this ARTICLE shall not be applied to a minor segment of an existing utility installation in such a manner as to result in misalignment of the installation or adjustment of the entire installation.

4.06.02 Light and Utility Poles

Light and utility poles shall be at least 18 feet from edge of pavement or at right-of-way line. Poles are permitted to within 12 feet from edge of pavement, provided a frangible base is used or if poles are placed behind a barrier. A minimum distance of 6 feet shall be required from the edge of pavement on deceleration and acceleration lanes. Where the design permits, a 14 foot clearance from finished grade shall be used. In curb and gutter sections, poles shall be at the right-of-way line with 4 foot minimum from face of non-mountable curb to front of pole. Edge of pavement does not include shoulder pavement.

In exposed areas, frangible or breakaway poles and light standards shall be considered to the extent practical. Where location is not exposed, consideration can be given to other type standards. Where feasible and practical, luminaries shall be attached to existing utility poles which meet offset criteria. For the purpose of this ARTICLE, frangible base poles will be accepted as bases in accordance with the FDOT Index Number 9623 (including later revisions), approved slip-type bases, or aluminum poles with an 8 inch outside diameter and 0.188 inch wall thickness, mounted on cast aluminum flange base, alloy 356-T6 and 356-F.

Projects where the 4 foot minimum offset would place the utility or other obstruction in substantial conflict with the sidewalk/bikepath or an unreasonable conflict with requirements of the National Electrical Safety Code would be created (in the case of power poles), and other alternatives are deemed impractical, the minimum may be reduced to 2½ feet from back of curb. Each case where this deviation is proposed must be supported on an individual basis and approved by the City Engineer or his Designee.

4.06.03 Mailboxes and Newspaper Boxes

Non-single family mailboxes, newspaper boxes, etc. shall be placed on private property or at the right-of-way line where possible. Poles may be located up to 6½ feet from right-of-way line, provided that they are at least 18 feet from edge of pavement. In curb and gutter sections, poles shall be at the right-of-way line with 4 foot minimum from face of non-mountable curb to front of pole. Edge of pavement does not include shoulder pavement. Poles shall not be permitted in medians, except for temporary construction purposes where incorporated within a suitable barrier system. Privately owned boxes, etc. are placed at the Owner's expense and liability, and when in City right-of-way shall be removed/relocated if directed to do so by the City Engineer.

Single family mailboxes shall be constructed and/or installed in a manner that does not endanger the public. U.S. Postal regulations shall be considered.

4.06.04 Other Structures

Devices such as signal-strain poles, above ground enclosures, and other items whose construction and size would cause extensive damage to a vehicle if struck are to be located according to the standards for utility poles.

4.06.05 Underground Installations

Underground utility installations shall have a minimum vertical clearance of 36-inches below the top of roadway pavement or top of ground, including ditch grades.

4.06.06 Aerial Crossings

Aerial crossings shall be in accordance with the National Electrical Safety Code, and a minimum of 18 feet over roadways and driveways. Crossing shall not interfere with existing or planned signal installation.

The roadside clearances for above ground utility facilities shall be consistent with those clearances applicable to other obstacles on the type of highway involved, reflecting good engineering and economic considerations.

4.06.07 Excavation

Where possible, excavation shall not be allowed within 4 feet of the edge of pavement. This shall necessitate that the utility be placed a sufficient distance from the pavement. Where this requirement imposes a hardship on the utility due to a narrow distance between the back of curb and the right-of-way or edge of sidewalk/bikepath, the utility may place their facilities within 2 feet of the back of the curb, but only upon approval from the City Engineer or his Designee.

Section 4.07 INSPECTION

The City Engineer or his Designee shall inspect work within the scope of this Manual to ensure that the rights-of-way are established and/or restored properly. Upon project completion, a final inspection shall be required. The City's representatives, together with the representatives of other interested agencies, shall perform the final inspection. Provide 48 hour prior request, excluding weekends and holidays, for final inspection.

The job shall be inspected against the provisions of the approved plans and the City Engineer shall not recommend acceptance until all such provisions are met, and any required tests are performed and accepted.

The Contractor shall have all materials within the scope of this Manual and the right-of-way regulations inspected before being laid, concealed or covered.

The Contractor shall inform the City Engineer or his Designee at the time backfill or any other process which should be monitored is occurring, and provide any requested reports. The laying and simultaneous covering of power cables, telephone cables, television cables, and gas mains is allowed outside the pavement.

Section 4.08 OPERATIONAL SAFETY

The City Engineer may disapprove any curb cut, median opening, or access which will constitute a public hazard or create excessive conflicts in traffic or pedestrian flow, or adversely impact the public safety.

The City Engineer or his Designee shall authorize a “stop work” order upon any Permitee who is committing or creating unsafe acts which may create a public hazard, or who is not complying with the provisions of the permit and this ARTICLE. The order shall remain in effect until such time as these matters are corrected.

The City Engineer or his Designee shall not be held responsible for any damages as a result of the above actions taken under this ARTICLE.

Section 4.09 EXISTING USES

Any Owner/Developer of property on which there is a roadway access point lawfully in existence, but which is determined by the City to present a hazard to the public safety and welfare due to the location of curb cuts, median openings, or other matters regulated within this Manual, and which does not comply with this Manual and/or the LDC shall be required to reconstruct or alter such hazardous situation at the time of any modifications/permits (use-changes , remodeling, reconstruction, enlargement, alterations, paving).

Any curb cut made after the date of this publication, which fails to provide for smooth flow of traffic on and/or off the right-of-way and traveled way, shall be closed by the City until repaired. The City Engineer or his Designee shall make such closure upon notification to the property Owner/Developer. The closure shall be maintained until the condition has been corrected to the satisfaction of the City Engineer.

ARTICLE 5

SITE PREPARATION, SURFACE REMOVAL AND RESTORATION

Index

5.01 GENERAL DEVELOPMENT STANDARDS
5.02 CLEARING AND GRUBBING
5.03 EROSION CONTROL
5.04 DUST CONTROL
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Section 5.01 GENERAL DEVELOPMENT STANDARDS

5.01.1 General

All land proposed for development within the City of Ocoee shall be suitable for the use proposed, shall be adequately served by public facilities and services, and shall conform to adopted goals, objectives, and policies of the City Commission. All proposed development shall also be consistent with the adopted Comprehensive Plan for the City.

5.01.2 Environmental Considerations

Development shall make advantageous use of natural topography and preserve mature trees wherever possible. Special development stipulations may be placed on areas with low and very low potential soils, areas within the 100 year flood plain, wetlands, and other unique environments. Because most environmental problems are site specific, conditions and proposals will be evaluated with permit reviews.

Section 5.02 CLEARING AND GRUBBING

Clearing and grubbing of property shall conform to ARTICLE 7 of this Manual.

Section 5.03 EROSION CONTROL

All commercial and residential Developers and Builders shall follow erosion control methods as described in Section 3.09 of this Manual. Erosion Control measures shall comply with the City of Ocoee criteria described in Section 3.09, FDOT Design Standards, and FDEP Stormwater, Erosion and Sediment Control Program and Manual

Section 5.04 DUST CONTROL

Contractor shall control dust resulting from clearing and grubbing operations to prevent nuisance to adjacent property Owners and the general public.

Section 5.05 SURFACE REMOVAL

Along the proposed pipe lines, as indicated on the plans, the Contractor shall remove the surface materials only to such widths as will permit a trench to be excavated, affording sufficient room for proper efficiency and construction. All applicable City regulations shall be followed under the guides of this Manual and FDOT Standards. Where sidewalks, driveways, pavements and curb and gutter are encountered, caution shall be taken to protect against fracture or disturbance beyond reasonable working limits. All fractured, broken or disturbed surfaces shall be restored to their original condition prior to completion of the work.

Section 5.06 RESTORATION

Restoration of all surfaces including road subbase, soil cement, limerock base, asphaltic concrete surface, Portland cement concrete pavement, driveways, sidewalks and concrete curbs shall be in strict accordance with this Manual. All grassing, sodding and mulching shall be done as specified in ARTICLE 21 of this Manual. In addition, Contractor shall restore all storm drains, culverts, inlets and storm manholes to equal or better condition in accordance with this Manual.

Section 5.07 FINISHED FLOOR ELEVATIONS

Lots and building sites shall be graded to permit construction utilizing a first floor elevation based on the following:

A) At least 2 feet above the 100 year flood plain elevation.

B) If a lot or site is reasonably level, or slopes toward a street, the minimum finished floor elevation shall not be less than 18 inches above the highest crown of that portion of the adjacent street, or right-of-way upon which the structure fronts. This applies to grading classified as Type A or B.

C) If a lot or site slopes away from a street or road with continuous slope to the rear, the finished floor elevation of any structure shall be at least 1 foot above the finished elevations at the side lot lines nearest the front corners of the dwelling. This requirement applies to grading classified as Type C.

D) In addition to the conditions of paragraphs A, B, and C above, the finished floor elevation shall be a minimum of 6 inches above the rim elevation of the nearest downstream gravity sewer manhole serving the lot.

E) It is the intent of the City that lots and building sites provide the necessary finished floor elevation without excessive filling of land. Specific grading plans with proposed finished floor elevations and grading shall be submitted for review and approval of the Public Works Department. When a subdivision lot grading plan has been prepared and approved, specified finished floor elevations and grading types shall be observed. Finished floor elevation shall not deviate below that specified in the grading plan, but may be increased up to 6 inches above that specified without approval. Justification shall be provided for raising finished floor elevation more than 6 inches above that specified. An approved plan that specifies individual elevations shall supersede the requirements of (B) and (C) above and this paragraph.

F) Swales shall be constructed to carry runoff along side lot lines without allowing unintended runoff to adjacent lots. Grading shall minimize the impact of runoff onto other lots when intended by Type B and C grading. Use of stem wall construction, retaining walls or other techniques shall be considered to improve drainage and aesthetics. Areas adjacent to structures or paved surfaces shall be graded to drain away from structures and pavement. Ponding shall be prevented.

G) All slopes of 4:1 or greater shall be sodded. Sodded slopes shall not exceed 4:1 without approval. Where lots adjoin ponds, natural, conservation, or common areas, the lot line elevation specified on the subdivision plans (or natural elevation) shall be maintained and the lot graded at a slope not to exceed 4:1.

ARTICLE 6

EXCAVATION, TRENCHING, AND BACKFILLING

Index

6.01 GENERAL
6.02 SOIL BORINGS AND SUBSURFACE INVESTIGATIONS
6.03 EXISTING UTILITIES
6.04 MATERIALS
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Section 6.01 GENERAL

This ARTICLE covers excavation, backfill, fill and grading associated with utility trench and structural construction. The Contractor shall furnish all labor, materials, equipment and incidentals necessary to perform all excavation, backfill, fill, compaction, grading and slope protection required to complete the work shown on the Drawings and specified herein. The work shall include, but not necessarily be limited to: pump stations, manholes, vaults, conduits, pipes, roadways and paving; all backfilling, fill and required borrow; grading; disposal of surplus and unsuitable materials; and all related work such as sheeting, bracing and water handling.

Section 6.02 SOIL BORINGS AND SUBSURFACE INVESTIGATIONS

The Contractor shall examine the site and undertake subsurface investigations, including soil borings, before commencing the work. The City will not be responsible for presumed or existing soil conditions in the work area.

Section 6.03 EXISTING UTILITIES

The Contractor shall locate existing utilities in the areas of work prior to starting construction activities. If utilities are to remain in place, the Contractor shall provide adequate means of protection during earthwork operations. Should uncharted or incorrectly charted piping or other utilities be encountered during excavation, the Contractor shall consult the Owner of such piping or utility immediately for directions. Payment for damage and repair to such piping or utilities is the Contractor's responsibility.

The City shall not be responsible for uncharted or incorrectly charted water and wastewater mains or other utilities. It is the Contractor's responsibility to ensure that such facilities exist at the presumed point prior to commencing construction.

Section 6.04 MATERIALS

6.04.01 General

Materials for use as bedding and backfill shall be as described under this Section. The Contractor shall, upon request by the City, make an appropriate sample of this material available for testing by the City or its designated representative.

6.04.02 Structural Fill

Materials for structural fill shall be bedding rock or select common fill as specified herein or other suitable material as approved by the City.

6.04.03 Common Fill

Common fill shall consist of mineral soil, substantially free of clay, organic material, loam, wood, trash and other objectionable material which may be compressible or which cannot be compacted properly. Common fill shall not contain stones larger than 6 inches in any dimension, asphalt, broken concrete, masonry, rubble, or other similar materials. It shall have physical properties such that it can be readily spread and compacted during filling. Additionally, common fill shall be no more than 12% by weight finer than the No. 200 mesh sieve unless finer material is approved for use in a specific location by the City.

Material falling within the above Specifications, encountered during the excavation, may be stored in segregated stockpiles for reuse. All material which in the opinion of the City is not suitable for reuse, shall be spoiled as specified herein for disposal of unsuitable materials.

6.04.04 Select Common Fill

Select common fill shall be as specified above from common fill, except that the material shall contain no stones larger then 1½ inches in largest dimension, and shall be no more than 5% by weight finer than the No. 200 mesh sieve.

6.04.05 Bedding Rock

Bedding rock shall be $^{3}/_{16}$ inch to ¾ inch washed and graded stone (FDOT #57). This stone shall be graded so that 90% to 100% will pass a ¾ inch screen and 95% to 100% will be retained on a No. 8 screen. No stones larger then 1 inch in any dimension shall be accepted.

Table 6-1				
	Type of Fill	Usage	Final Compacted	%
1)	Trenched Pipe Foundation, Bedding, and Haunching	Beneath piping	6"	98
2)	Trenched Pipe Cover	Over and/or around piping	6"	98
3)	Utilities Trench Backfill	"Influence area" beneath other piping or utility lines	8"	98
		"Influence area" beneathrigid paving and railroad tracks	6"	98
		"Influence area" beneath non-rigid paving	9"	98
		Adjacent to or under structures	9"	98
4)	Structural Fill	All locations under minor structures (manhole, etc.)	8"	98
5)	Granular Fill	Below concrete slabbedding, foundations, rigid paving, and excavated areas adjacent to structures	8"	98
6)	Structural Backfill	(See Trench Backfill)		
7)	General Site Grading	Fill in other locations not covered herein	12"	92
		Topsoil Placement	12"	92

"Influence area" shall be considered the area within lines sloped downward at 45° from the outer edges of paving, foundations, and utility lines.

Section 6.05 SHEETING AND BRACING IN EXCAVATIONS

6.05.01 General

If required to support the sides of excavations, to prevent any movement which could in any way diminish the width of the excavation below that necessary for proper construction and to protect adjacent structures, existing piping and/or foundation material from disturbance, undermining or other damage, the CONTRACTOR shall construct and maintain sheeting and bracing. Care shall be taken to prevent voids outside of the sheeting, but if voids are formed, they shall be immediately filled and rammed.

6.05.02 Miscellaneous Requirements

For trench sheeting for pipes, no sheeting is to be withdrawn if driven below mid-diameter of any pipe and no wood sheeting shall be cut off at a level lower than one foot above the top of any pipe unless otherwise directed by the TWA. If, during the progress of the WORK, the TWA decides that additional wood sheeting should be left in place, it may direct the CONTRACTOR to do so. If steel sheeting is used for trench sheeting, removal shall be as specified above, unless written approval is given by the TWA for an alternate method of removal. All sheeting and bracing not left in place shall be carefully removed in such a manner as not to endanger the construction of other structures, utilities, existing piping or property. Unless otherwise approved or indicated on the Drawings or in the Specifications, all sheeting and bracing shall be removed after completion of the substructure. All voids left or caused by withdrawal of sheeting shall be immediately refilled with sand by ramming with tools specially adapted to that purpose, by watering or otherwise as may be directed.

The right of the TWA to order sheeting and bracing left in place shall not be construed as creating an obligation on its part to issue such orders, and its failure to exercise its right to do so shall not relieve the CONTRACTOR from liability for damages to persons or property occurring from or upon the work occasioned by negligence or otherwise, growing out of a failure on the part of the CONTRACTOR to leave in place sufficient sheeting and bracing to prevent any caving or moving of the ground.

The CONTRACTOR shall construct the sheeting outside the neat lines of the foundation unless indicated otherwise to the extent he deems it desirable for his method of operation. Sheeting shall be plumb and securely braced and tied in position. Sheeting, bracing and cofferdams shall be adequate to withstand all pressures to which the structure will be subjected. Pumping, bracing and other work within the cofferdam shall be done in a manner to avoid disturbing any construction already performed. Any movement or bulging, which may occur, shall be corrected by the CONTRACTOR at his own expense so as to provide the necessary clearances and dimensions.

Section 6.06 DEWATERING, DRAINAGE AND FLOTATION

6.06.01 General

The Contractor shall excavate, construct and place all pipelines, concrete work, fill, and bedding rock, in-the-dry. In addition, the Contractor shall not make the final 24 inches of excavation until the water level is a minimum of 1 foot below proposed bottom of excavation. For purposes of these Specifications, "in-the-dry" is defined to be within 2% of the optimum moisture content of the soil. The City reserves the right to ask the Contractor to demonstrate that the water level is a minimum of 1 foot below proposed bottom of excavation before allowing the construction to proceed.

Discharge water shall be clear with no visible soil particles and must be in compliance with all Regulatory Agency Requirements. Discharge from dewatering shall be disposed of in such a manner that it will not interfere with the normal drainage of the area in which the work is being performed, create a public nuisance, or form ponding. The operations shall not cause injury to any portion of the work completed, or in progress, or to the surface of streets, or to private property. The dewatering operation shall comply with the requirements of appropriate regulatory agencies. Additionally, where private property will be involved, advance permission shall be obtained by the Contractor. All dewatering activities shall comply with the current standards of SJRWMD and FDEP.

6.06.02 Additional Requirements

The Contractor shall, at all times during construction, provide and maintain proper equipment and facilities to remove promptly and dispose of properly all water entering excavations, and keep such excavations dry so as to obtain a satisfactory undisturbed subgrade foundation condition until the fill, structure, or pipes to be built thereon have been completed to such extent that they will not be floated or otherwise damaged by allowing water levels to return to natural elevations.

Dewatering shall at all times be conducted in such a manner as to preserve the natural undisturbed bearing capacity of the subgrade soils at proposed bottom of excavation.

It is expected that well points or other engineered dewatering systems will be required for pre-drainage of the soils prior to final excavation for some of the deeper in-ground structures, or piping and for maintaining the lowered groundwater level until construction has been completed to such an extent that the structure, pipeline or fill will not be floated or otherwise damaged. Well points shall be surrounded by suitable filter sand and negligible fines shall be removed by pumping.

The Contractor shall furnish all materials and equipment and perform all work required to install and maintain the drainage systems for handling groundwater and surface water encountered during construction of structures, pipelines and compacted fills.

During backfilling and construction, water levels shall be measured in observation wells located as directed by the City.

Continuous pumping shall be required as long as water levels are required to be below natural levels.

Section 6.07 EXCAVATION

6.07.01 General

Excavation consists of removal, storage and disposal of material encountered when establishing required grade elevations and in accordance with the notes shown in the Contract Documents. Authorized earth excavation includes removal and disposal of pavements and other obstructions visible on ground surface, underground structures and utilities indicated to be demolished and removed, and other materials encountered that are not classified as rock excavation or unauthorized excavation. Unauthorized excavation consists of removal of material beyond the limits needed to establish required grade and subgrade elevations without specific direction of the City. Unauthorized excavation, as well as remedial work directed by the City, shall be at the Contractor's expense. Such remedial work shall be performed as directed by the City.

If requested by the City, when excavation has reached required subgrade elevations, a Geotechnical/Soils Engineer shall make an inspection of conditions. If the subgrade is unsuitable, Contractor shall carry excavation deeper and replace excavated material with select common fill or bedding rock, as directed by the City.

If the Contractor excavates below grade through error, for convenience, or through failure to properly dewater the excavation or disturbs the subgrade before dewatering is sufficiently complete, the Contractor may be directed by the City to excavate below grade and refill the excavation using select common fill or bedding rock.

Slope sides of excavations shall comply with Local Codes and Ordinances, and with OSHA requirements. Contractor shall shore and brace where sloping is not possible due to space restrictions or stability of the material excavated. Sides and slopes shall be maintained in a safe condition until completion of backfilling.

Contractor shall stockpile satisfactory excavated materials at a location approved by the City until required for backfill or fill. When needed in the work, material shall be located and graded at the direction of a Geotechnical/Soils Engineer. Stockpiles shall be placed and graded for proper drainage. All soil materials shall be located away from the edge of excavations. All surplus and/or unsuitable excavated material shall be legally disposed of by the Contractor. Any permits required for the hauling and disposing of this material shall be obtained by the Contractor prior to commencing hauling operations.

6.07.02 Excavation For Structures

All such excavations shall conform to the elevations and dimensions shown in the Contract Documents within a tolerance of plus or minus 0.10 foot and extending a sufficient distance from footings and foundations to permit placing and removing form work, installation of services and other construction, inspection or as shown in the Contract Documents . In excavating for footings and foundations, care shall be exercised not to disturb the bottom of the excavation. Bottoms shall be trimmed to required lines and grades to leave a solid base to receive concrete.

6.07.03 Trench Excavation

Excavation for all trenches required for the installation of utility pipes shall be made to the depths indicated in the Contract Documents and in such manner and to such widths as will give suitable room for laying the pipe within the trenches, for bracing and supporting, and for pumping and drainage facilities. The bottom of the excavations shall be firm and dry and in all respects acceptable to the City.

Excavation shall not exceed normal trench width as specified in the Typical City Details attached as part of this Manual. Any excavation which exceeds the normal trench width shall require special backfill requirements as determined by the City.

Where pipes are to be laid in bedding rock, select common fill or encased in concrete, the trench may be excavated by machinery to or just below the designated subgrade, provided that the material remaining in the bottom of the trench is no more than slightly disturbed.

Where the pipes are to be laid directly on the trench bottom, the lower part of the trenches shall not be excavated to grade by machinery. The last of the material being excavated shall be done manually in such a manner that will give a shaped bottom, true to grade, so that pipe can be evenly supported on undisturbed material, as specified in the Typical City Details attached as part of this Manual. Bell holes shall be made as required.

Section 6.08 BEDDING AND BACKFILL

6.08.01 General

Material placed in fill areas under and around structures and pipelines shall be deposited within the lines and to the grades shown on the Drawings or as directed by the City, making due allowance for settlement of the material. Fill shall be placed only on properly prepared surfaces which have been inspected and approved by the City. If sufficient select common or common fill material is not available from excavation on-site, the Contractor shall provide fill as may be required.

Fill shall be brought up in substantially level lifts starting in the deepest portion of the fill. The entire surface of the work shall be maintained free from ruts and in such condition that construction equipment can readily travel over any section. Fill shall be placed and spread in layers by a backhoe or other approved method, unless otherwise specified. The Contractor shall assign a sufficient number of men to this work to insure satisfactory compliance with these requirements.

All fill materials shall be placed and compacted "in-the-dry". The Contractor shall dewater excavated areas as required to perform the work and in such manner as to preserve the undisturbed state of the natural inorganic soils.

Prior to filling, the ground surface shall be prepared by removing vegetation, debris, unsatisfactory soil materials, obstructions and deleterious materials. Contractor shall plow strip or break up sloped surfaces steeper than 1 vertical to 4 horizontal so that fill material will bond with the existing surface. When existing ground surface has a density less than that specified for the particular area classification, Contractor shall break up the ground surface, pulverize, moisture-condition to the optimum moisture content and compact to required depth and percentage of maximum density.

Before compaction, material shall be moistened or aerated as necessary to provide the optimum moisture content. Material which is too wet shall be spread on the fill area and permitted to dry, assisted by harrowing if necessary, until the moisture content is reduced to allowable limits. If added moisture is required, water shall be applied by sprinkler tanks or other sprinkler systems, which will insure uniform distribution of the water over the area to be treated and give complete and accurate control of the amount of water to be used. If too much water is added, the area shall be permitted to dry before compaction is continued. The Contractor shall supply all hose, piping, valves, sprinklers, pumps, sprinkler tanks, hauling equipment and all other materials and equipment necessary to place water in the fill in the manner specified. Contractor shall compact each layer to required percentage of maximum dry density or relative dry density in accordance with this Manual. Backfill or fill material shall not be placed on surfaces that are muddy, frozen or contain frost or ice. Contractor to Supply all materials and equipment necessary for proper installation.

6.08.02 Bedding and Backfill For Structures

Bedding rock shall be used for bedding under all structures as specified in the Latest Typical City Details. The Contractor shall take all precautions necessary to maintain the bedding in a compacted state and to prevent washing, erosion or loosening of this bed. Structural fill shall be used as backfill against the exterior walls of the structures. Fill shall be compacted sufficiently in accordance with these Specifications. If compaction is by rolling or ramming, material shall be wet down as required.

Backfilling shall be carried up evenly on all walls of an individual structure. No backfill shall be allowed against walls until the walls and their supporting slabs, if applicable, have attained sufficient strength.

In locations where pipes pass through building walls, the Contractor shall take precautions to consolidate the fill up to an elevation of at least 1 foot above the bottom of the pipes. Structural fill in such areas shall be placed for a distance of not less than 3 feet either side of the center line of the pipe in level layers not exceeding 8 inches in depth.

The surface of filled areas shall be graded to smooth true lines, strictly conforming to grades indicated on the Drawings. No soft spots or uncompacted areas shall be allowed in the work.

Temporary bracing shall be provided as required during construction of all structures to protect partially completed structures against all construction loads, hydraulic pressure and earth pressure. The bracing shall be capable of resisting all loads applied to the walls as a result of backfilling.

6.08.03 Bedding and Backfill For Pipes

Bedding for pipe shall be as shown on the plans and as specified in the Typical City Details attached as part of this Manual. The Contractor shall take all precautions necessary to maintain the bedding in a compacted state and to prevent washing, erosion or loosening of this bed.

Backfilling over and around pipes shall begin as soon as practical after the pipe has been laid, jointed and inspected as specified in the Typical City Details attached as part of this Manual.

Any space remaining between the pipe and sides of the trench shall be carefully backfilled and spread by hand or approved mechanical device and thoroughly compacted with a tamper as fast as placed, up to a level of 1 foot above the top of the pipe. The filling shall be carried up evenly on both sides. Compaction shall be in accordance with this Manual.

The remainder of the trench above the compacted backfill, as just described above, shall be filled and thoroughly compacted in uniform layers. Compaction shall be in accordance with this Manual.

Section 6.09 COMPACTION

6.09.01 General

The Contractor shall control soil compaction during construction to provide the percentage of maximum density specified. The Contractor shall provide the City copies of all soils testing reports, prepared by a Geotechnical/Soils Engineer, demonstrating compliance with these Specifications.

When an existing trench bottom has a density less than that specified under these Specifications, the Contractor shall break up the trench bottom surface, pulverize, moisture-condition to the optimum moisture content, and compact to required depth and percentage of maximum density.

6.09.02 Percentage of Maximum Density Requirements

The CONTRACTOR shall control soil compaction during construction to provide the percentage of maximum density specified. When utility work is conducted within FDOT right-of-way or other governing municipality, the more stringent minimum density standards shall apply.

Fill or undisturbed soil from the bottom of the pipe trench to one foot above the pipe to the finished grade elevation shall be compacted to a minimum density of 98 percent of the maximum dry density as determined by AASHTO T-180 for all structural areas or right of way or easements with vehicular traffic on top of the pipe. Other non– structural areas may be compacted to a minimum density of 95% of maximum dry density as determined by AASHTO T-180.

6.09.03 Compaction Tests

One compaction test location shall be required for each 300 linear feet of pipe and for every 100 square feet of backfill around structures as a minimum. The City may determine that more compaction tests are required to certify the installation depending on field conditions. The locations of compaction tests within the trench shall be in conformance with the following schedule:

A) One test at the spring line of the pipe.

B) At least one test for each 12 inch layer of backfill within the pipe bedding zone for pipes 24 inches and larger.

C) One test at an elevation of 1 foot above the top of the pipe.

D) One test for each 2 feet of backfill placed from 1 foot above the top of the pipe to finished grade elevation.

If, based on the Geotechnical/Soils Engineer testing reports and inspection, fill which has been placed is below specified density, Contractor shall provide additional compaction and testing prior to commencing further construction.

Section 6.10 GRADING

All areas within the limits of construction, including transition areas, shall be uniformly graded to produce a smooth, uniform surface. Areas adjacent to structures or paved surfaces shall be graded to drain away from structures and pavement. Ponding shall be prevented. After grading, the area shall be compacted to the specified depth and percentage of maximum density.

No grading shall be done in areas where there are existing pipelines that may be uncovered or damaged until such lines have been relocated.

Section 6.11 MAINTENANCE

Contractor shall protect newly graded areas from traffic and erosion and keep them free of trash and debris. Contractor shall repair and reestablish grades in settled, eroded and rutted areas.

Where completed compacted areas are disturbed by subsequent construction operations or adverse weather, Contractor shall scarify surface and reshape and compact to required density prior to further construction.

Section 6.12 INSPECTION AND QUALITY ASSURANCE

6.12.01 Inspection

Contractor shall examine the areas and conditions under which excavating, filling and grading are to be performed, and not proceed with the work until unsatisfactory conditions have been corrected.

Contractor shall examine existing grade prior to commencement of work and report to the City if elevations of existing grade vary from elevations shown on Drawings.

6.12.02 Quality Assurance

All work shall be performed in compliance with applicable requirements of governing authorities having jurisdiction.

The City shall provide quality control testing during construction to ensure compliance with these Specifications.

Contractor shall allow the testing service to inspect and approve fill materials and fill layers before further construction is performed. The Contractor shall be given copies of all test results. Contractor shall be financially responsible for all failed and/or substandard material testing.

ARTICLE 7

CLEARING AND GRUBBING

Index

7.01 GENERAL
7.02 CLEARING AND GRUBBING
7.03 DISPOSAL OF UNSUITABLE MATERIALS

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Section 7.01 GENERAL

The work covered by this ARTICLE consists of clearing and grubbing and the proper removal and disposal of the resultant products and debris within the areas of the rights-of-way, easements, retention areas, and all other construction areas. Dust control is mandatory. All appropriate permits shall be obtained prior to start of activity. Existing trees and other vegetation that are designated to remain shall be protected in accordance with the LDC.

Section 7.02 CLEARING AND GRUBBING

Clearing and grubbing shall consist of the removal and proper disposal of all timber, brush, stumps, roots, grass, weeds, sawdust, rubbish, buildings, septic tanks, pipe, foundations, and all other deleterious material resting on or protruding through the surface of the excavated areas. All wells with no future use shall be abandoned in accordance with Florida Department of Environmental Protection and local Water Management District regulations.

In all areas of roadway construction and embankment, trees, stumps, roots, and other deleterious materials shall be removed to a depth of not less than 2 feet below the subgrade.

Section 7.03 DISPOSAL OF UNSUITABLE MATERIALS

Unsuitable material shall be the property of the Owner/Developer, and materials shall be disposed of in accordance with current City, County, State, and Federal Regulations.

ARTICLE 8

EARTHWORK

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8.01 GENERAL
8.02 EXCAVATION
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8.04 SUITABLE MATERIAL
8.05 DISPOSAL OF EXCESS MATERIAL
8.06 PLACING EMBANKMENT
8.07 SHOULDERS, DITCHES, AND SLOPES

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Section 8.01 GENERAL

The work covered by this ARTICLE consists of excavation and embankment required for roadway, ditches, channel changes and other works.

Unless otherwise provided, this ARTICLE shall include all excavation, shaping, filling, sloping and finishing necessary for the construction, preparation, and completion of all embankments, subgrades, shoulders, ditches, slopes, gutters, intersections, approaches, private entrances, and other works all in accordance with the required alignment, grade, and cross sections shown on the plans or as directed, by the City Engineer or his Designee. All earthwork within the City of Ocoee will comply with FDOT Standard Specifications for Road and Bridge Construction, most current edition.

Section 8.02 EXCAVATION

While the excavation is being done and until the work is finally accepted, the Contractor shall take the necessary steps to protect the work to prevent loss of material from the construction area due to the action of wind or water. During construction, the area shall be maintained in such condition that it will not constitute a hazard and shall be well drained at all times.

Section 8.03 UNSUITABLE MATERIAL

Where muck, rock, clay, organic, or other materials within the limits of the construction area is, in the opinion of the City Engineer, unsuitable, the Contractor shall excavate to a depth approved by the City Engineer or his Designee and then backfill with suitable material in an approved manner, shaping to conform to the required cross section.

Section 8.04 SUITABLE MATERIAL

Suitable material excavated from existing City right-of-way shall be hauled to a designated location within the City. Location to be designated by City Engineer

Section 8.05 DISPOSAL OF EXCESS MATERIAL

Excess material shall be disposed of in accordance with current City, County, State of Florida, and Federal regulations.

Section 8.06 PLACING EMBANKMENT

Embankments shall be constructed of suitable materials placed in successive level layers not more than 12 inches in thickness, loosely measured, for the full width and the full length of the embankment, and compacted to a minimum density of 98% of the maximum density value as determined by AASHTO T-180.

Section 8.07 SHOULDERS, DITCHES, AND SLOPES

When the work includes surfacing or paving, the earthwork, including the slopes and all drainage structures, shall be Substantially Completed before the construction of the base course and pavement is started.

During the construction of the pavement, a shoulder at least 3 feet wide shall be maintained in place to properly support the edges of the pavement or curb. Before final acceptance by the City, the earth shoulders, slopes, and side ditches shall be completed and shaped to a surface which is within 0.1 foot above or below the true surface shown on the plans; except that, adjacent to pavement, curb, or sidewalk/bikepath, the shoulders shall be shaped to match the edge of the pavement, curb or sidewalk/bikepath. The shoulder line shall not vary more than 0.3 foot horizontally from the true lines shown on the plans.

All earth work within 5 feet of the roadway must be compacted to a minimum density of 98% of the maximum dry density as determined by AASHTO T-180.

ARTICLE 9

SUBBASE

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9.01 DESCRIPTION
9.02 SUBBASE REQUIREMENTS
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Section 9.01 DESCRIPTION

Subbase shall be defined as that portion of the roadbed immediately below the base course or pavement including below the curb and gutter, the limits of which will ordinarily include those portions of the roadbed shown in the plans. The limits of the subbase shall be considered to extend outward to 12 inches beyond the base. On roadways where curbs are utilized, the subbase shall extend to 12 inches beyond the back of curb.

All subbase material installed within the City of Ocoee will comply with the FDOT Standard Specifications for the Road and Bridge Construction, most current edition.

Section 9.02 SUBBASE REQUIREMENTS

Before the following items are constructed, subbase material is required as specified:

A) Stabilize top 12 inches to Limerock Bearing Ration (LBR) 40.

B) Compact to a minimum density of 98% of the maximum density determined by AASHTO T-180 for top 12 inches.

Section 9.03 STABILIZATION

The stabilizing material shall be high bearing value soil, sand-clay, limerock, shell, or other material approved by the City Engineer and shall meet the physical requirements of FDOT.

Section 9.04 CONSTRUCTION

The surface of the subbase shall conform to the lines and grades as defined on the construction plans to a tolerance of 0.05 foot. If surface exhibits plastic deformations during compaction, the existing wet material shall be removed and replaced by dry material. The method of aeration may be used if permitted by the City Engineer.

Section 9.05 TESTING

Refer to ARTICLE 15 of this Manual for testing and quality control requirements.

ARTICLE 10

SOIL CEMENT BASE

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Section 10.01 DESCRIPTION

The work specified in this ARTICLE shall consist of the construction of a soil cement base course composed of soil and Portland cement uniformly mixed, moistened, compacted, finished and cured in accordance with these Specifications, and shall conform to the lines, grades thicknesses and typical cross sections shown on the plans.

The base shall be designed to have a minimum in-situ strength of 350 psi. Seven day laboratory design compressive-strength shall be a minimum of 500 psi for mixed in-place and 450 psi for plant mixed.

Section 10.02 USE OF SOIL CEMENT APPROVAL

The use of soil cement is generally not permissible and shall not be used without the City Engineer's permission. The City Engineer shall only consider the use of soil cement under conditions when normal base material functions may fail due to field conditions. Additional information supporting the request for and the use of soil cement may be required.

Section 10.03 DESIGN MIX

10.03.01 Minimum Requirements

Processing of the base shall not be started until the soil cement design mix, which has been prepared by a registered Geotechnical/Soils Engineer, for the particular soil has been submitted to and approved by the City Engineer or his Designee. The following shall be the minimum items included with the mix design submittal:

A) Cement content.

B) Optimum moisture content.

C) Minimum and maximum moisture content.

D) Seven laboratory compressive strength.

E) Anticipated 7 day field compressive strength.

F) Method of application and timing (including total time from batching to completion).

G) Other information as requested.

10.03.02 Notification

Construction of the soil cement base shall not proceed without 72 hour notice to the Engineering Inspection Division of the City of Ocoee.

Section 10.04 MATERIALS

10.04.01 Portland Cement

Portland Cement shall be Type I or Type I-P and shall comply with the Standard Specifications for Portland Cement ASTM C-145. Cement which is partially set, lumpy or caked shall not be used. One cubic foot of Portland Cement shall be considered to weigh 94 lbs.

10.04.02 Water

Water shall be clean and free from substance deleterious to the hardening of the soil cement.

10.04.03 Soil

Only soils which have proven themselves to produce a high quality soil cement base shall be acceptable. New sources of soil cement material must be approved by the City Engineer prior to use.

10.04.04 Soil Cement Mix Types

Central mixed plant materials:

A) Only a central mixed material from an approved commercial source shall be acceptable for use as a base material for improvements to be dedicated to the City of Ocoee.

B) In place mixed materials shall only be an option for an Owner/Developer on private property or for improvements not being dedicated to the City. The Owner/Developer shall provide to the City a certification from the Geotechnical or Project Engineer stating that the results of all testing of the mixed in place materials are satisfactory.

Section 10.05 EQUIPMENT

Soil cement may be constructed with any machine, combination of machines or equipment that will produce the results meeting the requirements for soil pulverization, cement application, mixing, uniform depth control, water application, incorporation of materials, compaction, finishing and curing, as required by these Specifications.

Section 10.06 CONSTRUCTION METHODS

10.06.01 Responsibility

The Contractor is responsible for completing the project in accordance with plans and Specifications and with experienced competent supervision.

10.06.02 Preparation

Before construction operations are begun, the area to be paved shall be graded and shaped as required to construct the soil cement base in conformance with the grades, lines, thicknesses and typical cross section shown on the plans. Additional soil needed, if any, shall be placed as directed. Unsuitable and/or yielding soil or material shall be removed and replaced with acceptable soil.

10.06.03 Delivery of Materials

All soil cement deliveries shall be accompanied by a batch time stamped on the delivery ticket by means of a mechanical time clock. Batch time shall be an accurate time of concrete batch and delivery truck departure from the batch plant.

10.06.04 Application of Water and Moist Mixing

Immediately after and/or during the mixing of soil and cement, and before beginning the compaction, the moisture content of the soil cement mixture shall be determined by the laboratory and, if required, water shall be applied uniformly in quantities required to obtain proper moisture content. After the final application of water, mixing shall be continued until the water is distributed uniformly through the full depth of the mixture.

When water application and mixing has been completed, the percentage of moisture in the mixture and in unpulverized soil lumps, based on oven-dry weights, shall not be more than 2 percentage points above the specified optimum moisture content, and shall not be less than that quantity which will cause the soil cement mixture to become unstable during compaction and finishing.

10.06.05 Compaction

Prior to beginning of compaction, the mixture shall be in a loose condition for its full depth. The loose mixture shall then be uniformly compacted until the entire depth of the mixture is compacted to a minimum density of 98% of the maximum density in accordance with AASHTO T-180 as determined in the field on representative samples of soil cement mixture obtained from the roadway at the time compaction begins. During the compaction operations, shaping may be required to obtain the required grades and cross section. The maximum time allowed between the last moist mixing and compaction shall be 60 minutes.

10.06.06 Finishing

After the mixture has been initially compacted, the surface of the soil cement shall be shaped to the required lines, grades and cross section. During the shaping operations, the surface shall be lightly scarified to loosen any imprints left by the compacting or shaping equipment, when deemed necessary. The resulting surface shall then be compacted to the specified density with a pneumatic tire roller. Rolling shall be supplemented by broom-dragging, if required.

The moisture content of the surface material must be maintained at not less than its specified optimum moisture content during finishing operations. Surface compaction and finishing shall be done in such a manner as to produce a smooth, dense surface, free of surface compaction planes, cracks, ridges or loose material. Surface-finishing methods may be varied, provided a smooth, dense surface, free of surface compaction planes is produced. The moisture and density requirements shall be determined by the methods prescribed in AASHTO T-135.

10.06.07 Surface Requirements (Scalping or Hard-Planing)

After compaction and finishing have been completed, and not later than the beginning of the next calendar day after the construction of any section of the base, the surface shall be tested with a template cut to the required crown and/or with a 15 foot straight edge laid parallel to the centerline. All irregularities greater than ¼ inch shall be immediately corrected with a blade adjusted to the lightest cut, which will insure a surface that does not contain depressions greater than ¼ inch under the template or the straight-edge. The material removed shall be wasted. Additional wetting during and after this final shaping operation shall be required to keep the base continuously moist.

10.06.08 Prime/Curing

The curing material shall be applied immediately after the completion of finishing operations. The finished soil cement shall be kept continuously wet until the curing material is placed. After the soil cement has been finished as specified herein, it shall be protected against drying for 7 days by the application of bituminous coating.

Prime and curing materials shall conform to ARTICLE 12 of this Manual. Covering the application of bituminous materials, including but not limited to: materials, equipment, cleaning of the base, weather limitations, application of prime coat and application of tack coat.

10.06.09 Construction Joints

Prior to the beginning of each day's construction, a straight transverse construction joint shall be formed by cutting back into the completed work to form a true vertical face.

10.06.10 Thickness

During various stages of construction, test holes or trenches shall be dug in the mixture to determine the thickness. After the base is completed test holes shall be dug or cored at intervals of not more than 300 feet, or at closer intervals if necessary, and the thickness of the base shall be determined from measurements made in these test holes.

Where the base is deficient in thickness by more than ½ inch, the area of deficient base shall be removed and replaced by base of the required thickness, at the Contractor's expense. Except, at the City Engineer's discretion, such deficient base thickness may be left in place if the deficiency can be made up in asphaltic surface course.

Section 10.07 OPENING TO TRAFFIC

The Contractor shall not be permitted to drive heavy equipment over the completed sections. Light weight pneumatic-tired equipment may be permitted after the surface has hardened sufficiently to prevent the equipment from marking the surface and provided the protection and curing specified are not impaired. Completed section may be opened to light traffic after 24 hours, provided the surface has hardened sufficiently to prevent marking by traffic and has been inspected by the City Engineer or his Designee. An application of sand shall only be done prior to opening to construction traffic.

Section 10.08 MAINTENANCE

The Contractor shall maintain the base to a true and satisfactory surface until the wearing surface is constructed. Should any repairs or patching be necessary, they shall extend to the full depth of the base and shall be made in a manner that will assure restoration of a uniform base course conforming to the requirements of these Specifications. The bituminous curing coating shall be maintained until the wearing surface is constructed.

Section 10.09 INSPECTION

After a minimum of 7 days have elapsed and prior to applying the asphalt wearing surface, a detailed engineering inspection of the base shall be performed by the City Engineer or his Designee, Geotechnical/Soils Engineer, and Contractor. This inspection of the hardened soil cement base is required prior to approval for paving, to assure that the soil cement base has set-up satisfactorily and that no soft areas or surface scabs exist which may need repair. Prior to commencing paving operations, all deficiencies shall be corrected and approved by the City Engineer or his Designee.

ARTICLE 11

LIMEROCK BASE

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Section 11.01 GENERAL

The work specified in this ARTICLE consists of the construction of a base course composed of limerock. It shall be constructed on the prepared subgrade in accordance with these Specifications and in conformity with the lines, grades, notes, and typical cross sections shown on the plans. Where so shown on the plans, the base shall be constructed in 2 courses. Where the plans do not specify double-course base, the base may be constructed in either 1 or 2 courses.

All limerock base installed within the City of Ocoee will comply with the FDOT Standard Specifications for the Road and Bridge Construction, most current edition.

Section 11.02 MATERIALS

The material used shall be obtained from a FDOT certified mine (pit).

Section 11.03 EQUIPMENT

This work may be performed with any machine, combination of machines, or equipment that will produce the specified results.

Section 11.04 TRANSPORTING LIMEROCK

The limerock shall be transported to the point where it is to be used over rock previously placed and dumped on the end of the preceding spread. In no case shall rock be dumped directly on the subgrade. The Contractor may seek relief from this requirement when the subgrade is to be adequately stabilized, as approved by the City Engineer.

Section 11.05 SPREADING LIMEROCK

The limerock shall be spread uniformly. All segregated areas of fine or coarse rock shall be removed and replaced with well-graded rock.

For double-course base, the rock shall be spread in 2 courses, and the thickness of the first course shall be approximately ½ the total thickness of the finished base, or enough additional to bear the weight of the construction equipment without disturbing the subgrade.

Section 11.06 COMPACTING AND FINISHING BASE

For double course base, the first course shall be bladed if necessary to secure a uniform surface, and shall be compacted to the density specified below, immediately prior to spreading the second course. No other finishing of this course is required.

After spreading is completed, the entire surface shall be scarified and shaped so as to produce the exact grade and cross section after compaction. For double course bases, this scarifying shall extend to a depth sufficient to penetrate slightly the surface of the first course.

Proper moisture condition shall be maintained uniformly throughout the material during the compaction operation. The material shall be compacted to a minimum density of 98% of the maximum density obtainable under AASHTO T-180. Where the base is being constructed in one course and the specified thickness is more than 6 inches, the density specified above shall be obtained in both the bottom half and top half of the base. During final compacting operations, if blading of any areas is necessary to obtain the true grade and cross section, the compacting operations for such areas shall be completed prior to making the density determinations on the finished base.

The surface shall be "hard-planed" with a grader immediately prior to the application of the prime coat to remove the thin-glazed or cemented surface, leaving a granular or porous condition that will allow free penetration of the prime material. The materials planed from the base shall be removed from the base area.

If, at any time, the subgrade material should become mixed with the base course material, the Contractor, at their cost shall excavate and remove the mixture, reshape and compact the subgrade, and replace the materials removed with clean base material, which shall be shaped and compacted as specified above.

Section 11.07 PRIME/CURING

Once limerock has been finished as specified herein, it shall be protected by the application of a bituminous coating. The bituminous material shall be applied as soon as possible after the completion of finishing operations. The Prime/Curing material shall be in accordance with ARTICLE 12 of this Manual.

Section 11.08 TESTING SURFACE

The finished surface of the base course shall be checked with a template cut to the required cross section and with a 15 foot straight edge laid parallel to the centerline of the road or other approved testing devices. All irregularities greater than ±¼ inch shall be corrected by scarifying and removing or adding rock, as may be required, after which the entire areas shall be re-compacted as specified herein. All corrective material and rework is at the contractor's expense.

Section 11.09 TESTS

Testing shall be done in accordance with ARTICLE 15 of this Manual.

Section 11.10 DEFICIENCIES

If deficiencies in the density occur, the base shall be reworked and re-compacted until the density tests conform to these Specifications. All work to repair said deficiencies will be at the contractor's expense.

Any deficiencies in thickness of base greater than ½ inch shall require that the entire base be reworked to conform to the original line and grade and specifications as shown on the original plans. Except, at the City Engineer's discretion, such deficient base thickness may be left in place if the deficiency can be made up in asphaltic surface course.

Section 11.11 OPENING TO TRAFFIC

The Contractor shall not be permitted to drive heavy equipment over the completed sections. Light weight pneumatic-tired equipment may be permitted after the surface has hardened sufficiently to prevent the equipment from marking the surface and provided the protection and curing specified are not impaired. Completed section may be opened to light traffic after 24 hours, provided the surface has hardened sufficiently to prevent marking by traffic and has been inspected by the City Engineer or his Designee. An application of sand shall only be done prior to opening to construction traffic.

Section 11.12 MAINTENANCE

The Contractor shall maintain the base to a true and satisfactory surface until the wearing surface is constructed. Should any repairs or patching be necessary, they shall extend to the full depth of the base and shall be made in a manner that will assure restoration of a uniform base course conforming to the requirements of these Specifications. The bituminous curing coating shall be maintained until the wearing surface is constructed.

ARTICLE 12

PRIME AND TACK COATS FOR BASE COURSES

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Section 12.01 GENERAL

The work specified in this ARTICLE consists of the application of bituminous material, on a previously prepared base, in accordance with these Specifications and in conformity with the lines, grades, dimensions, and notes shown on the plans.

All prime and tack coats installed will comply with the FDOT Standard Specifications for the Road and Bridge Construction, most current edition.

Section 12.02 MATERIALS

The materials used shall be as follows:

12.02.01 Prime Coat

A) Cutback Asphalt, Grade RC-SS-1, SS-1H, Special MS-Emulsion, diluted at the ratio of 6 parts emulsified asphalt to 4 parts water.

B) Cutback Asphalt, Grade RC-70.

12.02.02 Tack Coat

A) Asphalt Cement, Viscosity Grades AC-20 or AC-30.

B) Emulsified Asphalt, Grade RS-2, SS-1, SS-1H, Special MS-Emulsion, diluted at the ratio of 6 parts emulsified asphalt to 4 parts water.

For the prime and tack coat, any one of the specified bituminous materials may be used at the option of the Contractor, unless a specific type and grade is called for on the plans.

Section 12.03 EQUIPMENT

This work may be performed with any machine, combination of machines, or equipment that will produce the specified results.

Section 12.04 CLEANING THE BASE

Before any bituminous material is applied, all loose material, dust, and foreign material, which might prevent proper bond with existing surface, shall be removed for the full width of the application. Particular care shall be taken to clean the outer edges of the strip to be treated in order to insure that the prime or tack coat will adhere. Where the prime or tack coat is applied adjacent to curb and gutter or valley gutter, such concrete surfaces are to be protected and kept free of bituminous materials.

Section 12.05 WEATHER LIMITATIONS

No bituminous material shall be applied when the temperature of the air is less than 40° F in the shade, or when the weather conditions or the condition of the existing surface is unsuitable.

Section 12.06 APPLICATION OF PRIME COAT

The surface to be primed shall be clean and free of standing water. For limerock bases the glazed finish shall be removed, leaving a granular or porous condition that will allow free penetration of bituminous material. The temperature of the prime material shall be between 100° F and 150° F. The actual temperature shall be that which will insure uniform distribution. The material shall be applied by means of a pressure distributor. The amount of bituminous material applied shall be not less than 0.10 gallon per square yard for limerock base and not less than 0.15 gallon per square yard for soil cement, or shell base. The amount to be applied will be dependent on the character of the surface and shall be sufficient to coat the surface thoroughly and uniformly, with no excess. Where asphaltic pavement abuts concrete curbing, the vertical abutting edge shall receive a uniform coating of tack applied so as to avoid puddles, etc.

A light uniform application of clean sand shall be applied prior to opening the primed base to traffic, in which case the sand shall be rolled with a traffic roller. If warranted by traffic conditions, the application shall be made only on one-half of the width of the base at one time, care being taken to secure the correct amount of bituminous materials at the joint.

The base shall be sufficiently moist in order to obtain maximum penetration of the asphalt.

Section 12.07 APPLICATION OF TACK COAT

Where a bituminous surface is to be laid and a tack coat is required, it shall be applied as herein specified. On newly constructed base courses, the application of the tack coat, when required, shall follow the application of the prime coat, immediately prior to placing the wearing surface. In general, a tack coat shall not be required on primed bases, except in areas which have become excessively dirty and cannot be cleaned, where the prime has cured and lost bonding effect, or where the prime coat has worn away. The tack coat shall be applied with a pressure distributor. The bituminous material shall be heated to a suitable consistency as designed or as stated in Section 11.06. The bituminous material shall be applied at the rate between 0.02 gallon and 0.08 gallon per square yard. The tack coat shall be applied sufficiently in advance of the laying of the wearing surface to permit drying, but shall not be applied so far in advance or over such an area as to lose its adhesiveness as a result of being covered with dust or other foreign material and shall be kept free from traffic until the wearing surface is laid.

ARTICLE 13

ASPHALTIC CONCRETE SURFACE COURSE

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Section 13.01 GENERAL

The work specified in this ARTICLE consists of the application of asphaltic concrete surface course. This course shall be composed of a mixture of aggregates and, if necessary, mineral filler and asphalt cement to produce the desired stability as hereinafter described, properly laid upon a prepared base in accordance with these Specifications and in conformity with the lines, grade, thickness and typical cross section shown on the plans. This work shall include the conditioning of the existing surface or base. Skid resistant surfaces shall be installed as required by the City Engineer.

All asphalt pavement installed will comply with the FDOT Standard Specifications for the Road and Bridge Construction, most current edition.

Section 13.02 ASPHALTIC CONCRETE MIXES

All thicknesses mentioned in these Specifications and/or shown on the project Drawing shall be an average thickness computed as follows:

The minimum thickness allowed shall be ¼ inch less than the required average thickness. Thickness in excess of ¼ inch of the required average thickness shall be computed at the design thickness plus ¼ inch in computing the average thickness.

The thickness of the pavement shall be determined from the length of core, at least 2 inches in diameter, taken at random points on the cross section and along the roadway. Each core shall represent a section not longer than 250 feet. The average thickness shall be determined from the measured thicknesses.

If the Contractor believes that the number of cores taken is insufficient to properly indicate the thickness of the pavement, additional cores can be requested at locations designated by the Contractor. These and any additional costs shall be born by the Contractor.

When the deficiency in thickness is in excess of ¼ inch, the Contractor shall correct the deficiency either by replacing the full thickness for a length extending at least 50 feet from each end of the deficient area, or (when permitted by the City Engineer or his Designee) by overlaying. Normally an overlay shall not be permitted in a concrete curb section.

Asphaltic concrete mixes shall meet the following Specifications when called for in the plans and specifications:

Table 13-1				
Type	Job Mix Specification	Min/Avg Compacted (Max Lift)	Minimum Marshall Stability	Application
Type S-1 (S-I)	*	1 ¼ " 2 ½ "	1,500 lb	Wearing Course
Type S-2 (S-II)	*	2" 2 ¾ "	1,000 lb	Wearing Course
Type S-3 (S-III)	*	¾ " 1 ½"	1,500 lb	Wearing Course
Type FC-5	Current FDOT Specification	(¾"")	N/A	Friction Course
Type FC-9.5	*	Refer to FDOT Specification	N/A	Friction Course
Type FC-12.5	*	Refer to FDOT Specification	N/A	Friction Course
Type SP-9.5	Current FDOT Specification	1" 1 ½ "	N/A	Structural Course
Type SP-12.5	Current FDOT Specification	1 ½ " 2 ½ "	N/A	Structural Course
Type SP-19	Current FDOT Specification	2" 3"	N/A	Structural Course

* http://www.dot.state.fl.us/specificationsoffice/Implemented/LAP/Archives/Asphalt/Default.shtm

Section 13.03 MECHANICAL SPREADING and SCREEDING EQUIPMENT

Bituminous pavers shall be self-contained, self-propelled and steerable. It shall be equipped with a receiving and disbursing hopper capable of holding a minimum quantity of 5 cubic yards of bituminous plant mix material permitting a uniform spreading operation. The hopper shall be equipped with a conveyor distribution system to place the mixture uniformly in front of the screed.

The paver shall also be equipped with a heated mechanical screed or strike-off assembly. The screed or strike-off shall be capable of adjustment to regulate the depth of material spread and shall produce a finished surface of the required evenness and texture, without tearing, shoving, or gouging the mixture.

Section 13.04 CONSTRUCTION METHODS

The mixture shall be spread on the designated surface only when the surface previously prepared is intact, firm, properly cured and dried, and only when the air temperature in the shade and away from artificial heat is above 40° F and rising.

The mixture shall be delivered on the road in ample time to permit the spreading, rolling and surface testing during daylight hours. The temperature of the mixture at the time of spreading shall be between 260° and 310° F and shall not exceed 340° F at the plant.

Material shall be delivered to the job site with sufficient frequency that the paving operation can continue without interruption.

Depressions which may develop after the initial rolling shall be remedied by removing the mixture laid and adding new material to bring such depressions to a true surface. Such portions of the completed course that are defective in surface planeness, compaction or composition, or that do not comply with the requirements of these Specifications shall be removed and replaced with suitable mixture properly laid in accordance with these Specifications.

Vertical construction joints shall be constructed prior to the commencement of the ongoing paving operation. All cold joints shall be prepared according to the FDOT Specifications. The vertical surface of all existing asphaltic concrete mixes, at cold joints, shall be mopped with an approved liquid bitumen material so as to provide a water-tight joint at the interface of the two mixes.

Section 13.05 FINISHED SURFACE REQUIREMENTS

For the purpose of testing the finished surface, the Contractor shall provide a 15 foot rolling straight edge (to include a recent certification of calibration) and standard template cut to the true cross section of the road. These shall be available at all times during construction so that the City may check the finished surface. The Contractor shall provide and designate an employee whose duty it is to use the straight edge and template in checking all rolled surface under the direction of the City. Vertical measurement from a string line between curbs, to determined crown, may be accepted as an alternate. The finished surface shall be such that it will not vary more than ¼ inch from the 15 foot rolling straight edge applied parallel to the centerline of the pavement and shall be of uniform texture and compaction. The lip of the asphalt shall be higher than the gutter by ¼ to ½ inch. The surface shall have no pulled, torn or loosened portions and shall be free from segregation, sand streaks, sand spots, or ripples. Irregularities of the surface, exceeding the above requirements, shall be corrected by the Contractor who has the option of selecting one of the following methods:

A) Removing and Replacing - If correction is made by removing and replacing the pavement, the removal must be for the full depth of the course and extend at least 50 feet on either side of the defective area, for the full width of the paving lane.

B) Overlaying - If correction is made by overlaying, the overlay shall cover the length of the defective area and taper uniformly to a feather edge thickness at a minimum distance of 50 feet on either side of the defective area. The overlay shall extend full width of the roadway. Care shall be taken to maintain the specified cross slope. The mix used for the overlay may be adjusted as necessary for this purpose by the City Engineer. Overlaying shall not be permitted when the finished pavement surface is a friction course or abuts concrete curbs.

C) Other Methods - For courses which will not be the final pavement surface, correction of minor straightedge deficiencies by methods other than specified above may be approved by the City Engineer.

The City Engineer or his Designee may require in-laid type pavement markings or alkyd thermoplastic pavement markings at the time of the final course application.

Section 13.06 SUBMITTALS

Prior to the start of the placing of the asphaltic concrete, the job mix formula prepared by a certified material testing laboratory shall be submitted to and be approved by the City Engineer or his Designee. All job mix design formulas shall be current within the last 12 months.

The following items may be required by the City Engineer or his Designee:

A) Plant inspection and calibration check.

B) Aggregate verification.

C) Temperature control and verification.

ARTICLE 14

PORTLAND CEMENT CONCRETE PAVEMENT

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Section 14.01 GENERAL

Rigid pavement consists of constructing a specified Portland Cement Concrete Paving on a prepared subgrade. The utilities and other items in and beneath the street must be properly coordinated with the construction of rigid pavement to avoid all conflicts. The work to be done shall include the furnishing of all supervision, labor, materials, equipment and incidentals necessary for the proposed rigid pavement construction in accordance with the approved Drawings and specifications.

All rigid pavement installed will comply with the FDOT Standard Specifications for the Road and Bridge Construction, most current edition.

Section 14.02 SUBGRADE PREPARATION FOR RIGID PAVEMENT

14.02.01 General

The bottom of the excavation for the pavement or top of the earth fill will be known as the pavement subgrade and shall conform to the lines, grade and cross sections shown on the plans.

Prior to placing the concrete, the subgrade shall be tested for conformity with the cross section shown on the plans. If necessary, material shall be removed or added as required to bring all portions of the subgrade to the correct elevation. Concrete shall not be placed on any portion of the subgrade which has not been tested for correct elevation. The subgrade shall be cleared of all debris, including tree roots, stumps, and loose material. If at any time trucks, construction equipment or slip forming machines cause rutting or displacement of the subgrade materials, the subgrade shall be reshaped and compacted. The subgrade shall be in a moist condition at the time the concrete is placed.

14.02.02 Subgrade Material

The top 6 inches shall be composed of well drained granular soils that are predominantly sandy, mixed with no more silt or clay than required to obtain a Florida bearing value of 50 plus or minus 5 and be compacted to a minimum density of 98% of maximum density in accordance with AASHTO T-180.

Section 14.03 MATERIALS, PROPORTIONING AND CONSTRUCTION FOR RIGID PAVEMENTS

The materials and proportioning shall be in accordance with ACI Standard 318, latest edition. All construction procedures shall be in accordance with FDOT Standard Specifications for Road and Bridge Construction, latest edition.

14.03.01 Strength Required

All concrete shall have a minimum compressive strength of 3,000 psi at 28 days. Conformance to strength requirements shall be determined by ACI Standard 318, latest edition.

14.03.02 Slump

The mixture shall contain no more water than is necessary to produce concrete which is workable and plastic. The minimum slump necessary to place the concrete satisfactorily shall be used. Slumps shall be maintained so as not to exceed 4½ inches for non-vibrated placement nor to exceed 5 inches for vibrated placement.

The design mix shall be submitted to the City Engineer and Construction Manager for approval prior to paving.

Section 14.04 EQUIPMENT

14.04.01 Forms

The pavement shall be placed to lines and grades established by the Engineer. The edges of pavement shall be vertical to the subgrade and forms shall be sufficient to support mechanical equipment.

14.04.02 Ready Mixed Plants

The plant shall be in accordance with the FDOT Standard Specifications for Road and Bridge Construction, latest edition. All plants must be DOT certified or approved by the City Engineer.

14.04.03 On-Site Central Mix Plants

The plant shall be in accordance with the FDOT Standard Specifications for Road and Bridge Construction, latest edition. The trucks used to transport the concrete shall be so constructed to prohibit segregation of the mix. All plants must be DOT certified or approved by the City Engineer.

14.04.04 Paver

All equipment used in the placement of concrete pavements shall conform to FDOT Standard Specifications for Road and Bridge Construction, latest edition.

Section 14.05 MIXING AND PLACING FOR RIGID PAVEMENT

14.05.01 General

Concrete pavement shall be constructed on the prepared subgrade in accordance with these Regulations and in conformity with the lines, grades, thickness, and typical cross sections shown on the construction plans. Concrete pavement shall meet the following Minimum thickness requirements.

Table 14-1

Minimum Type of Development	Roadway Classification	Concrete Thickness
Residential	Marginal Access and Parking Areas	6"
	Local Street	8"
	Minor Collector Street	8"
	Major Collector Street	8"
Industrial and Commercial	Marginal Access and Parking Areas	6"
	Minor Street	8"
	Collector Street	8"

14.05.02 Transporting Concrete

Concrete may be transported any distance providing it is discharged on the grade with the slump within the required slump range and meets concrete time limit requirements. If additional water is required to maintain the specified slump of concrete transported in the truck mixers, it may be added with the permission of the City Engineer or his Designee. In this case, a minimum of 25 additional revolutions of the mixer drum at designed mixing speed shall be required before discharging of the concrete. All concrete deliveries shall be accompanied by a batch time stamped on the delivery ticket by means of a mechanical time clock. Batch time shall be an accurate time of concrete batch and delivery truck departure from the batch plant.

14.05.03 Concrete Time Limit

The length of time that the concrete can be held in the truck shall conform to the following:

A) Air temperature 45°F to 80°F, 90 minutes.

B) Air temperature over 80°F with a retarder added to the mix, 90 minutes maximum.

C) Air temperature over 80°F without a retarder added to the mix, 60 minutes maximum.

D) The maximum temperature of the concrete at the time of placing shall be 95°F.

14.05.04 Placing Concrete

The concrete shall be deposited on the grade in such a manner as to require as little re-handling as possible. It shall be deposited in successive batches in a continuous operation. The concrete shall be consolidated by suitable means so as to preclude the formation of voids or honeycomb pockets.

14.05.05 Placing in Cold Weather

Concrete shall only be placed when the temperature is at least 40°F and rising. Any concrete damaged by frost action shall be removed and replaced.

Section 14.06 FINISHING

14.06.01 General

The concrete shall be struck-off, consolidated, and finished with mechanical equipment in such a manner that after final finishing, it shall conform to the pavement cross section shown on the construction plans. Hand finishing shall be permitted in narrow widths, in areas of irregular dimensions, or in the event of breakdown of the mechanical equipment, only to finish the concrete already deposited on the grade.

14.06.02 Final Surface Finish

The final surface of the pavement shall have uniform, skid-resistant texture. The method of texturing shall be approved by the City Engineer or his Designee and may require change in the final finishing procedure as required to produce the desired final surface texture. A burlap drag or transverse broom finish is recommended for local and collector streets. Arterial and rural roads may require an overlapping stiff bristled brook or steel comb finish at the discretion of the City Engineer or his Designee.

14.06.03 Pavement Exposed to Rain During Construction

The Contractor shall always have materials available to protect the surface of the plastic concrete against rain. Areas of the pavement surface that exhibit a smooth, sandy appearance after the rain ceases shall be textured before applying the membrane curing materials. Areas that have suffered surface erosion and have coarse aggregate exposed, and have not yet hardened, shall be reworked by hand methods or with the finishing machine when the form paving method is used. Fresh concrete containing the same materials and properties as the pavement concrete shall be added to maintain an adequate supply in front of the screeds or machine to assure replacement of the concrete eroded from the surface. The surface shall then be textured and cured as specified.

If pavement edges have been severely eroded and the concrete has not set, the edges shall be repaired by setting side forms and replacing eroded concrete. After the side forms are set, fresh concrete shall be placed and finished prior to texturing and curing. After the pavement has hardened, remedial work shall not be permitted until after the curing period has terminated.

Section 14.07 CURING FOR RIGID PAVEMENTS

14.07.01 General

After finishing operations have been completed and immediately after the free water has left the surface, the surface of the slab and the sides of the slab, for slip formed pavement, shall be coated and sealed with a uniform layer of membrane curing compound. The curing compound shall be applied at the rate of not less than 1 gallon per 200 square feet of surface. When the forms are removed, curing compound shall be applied to the sides of the slab. Areas in which the curing membrane is damaged shall be re-sprayed with curing compound within a period of 3 days.

Curing compound may be omitted when, in conjunction with protection of pavement from inclement weather, a polyethylene film or other acceptable material is applied over the pavement and maintained intact for 3 days.

14.07.02 Cracks

Concrete rigid pavement shall not be accepted with excessive uncontrolled cracks. Shrinkage cracks must be avoided.

Uncontrolled cracks 1/16 inch or larger in width shall be repaired. One of the following repair methods shall be used:

A) Remove and Replacement.

B) Widen with power router and fill with an approved joint sealant.

C) Epoxy grout injection.

The City Engineer or his Designee shall determine which cracks are to be repaired and the method to be used.

Section 14.08 JOINTS IN RIGID PAVEMENTS

14.08.01 General

Transverse and longitudinal joints shall be constructed to a maximum spacing of 15 feet. Transverse joints shall extend the entire width of the pavement and through the curbs.

Sawing of joints shall begin 4 to 6 hours after placing concrete or as soon as the concrete has hardened sufficiently to permit sawing without excessive raveling and before uncontrolled cracking occurs. If necessary, the sawing operations shall be carried on both day and night, regardless of weather conditions.

14.08.02 Construction Joints

Longitudinal joints may be construction joints at the discretion of the City Engineer or his Designee. Transverse construction joints shall be installed whenever the placing of concrete is suspended a sufficient length of time for the concrete to begin to harden.

14.08.03 Joint Sealing

Joints shall be sealed, if required, before the pavement is exposed to traffic, including construction traffic. Prior to sealing, all foreign material shall be removed from the joints and the joints shall be thoroughly dry.

Section 14.09 FINAL ACCEPTANCE FOR RIGID PAVEMENTS

14.09.01 General Acceptance for Rigid Pavements

Before the pavement shall be considered for acceptance, all items shall be complete in accordance with the construction plans and these Regulations. Equipment, surplus materials, and construction debris shall be removed from the project.

14.09.02 Opening to Traffic

The pavement shall be closed to traffic after the concrete is placed until it reaches a compressive strength of 3,000 psi under ordinary field conditions. This does not include the sawing and sealing equipment or other light miscellaneous equipment. New roadways shall be closed to public traffic until approved by the City Engineer or his Designee.

14.09.03 Testing of Concrete

Concrete pavement shall have a 28-day compressive strength of 3,000 psi. Portland Cement Concrete control for slump testing, and concrete cylinder samples and testing is required and shall be in accordance with AASHTO and ASTM Specifications, latest editions. Test reports shall be submitted to the City Engineer or his Designee by the Engineer of Record for review of all non-public improvements. All tests on public improvements shall be conducted by a Geotechnical/Soils Engineer under contract to the City. Final acceptance shall be based on testing in accordance with other paving requirements. Failed tests or additional tests are at Contractor's expense.

ARTICLE 15

QUALITY CONTROL

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15.01 GENERAL
15.02 INSPECTIONS AND TESTS

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Section 15.01 GENERAL

Developments within the City of Ocoee which have improvements to be dedicated (property, utilities, and rights-of-way) or granted (easements) to the City shall require quality control assurances. The cost for these assurances shall be three (3) percent of the total construction cost of the dedicated and/or granted improvements. This is part of the requirements of a Right-of-Way Utilization Permit.

Section 15.02 INSPECTIONS AND TESTS

Staged inspections during construction are required. It is the responsibility of the Owner/Developer, or their Contractor, to notify the City Engineer or their Designee to arrange for these inspections. All tests shall be the responsibility of the Owner/Developer unless otherwise stated in the following paragraph.

Tests which are required under this Manual shall be performed by a competent engineering testing laboratory. This laboratory shall have an Engineer registered in Florida as one of the responsible officials of the firm. All tests on facilities to be dedicated to the public shall be performed by a City contracted or approved engineering firm. All such materials testing costs shall be paid for by the Owner/Developer. In accordance with City Policy, the Contractor shall reimburse the City for any extra costs incurred due to the retesting of failing portions of the project to be dedicated to the public. During construction and upon completion of the following construction stages, the Developer/Contractor shall notify the City that each stage is ready for inspection, and will await clearance by the City Engineer or their Designee before proceeding to the next stage:

A) Work zone traffic control.

B) Clearing and grubbing.

C) Utility systems (sanitary sewer facilities only).

D) Storm water facilities.

E) Removal of unsuitable material.

F) Stabilization of subgrade.

G) Underdrains.

H) Curb and gutter (including backfill behind curbing).

I) Inlets, box culverts, and all other concrete structures when steel is in place prior to pouring.

J) All underground utilities within right-of-way, including but not limited to water, wastewater, irrigation, electric, street lighting wiring and bases, cable television, telephones, gas, etc. shall be in place and an inspection approval on file with the Construction Manager prior to proceeding.

K) Base course during construction or mixing.

L) Traffic Signal Systems.

M) Finishing base course prior to paving.

N) Wearing surface during application.

O) Sidewalks, driveway approach, dumpster pads, and other reinforced structures (pre-pour).

P) Sodding and/or landscaping.

Q) Cleanup and dressing of right-of-way limits.

R) Pavement marking and traffic control signage.

S) Street name signs.

T) Final inspection.

The City requires a 24-hour notice of said scheduled inspections. The purpose of these inspections is to ensure compliance with the approved development plan and to advise the City whether or not the roads, traffic controls, storm drainage, utilities, and other required improvements being constructed appear to qualify for acceptance by the City. The City accepts no responsibility or liability for the work, or for any contractual conditions involving acceptance, payment, or guarantees between the Contractor and the Developer, by virtue of these stage inspections. The City assumes no responsibility or commitment guaranteeing acceptance of the work, or for subsequent failure, by virtue of these stage inspections. However, if any aspect of the work being performed does not comply with acceptable standards, corrections will be required by the City as a condition for City acceptance. All required improvements shall be installed and have the approval of the City prior to acceptance by the City.

Inspection of Private Facilities

Inspections and verifications of private streets and drainage facilities in approved developments shall be conducted by the City to verify that they are being constructed in accordance with the approved plans for the project.

ARTICLE 16

CULVERTS AND STORM SEWERS

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16.04 BACKFILLING
16.05 PIPE FOUNDATIONS
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Section 16.01 GENERAL

The work in this ARTICLE shall consist of furnishing and installing culverts and storm sewers with appurtenances in conformance with the Specifications hereafter described and of the sizes and dimensions shown on the plans. Storm sewer pumping stations shall in general conform to the Specifications for sanitary sewer lift stations. All products shall be FDOT approved materials.

Section 16.02 PIPE

16.02.01 Concrete Pipe

Concrete pipe shall be of first quality, conforming to the most current ASTM Designation C-76. Pipe requirements shall be shown on the plans. Class III reinforced concrete pipe is the minimum acceptable classification. Lifting holes are prohibited.

The joints shall have a continuous O-ring rubber gasket, or approved equal, which fits snugly in the annular space between the beveled surfaces of the tongue and groove ends of the pipe to form a flexible watertight joint under all conditions of service. There shall be no exposed metal in the joint, except that allowed by ASTM and FDOT for “chairs”. All concrete pipe joints shall be wrapped with filter fabric. Filter fabric shall conform to ARTICLE 18 of this Manual. Filter material shall extend a minimum of 1 foot both sides of the joint and a 2 foot overlap on the top. All joints shall prevent soil from infiltration into the pipe.

16.02.02 Alternative Material Pipes

Alternative pipe materials may be allowed upon the submittal by the Project Engineer and approval by the City Engineer.

Section 16.03 LAYING PIPE

All pipe shall be carefully laid, true to the lines and grades as shown on the plans. For pipe laid with rubber gasket joints, any deviation from true alignment or grade, which would result in a displacement from the normal position of the gasket of as much as ¼ inch, or which would produce a gap exceeding ½ inch between sections of pipe for more than 25% of the circumference of the inside of the pipe, shall not be acceptable. If this occurs the pipe shall be removed and re-laid. Where minor imperfections in the manufacture of the pipe cause a gap greater than ½ inch between pipe sections, the joint will be acceptable provided the gap does not extend more than 25% of the circumference of the inside of the pipe. No mortar, joint compound, or other filler which would tend to restrict the flexibility of the gasket joint shall be applied to the gap. All pipe shall be laid "in-the-dry" unless specifically authorized otherwise by the City Engineer.

Section 16.04 BACKFILLING

Backfilling shall progress as rapidly as the construction and testing of the work will permit. All backfill material shall be suitable and free of deleterious material. The initial backfill shall be carefully deposited on both sides of the pipe at the same time and uniformly compacted around the barrel of the pipe until enough has been placed to provide a cover of 1 foot above the crown of the pipe. In no case shall backfill material be placed in the trench in a manner that will cause shock to or unequal pressure on the pipe. The backfill shall be placed and compacted to a minimum density of 98% of the maximum density value as determined by AASHTO T-180. Under no conditions shall construction debris, concrete, etc., be included with the backfill. All backfill in existing pavement areas shall be non-shrinkable fill unless this requirement is waived by the City Engineer.

Section 16.05 PIPE FOUNDATIONS

Where the nature of the foundation materials is of poor supporting value, the foundation material shall be consolidated by mechanical methods, replaced with sand or other material by constructing supporting cradles, or as approved by the City Engineer or his Designee.

Section 16.06 TESTS

Compaction tests shall be required for the first lift around the pipe and one test for each 1 foot lift above that to the subgrade for each 200 linear feet of pipe as a minimum. The City Engineer or his Designee may determine that more or fewer tests are required to certify the installation depending on the field conditions.

ARTICLE 17

INLETS AND MANHOLES

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Section 17.01 GENERAL

The work specified in this ARTICLE shall consist of constructing inlets and manholes. These structures shall be constructed of Portland cement concrete and reinforcing steel with the necessary metal frames and gratings. They shall be constructed in conformity with the detailed plans and in accordance with this Manual and FDOT Standard Specifications. Stormwater and sewer facilities shall be in accordance with this Manual.

Section 17.02 MATERIALS

Concrete shall be Class I (Class II for sanitary sewer) and have a minimum compressive strength of 4,000 psi at 28 days. The mortar for masonry shall be of Portland cement and sand mixed in the proportions of 1 part cement to 3 parts of sand. At the option of the Contractor, high early strength cement may be used. All items shall be wet cast. Dry casting or low slump concrete shall not be allowed. There shall be no penetrating lifting holes on any structures, and no holes will be allowed within 6 inches of any joint on structures. Brick manholes shall not be permitted.

Section 17.03 FOUNDATIONS

Compaction shall be to a minimum density of 98% of the maximum density determined by AASHTO T-180 for 12 inches, then stabilized using a 9 inch layer of crushed rock in a filter fabric envelope.

Section 17.04 FORMS

Forms shall be built true to line and grade, braced in a substantial and unyielding manner and so designed and constructed that they may be removed without injury to the concrete.

Section 17.05 PLACING AND CURING CONCRETE

The concrete shall be placed in the forms to the depth shown on the plans and thoroughly tamped and spaded. After the concrete has hardened sufficiently, it shall be covered with suitable material and kept moist for a period of 3 days or longer, if necessary, and shall be protected in a satisfactory manner from the elements until thoroughly cured.

Section 17.06 MASONRY CONSTRUCTION

Masonry construction shall be limited to completion of doghouses around pipes, adjusting manhole covers, etc., or as approved by the City Engineer. It is the intent of this Manual that structures be constructed of precast concrete or cast in place concrete. All clay brick used shall be solid and conform to the current ASTM Designation C-55 Grade P-11.

Section 17.07 PRECAST INLETS AND MANHOLES

Precast manholes, inlets and junction boxes shall be in accordance with ASTM C-478. Top elevation adjustment of the manhole top shall be adjustable between 6 inches and 12 inches using precast concrete rings or cast in-place concrete, minimum compressive strength of 3,000 psi. No brick will be accepted for the main structure. Vertical walls of manhole entrances shall not exceed 19 inches in length including the ring and cover.

Section 17.08 PLACING PIPE

The inlet and outlet pipes shall be flush with the inside face of the wall. Mortar bonding shall be required between pipe and structure wall. Concrete to PVC adapters shall be required when PVC pipes are connected to concrete structures.

Section 17.09 FLOW CHANNELS

Flow channel to be precast in place or cast in-place concrete, minimum compressive strength of 3,000 psi. Fillers of any other material will not be accepted. A flow channel shall be formed in the invert of all inlets, manholes and junction boxes and shall extend to the spring line of the pipe. The flow channel through manholes shall be made to conform in shape and slope to the lower 0.8 diameter of the inlets and outlets. Flow direction changes in excess of 90” shall not be included in sewer alignments without special consideration. When directional changes exceeding 45” occur, an additional flow line elevation drop of 0.1 foot across manholes shall be provided. Straight-through channels may be formed with pre-cut half pipes. Benching shall be provided with a minimum slope of 2 inches per foot.

In general, manhole drop connections are not allowed. The City may allow such connections on a case by case basis. These connections shall only be considered when other alternatives are not feasible. If allowed, an outside drop pipe shall be provided for a sewer entering a manhole where its invert elevation is 24 inches or more above the manhole invert. Where the difference in elevation between the incoming sewer invert and the manhole invert is less than 24 inches, the manhole invert shall be filleted to prevent solids deposition.

Section 17.10 INLET PLACEMENT

Radial inlets are prohibited. All inlets must be placed on tangents.

Section 17.11 MANHOLE COVERS AND RINGS

Covers and rings for manholes shall conform to the Approved Manufacturers List for Model Numbers. The cover shall have the wording "City of Ocoee", "Florida" and either "STORM" or "SANITARY" based on application cast into the face as specified in the Typical City Details.

All manhole rings and covers shall be made watertight by means of dovetail grooves and gaskets in the cover. Bolt down and/or gasketed covers shall be provided where manholes are located in areas subject to ponding or flooding. Frames and covers shall be set to conform to the finished grades. All frames shall be set securely in a cement mortar bed and fillet. All covers shall be made flush with existing permanent surfaces except outside the limits of the traveled ways where they shall be set approximately 0.2 feet above the existing ground unless otherwise noted.

Covers and rings for storm inlets with cast in-top ring shall conform to the Approved Manufacturers List for Model Numbers.

Section 17.12 DIAMETER

For pipe sizes 24 inches in diameter and smaller, the minimum inside diameter of manholes shall be 48 inches. For pipe sizes between 24 and 36 inches, the minimum inside diameter shall be 60 inches. For pipe sizes larger than 36 inches in diameter, a 72 inch inside diameter manhole shall be provided

Section 17.13 ACCESS

A 10 foot wide access road and minimum 20 foot easement shall be provided for all structures to be dedicated to the public which are located outside of City roadways. The top 8 inches of the access road shall be stabilized to FBV 50, and compacted to a minimum density of 98% of the maximum density as determined by AASHTO T-180.

ARTICLE 18

UNDERDRAINS

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Section 18.01 GENERAL

The work specified in this ARTICLE consists of the construction of underdrains. Underdrain pipe shall have a minimum diameter of 8 inches, unless otherwise approved by the City Engineer. Underdrains shall be required in all cases unless explicitly deleted by the City Engineer.

Section 18.02 MATERIALS

The materials used shall conform to the following requirements.

18.02.01 Filter Fabric

Filter fabrics for use in underdrains shall conform to the following properties, minimum (use Mirafy 140 or approved equal):

Table 18-1

Fabric	Test Method	Unit	Typical Value
Grab Tensile Strength	ASTM D-1682	lb	120
Grab Tensile Elongation	ASTM D-1682	%	55
Trapezoidal Tear Strength	ASTM D-1117	lb	50
Mullen Burst Strength	ASTM D-3786	psi	210
Puncture Strength	ASTM D-3787	lb	70
Water Flow Rate	CEMC-GET-2	gal/min/sf	285

18.02.02 Pipe Wrap

The filter fabric pipe wrap shall be an approved strong, tough, porous nylon, polyester, polypropylene or other approved fabric. It shall be secured to and completely cover the perforated plastic tubing pipe underdrain to prevent infiltration of trench backfill material. The filter envelope shall weigh a minimum of 4 ounces per square yard and shall retain soil particles larger than 212 microns (No. 70 sieve) when tested in accordance with ASTM D-1682. The grab strength (wet) of the filter wrap shall not be less than 100 lbs and the grab elongation shall not be less than 60%. Storage and handling of filter envelope shall be in accordance with the manufacturer's recommendation. Torn or punctured filter wrap shall not be used.

18.02.03 Filter Aggregate (Fine Aggregate)

Sand used for backfilling trenches under, around and over underdrain pipe shall consist of hard, durable, clean quartz and shall be reasonably well graded, from coarse to fine. When tested by means of laboratory sieves, it shall meet the following requirements, in percent of total weight.

Total Retained on:

Table 18-2

Sieve	Percent
No. 4	0 to 5
No. 8	0 to 15
No. 16	3 to 35
No. 30	30 to 75
No. 50	65 to 95
No. 80	18 o 100

18.02.04 Filter Aggregate (Other)

A) Stone

When stone is used for filter aggregate it shall be composed of clean, durable rock that is non-cementous when exposed to water for extended periods and shall be so certified by a Geotechnical/Soils Engineer. The gradations of stone filter aggregates shall be designed and certified by a Geotechnical/Soils Engineer and approved by the City Engineer. Washed limerock shall not be permitted.

B) Slag

Slag shall be clean, tough and durable. It may be either air-cooled blast-furnace slag or phosphate slag. It shall be reasonably uniform in density and quality, and the gradations of slag filter aggregates shall be designed and certified by a Geotechnical/Soils Engineer and approved by the City Engineer.

O) Expanded Shale

Expanded shale may be used, but only in the filter material grade that meets the gradations specified above for sand.

18.02.05 Pipe

Corrugated Polyethylene Tubing shall be used as underdrain and shall conform to the requirements of AASHTO M-252, latest edition. Polyethylene Tubing shall be delivered in 20 foot lengths (minimum) and shall be fitted, prior to installation, with a filter fabric wrap. PVC Pipe shall satisfy ASTM D-3033 specifications; Aluminum pipe shall satisfy AASHTO M-196 specifications.

Section 18.03 EXCAVATION TRENCH

The trench shall be excavated carefully, to such depth as is required to permit the pipe to be laid to the grade desired and to the dimensions shown in the plans.

The underdrain trench shall be constructed in a dry condition. This shall be accomplished by the use of a well point system or other positive dewatering method.

Section 18.04 PLACING THE FILTER FABRIC

After the trench has been excavated, the filter fabric shall be rolled out over the trench and walked into the trench. Care shall be taken to prevent the excavated material from entering the trench after the fabric has been installed.

Section 18.05 LAYING THE PIPE

After the filter fabric has been placed in the trench, approximately 6 inches of filter aggregate shall be placed in the trench. The pipe shall be bedded firmly in the filter aggregate to the correct line and grade. The upper end of the run of pipe shall terminate at a drainage structure or underdrain cleanout to prevent any filter aggregate from entering the pipe.

All lateral connections to underdrains shall be made at approved drainage structures. Cleanouts and/or approved drainage structures shall be located along all underdrain systems. The maximum spacing of cleanouts or structures shall be 200 feet, or as directed by the City Engineer or his Designee.

Section 18.06 PLACING AND COMPACTING FILTER AGGREGATE

After the pipe has been laid to grade, the pipe shall be firmly held in place by mechanical means while the filter aggregate is placed to a maximum height of 5 inches plus 1 inch (compacted) above the top of the pipe. After the first lift is placed and compacted to the satisfaction of the City Engineer or his Designee the remainder of the filter aggregate shall be placed. The excavation of the trench, the placement of the filter fabric, the installation of the pipe and the placement and compaction of the first lift of filter aggregate shall be accomplished in a single continuous operation. Special care shall be taken to avoid displacement or damage to the pipe or filter fabric.

Section 18.07 BACKFILL ABOVE FILTER AGGREGATE

After the filter aggregate has been placed 12 inches above the pipe the filter fabric shall be lapped the full width of the trench from both sides. The portion of the trench above the filter aggregate shall be filled with fine filter aggregate which shall be placed and tamped in layers not thicker than 12 inches to the existing grade.

Section 18.08 CERTIFICATION

The Contractor shall provide to the City Engineer or his Designee, prior to the final acceptance, a written statement from a Geotechnical/Soils Engineer that all materials installed and that the construction of the underdrain system complies with the approved design.

Section 18.09 ACCEPTANCE OF UNDERDRAINS

Prior to the acceptance for maintenance, the Owner/Developer shall correct any deficiencies. A mandrel shall be used to insure pipe geometry. Failure of the Contractor to perform the required inspection and repairs will result in the City Engineer or his Designee withholding final acceptance and/or Certificates of Occupancy.

ARTICLE 19

SIDEWALKS/BIKEPATHS, CONCRETE CURB, ETC.

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Section 19.01 GENERAL

The work specified in this ARTICLE consists of the construction of curb, curb and gutter, and sidewalks/bikepaths of Portland Cement Concrete. Such work shall be constructed in accordance with this Manual and in conformity with the lines, grades, dimensions, and notes shown on the Plans. Should the Contractor so elect, a curb machine can be used. All concrete shall be finished and supplied as recommended by the PCA and ARTICLE 14 of this Manual. Sidewalks/Bikepaths shall be located at least 2 feet away from walls and fences unless otherwise approved by the City Engineer.

Section 19.02 MATERIALS

Unless otherwise shown on the Plans, concrete shall be Class I, 3,000 psi.

Section 19.03 FORMS

Forms for this work shall be made of either wood or metal. They shall be straight, free from warp or bends, and of sufficient strength when staked to resist the pressure of the concrete without springing.

Forms shall have a depth equal to the plan dimensions for the depth of the concrete being deposited against them.

Section 19.04 CONSTRUCTION METHODS

Excavation shall be made to the required depth. Subgrade or base shall be compacted to a minimum density of 98% of the maximum density as determined by AASHTO T-180 for sidewalks/bikepaths and curbs.

Sidewalk/bikepath construction shall be similar to street construction. Concrete sidewalks/bikepaths shall be at least 4 inches thick, increasing to at least 6 inches thick at driveway entrances. Sidewalks/bikepaths shall have a maximum longitudinal run of 12:1 and a minimum of ¼ inch, maximum of ½ inch per foot positive slope across the surface. There shall be a minimum of ½ inch and maximum of 1 inch per foot positive slope between the top of curb or edge of pavement and the sidewalk/bikepath, unless otherwise specifically approved by the City Engineer.

The concrete shall be placed in the forms to the depth specified and tamped and spaded until mortar entirely covers its surface. The top of the curb or gutter shall be floated smooth and the edges rounded to the radius shown on the plans.

Section 19.05 JOINTS

Where metal templates are used for joint construction, the curb, curb and gutter, etc., shall be constructed in uniform sections 10 feet in length, except where shorter sections are necessary for closures, but no section shall be less than 5 feet.

At the option of the Contractor, the sections may be formed by the use of dummy joints (either formed or sawed) or by the use of sheet metal templates. If sheet metal templates are used, they shall be of the dimensions and set to the lines shown on the plans. The templates shall be held firmly during the placing of the concrete and shall be left in place until the concrete has set sufficiently to hold its shape, but shall be removed while the forms are still in place. Contraction joints shall be spaced at 10 foot intervals for curb and intervals equal to the width of the sidewalks/bikepaths. They shall be ¼ the depth of the concrete. Expansion joints, extending to the full depth of concrete, shall be placed in sidewalks/bikepaths at a maximum of 100 feet, at driveways, sidewalks/bikepaths intersections, all inlets, all radius points, all points where operations cease for any considerable time (such as the end of the day's run), etc. A ½ inch expansion joint shall be installed between all curbs and any abutting structures.

Section 19.06 FINISHING

19.06.01 Surface Requirements

The gutter or flow-line section or curb shall be tested with a 10 foot straight edge laid parallel to the centerline of the roadway while the concrete is still plastic. Irregularities in excess of ¼ inch for curb, curb and gutter, or sidewalks/bikepaths shall be immediately removed.

19.06.02 Repair of Minor Defects

The forms shall be removed within 24 hours after the concrete has been placed, and minor defects then filled with mortar composed of one part Portland cement and two parts fine aggregate. Plastering shall not be permitted on the face of the curb or sidewalk/bikepath. Any rejected curb, curb and gutter, or sidewalk/bikepath shall be removed and replaced.

19.06.03 Final Finish

Sidewalk/bikepath surface, top of the curb, and the face from the top to 8 inches below shall be given a surface finish while the concrete is still green. In general, only a brush finish shall be required.

Section 19.07 CURING

All curbs and sidewalk/bikepath shall be covered with suitable material and kept moist for a period of 3 days or longer, if necessary, and shall be protected in a satisfactory manner from damage by the elements or other causes until acceptance of the work. If curing compound is used, moistening is not required.

Section 19.08 BACKFILLING AND COMPACTION

After the concrete has set sufficiently, but not later than 3 days after placing, the spaces in front and back of the curb shall be refilled to the required elevation with suitable material, which shall be placed and thoroughly compacted in layers not thicker than 6 inches.

Where bases are to be constructed adjacent to the curb, the concrete shall be properly backfilled and shall set for a period of not less than 3 days before any base material is placed against it.

Section 19.09 REQUIREMENTS FOR MACHINE-LAYING

As a specific requirement for machine-laid curb and gutter, contraction joints shall be sawed unless an alternate method of construction is approved in advance by the City Engineer. Joints on curbs shall be provided at intervals of 10 feet, except where shorter intervals are required for closure, but no joints shall be sawed or constructed at intervals of less than 5 feet. Sidewalks may also be machine laid.

Section 19.10 HANDICAP RAMPS

Ramps shall be required at all intersections and be in compliance with the most recent edition of the Florida Accessibility Code for Building Construction as prescribed by law and FDOT Standard Specifications. At each intersection there must be a sufficient number of handicap ramps to facilitate ingress and egress from both sides of the roadway. The slope of the ramp shall not exceed a ratio of 12 horizontal to 1 vertical. A curb ramp shall have a detectable warning complying with Section 11-4.29.2. The detectable warning shall extend the full width and depth of the curb ramp according to Chapter 11 Florida Accessibility Code for Building Construction.

ARTICLE 20

CHAIN LINK FENCE

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20.01 GENERAL
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Section 20.01 GENERAL

The work specified in this ARTICLE consists of furnishing and erecting chain link fence in accordance with this Manual, and Section 02444 of the Chain Link Manufacturers Institute's Specifications. The placement of any fence shall not interfere with the clear sight distance of intersections or driveways. Driveway gates shall be positioned to allow the length of one standard size vehicle behind the right-of-way line.

Section 20.02 MATERIALS

20.02.01 General

The fabric, posts, fastenings, fittings and other accessories for chain link fence shall meet the requirements of AASHTO M-181 with the following changes:

A) ANSI/ASTM A-123 - Zinc (Hot Galvanized) Coatings of Products Fabricated from Rolled, Pressed, and Forged Steel Shapes, Plates, Bars and Strips.

B) ANSI/ASTM F-567 - Installation of Chain-Link Fence.

C) ASTM A-120 - Black and Hot-dipped Zinc-coated (Galvanized) Welded and Seamless Steel Pipe, for Ordinary Uses.

D) ASTM C-94 - Ready-mixed Concrete.

E) ASTM A-120 - Schedule 40 steel or SS-40 pipe, standard weight, welded joints permitted. Size and weight as specified.

F) FS RR-F-191 - Type I: Zinc-coated steel.
Type IV(A): Extruded vinyl coated steel.
Type IV(B): Fusion bonded vinyl coated steel.

20.02.02 Concrete Mix

Concrete shall meet ASTM C-94 and be of normal sulphate resisting Portland Cement, 3,000 psi minimum at 28 days with a 3 inch slump, and ½ inch sized aggregate.

20.02.03 Framing Materials

	Framing Members	Type I Size/in(O.D.)	Round Wt/plf
A)	End, Corner and Pull Posts		
	12 ft and less	2.875	5.80
	Over 12 ft	4.50	11.00
B)	Line Posts (fabric height)	2.375	3.65
C)	Rails and Braces (fabric heights)	1.660	2.27
	This includes Horizontal brace, Top Rail, Center and Bottom Rail.		
D)	Gate Posts (width of leaf)		
	6 ft and less	2.875	5.80
	Over 6 ft to 13 ft	4.50	11.0
	Over 13 ft to 18 ft	6.625	19.0
	Over 18 ft	Design to be approved and certified	
E)	Gate Frame (size of leaf)		
	8 ft high OR 8 ft wide	2.375	3.65
	Over 8 ft high OR 10 ft wide		
	Plus additional structural members	Design to be approved and certified	
	Stretcher Bars	3/16”x3/4”	
	Color coating shall be applied to match fabric		

20.02.04 Chain Link Fabric (Fences and Gates)

PVC Coated Galvanized Steel shall be of steel wire, conforming to ASTM A-641, a tensile strength 75,000 psi, galvanized (0.30 oz/sf), and coated as follows:

A) Coating type I extruded polyvinyl chloride.

B) Coating type II FUSION BONDED PVC of 7 mils.

The standard material shall be Standard Industrial 2 inch mesh, 9 gauge, 0.148 inch diameter, not including vinyl coating.

The color of fabric, gates, and posts shall be as approved by the City Engineer in either medium green, dark green, black, or brown, as applicable.

20.02.05 Manual Operating Gates

A) Fabrication

Gate frames shall be assembled by welding connections. The same fabric as for the fence shall be used unless otherwise specified. Fabric shall be installed with stretcher bars, or tie wires at the top and bottom if stretcher bars are not used. Stretcher bars shall be attached to the gate frame not more than 14 inches off center. Hardware shall be attached with rivets or by other means which provide security against removal or breakage.

1) For sections over 8 feet in height and 10 feet in width, horizontal and vertical members shall be provided to ensure proper gate operation and for attachment of fabric, hardware and accessories.

2) Diagonal cross-bracing consisting of 3/8 inch diameter adjustable truss rods on gates shall be used where four-sided tension rods are not used. Frame rigidity shall be achieved without sag or twist.

B) Gate hardware shall be galvanized per ASTM A-153.

1) Hinges shall be pressed steel or malleable iron to suit gate size, of non lift off type, and offset to permit 180° gate opening. One pair of hinges per leaf, up to 12 feet in height, shall be provided.

2) Latches shall be the forked type to permit operation from either side of gate. A padlock eye shall be provided as an integral part of the latch.

3) The keeper for the gates, which automatically engages the gate leaf and holds it in the open position until manually released, shall be provided.

4) For double gates, a drop rod to hold the inactive leaf shall be provided. A pipe to engage the center drop rod shall be provided in the pavement. Locking devices and padlock eyes shall be provided as an integral part of the latch thereby requiring one padlock for locking both gate leaves.

20.02.06 Accessories

A) All items shall be galvanized to comply with ASTM A-153 (except tie wires) plus finished to match framing.

B) Tension and tie wire

1) Tension wire shall be 7 gauge galvanized wire.

2) Fabric to line posts, rails and braces shall be 9 gauge minimum.

3) Fabric to tension wire shall use 11 gauge hog rings.

C) Post tops shall be pressed steel, or malleable iron, designed as a drive fit, weather tight closure cap on tubular posts. Where top rails are used, tops shall permit passage of the top rail.

D) Stretcher bars shall be one piece lengths to full height of the fabric with a minimum cross section of 3/16 inch x ¾ inch or equivalent fiberglass rod. Stretcher bars shall be provided for each gate, end, corner and pull post. Stretcher bar bands and clips shall be heavy pressed steel or malleable iron. At square posts, special design clips shall be provided.

Section 20.03 INSTALLATION

A) Framework, fabric, accessories and gates shall be installed in accordance with ANSI/ASTM F-567.

B) Fence shall be of the height and length indicated on the approved plans.

C) Line posts intervals shall not exceed 10 feet.

D) Terminal gate and posts shall be set plumb, in concrete footings with the top of the footing 2 inches below the finished grade. Slope top of concrete for water runoff. Excavate depth as required by ANSI/ASTM F-567.

E) Top rail shall pass through line post tops and be spliced with 7 inch long rail sleeves.

F) Each gate and corner post shall be braced back to the adjacent line post with horizontal center brace rails and diagonal truss rods. Brace rails shall be installed one bay from end and gate posts.

G) Center and bottom brace rails shall be installed on corner and gate leaves.

H) Fabric shall be stretched between terminal posts or at intervals of 100 feet maximum, whichever is less.

I) The bottom of the fabric shall be positioned 2 inches above the finished grade.

J) The fabric shall be fastened to the top rail, line posts, braces, and bottom tension wire with wire ties at a maximum of 15 inches on centers.

K) The fabric shall be attached to the end, corner, and gate posts with tension bars and bar clips.

L) The bottom tension wire shall be stretched taut between terminal posts.

M) Gates with fabric overhang shall match fence. Three hinges per leaf, latch, catches, drop bolt, foot bolts and sockets, torsion spring retainer, and locking clamp shall be installed.

N) Concrete center drop shall be installed to the depth of the foundation. Drop rod retainers shall be placed at the center of double gate openings.

Section 20.04 ELECTRICAL GROUNDS

Wherever a power line passes over the fence, a ground shall be installed directly below the point of crossing. The ground rod shall consist of an aluminum or galvanized rod, with connection of similar metal if required, or of other appropriate material, 8 feet in length and at least ½ inch in diameter. The rod shall be driven vertically until the top of the rod is approximately 6 inches below the ground surface. A No. 6 conductor shall be used to connect the rod and all fence elements. The conductor shall be connected to each fence element and the ground rod by means of electrical-type clamps which will prevent corrosion.

Section 20.05 DECORATIVE GATES

Where a Developer/Owner proposes decorative entry gates for a "Gated Community" for access control, all conditions required in the City's LDC shall be met including the provisions for "Knox Box' and/or 'opticon' control. The Knox Box and all associated appurtenances shall be as approved by the City of Ocoee Fire Department. All automated swing gates shall be installed to provide gate swing in the direction of the vehicular flow.

ARTICLE 21

GRASSING AND MULCHING

Index

21.01 GENERAL
21.02 MATERIALS
21.03 CONSTRUCTION METHODS
21.04 SODDING
21.05 CLEAN-UP

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Section 21.01 GENERAL

The work specified in this ARTICLE shall consist of all grassing efforts on road shoulders, ditches, embankments, and other areas left barren by construction in order to establish a dense stand of grass.

Section 21.02 MATERIALS

The grass seed shall be common Bermuda and Bahia, as a minimum. In addition, brown top millet will be included during summer months and annual rye in the winter months. The mulch shall consist of thoroughly shredded straw or hay. All seed shall meet the requirements of the State Department of Agriculture. The chemical composition of the fertilizer shall be 8-8-8 or other chemical composition specified in the plans.

Section 21.03 CONSTRUCTION METHODS

Construction methods shall be in accordance with FDOT Standard Specifications.

Seed shall be applied at not less than the following rate:

Bermuda	30 lb per acre
Bahia (Argentina)	120 lb per acre
Annual Rye	20 lb per acre (October - March)
Brown-Top Millet	20 lb per acre (April - September)

Fertilizer shall be applied at the rate of 1,000 lb per acre.

Section 21.04 SODDING

Sodding shall be in accordance with FDOT Standard Specifications. Sod destroyed or damaged by construction shall be replaced with the same existing type of grass in place prior to construction. All disturbed areas in the public right-of-way shall be sodded.

Section 21.05 CLEAN-UP

After each day's work, all materials shall be removed from all sidewalks and roadways used by the general public.

Section 21.06 WATERING

Watering of seed and installed sod shall be provided in accordance with FDOT Standard Specifications as a minimum. Additional watering may be required to provide an acceptable established stand of grass as directed by the City Engineer.

ARTICLE 22

PAVEMENT MARKINGS

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22.01 GENERAL
22.02 MATERIALS
22.03 INSTALLATION

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Section 22.01 GENERAL

The work specified in this ARTICLE shall consist of the design and installation of pavement markings as shown on the plans in accordance with this Manual, Orange County Standards as well as FDOT and the MUTCD. Temporary markings shall be used as required by the City. The City Engineer has approval jurisdiction over ARTICLE 22 and any requests for modifications from these Standards.

Section 22.02 MATERIALS

All paint and Thermoplastic Compounds used for pavement markings (only alkyd materials shall be used), reflective pavement markers, and glass spheres shall conform to FDOT Standard Specifications.

Section 22.03 INSTALLATION

All surfaces shall be cleaned prior to the start of installation.

22.03.01 Painted Markings

Painted traffic markings shall be installed in accordance with FDOT Standard Specifications and the MUTCD. Paint may be used only on private development improvements or as temporary markings.

22.03.02 Thermoplastic Traffic Markings

Thermoplastic traffic markings shall be installed in accordance with FDOT Standard Specifications and the MUTCD. Pre-formed plastic markings may be substituted as permitted by the City Engineer. Alkyd materials may be applied immediately after final compaction of asphaltic concrete.

22.03.03 Reflective Pavement Markers

All reflective pavements markers shall be installed in accordance with FDOT Standard Specifications. Blue pavement reflectors shall be installed in the street, in front of fire hydrants, slightly offset from the centerline of the road in the closest lane to the hydrant.

22.03.04 Striping Design

A) Temporary tape to be installed prior to darkness on the day of existing markings removal. No conflicting markings permitted.

B) No markings are to be installed prior to layout approval City engineer or designer.

C) All markings are to be thermoplastic with raised pavement markers where applicable.

D) Centerline and edgeline to extend 15 feet beyond transition point downstream and 15 feet prior to transition point upstream.

E) Hash marks spacing to be in accordance with FDOT Standards.

F) Gore bullnose to have 25 foot minimum radius.

G) Arrow spacing to conform with FDOT Standard Specifications.

H) The City Engineer must approve all striping plans.

I) During auxiliary lane construction and installation of markings the work zone shall be signed in accordance with the MUTCD.

J) When a lane closure is permitted on a road classification of collector or above, the hours of operation shall be limited to 9:00 AM to 4:00 PM.

K) Non-Standard Working hours can be requested from the City by submittal of a written request that outlines the need for the Non-Standard Working hours and the specifics of work to be performed.

ARTICLE 23

MEDIANS

Index

23.01 MEDIAN SEPARATION REQUIREMENTS
23.02 MINIMUM WIDTHS
23.03 OPENINGS
23.04 SPECIAL CONSIDERATIONS

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Section 23.01 MEDIAN SEPARATION REQUIREMENTS

At a minimum, median separations shall be required on all divided streets with four or more travel lanes. Median separations may be required in other areas when deemed appropriate . The City Engineer has approval jurisdiction over ARTICLE 23 and any request for modifications from these Standards.

Section 23.02 MINIMUM WIDTHS

A) The minimum width of a median containing a left turn lane shall be 16 feet when curbed. If the median is a bi-directional turn lane, the minimum width shall be 12 feet.

B) The minimum width of a median intended to shadow a crossing or left turning vehicle (from side street or driveway) shall be 22 feet when curbed.

Section 23.03 OPENINGS

A) Median openings on all streets shall be spaced at 660 foot intervals or per the Standards of the LDC.

B) Correct signal spacing and dedicated public streets are given priority consideration for median opening approvals.

C) All median designs and provisions shall be consistent with Standards provided by the Manual of Uniform Minimum Standards for Design, Construction and Maintenance for Streets and Highways (FDOT).

D) All median openings and taper shall include a 12 foot wide left turn storage lane and taper. The minimum lengths for the storage lanes and tapers are included in ARTICLE 24 of this Manual.

E) The preferred end treatment for median opening is the bullet-nose design rather than the circular design.

F) The width of median openings shall be a minimum of 40 feet. The design shall be based upon the required turning radii and lane alignment of the intersection.

G) No median opening shall be allowed where the median is intended to shadow a crossing or left turning vehicle (from side street or driveway), and is of insufficient width to do so.

Section 23.04 SPECIAL CONSIDERATIONS

The minimum spacing requirements of this ARTICLE may be modified upon approval by City Commission given the particular conditions of the proposed development, if the minimums cannot be met, and if such reduction will not compromise operational and safety standards of the adjacent roadway.

ARTICLE 24

TURN LANES AND TAPERS

Index

24.01 GENERAL
24.02 DEDICATION OF ADDITIONAL RIGHT-OF-WAY
24.03 RIGHT TURN DECELERATION AND STORAGE LANES
24.04 ACCELERATION LANES AND TAPERS
24.05 LEFT TURN DECELERATION AND STORAGE LANES
24.06 ALTERNATE STORAGE LENGTHS FOR LEFT TURN LANES
24.07 BYPASS LANES
24.08 EXCEPTIONS
24.09 REVERSE CURVES

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Section 24.01 GENERAL

Turn lanes and tapers shall be designed in accordance with this Manual and the Manual of Uniform Minimum Standards for Design, Construction and Maintenance for Streets and Highways (FDOT) and AASHTO Green Book standards. Turn lanes and tapers shall be used to reduce conflict between the traffic on driveways or intersecting streets and the traffic on the through street. This conflict reduction is achieved by providing turning vehicles with a refuge area where acceleration, deceleration, storage, and turning maneuvers may be accomplished. The City Engineer has approval jurisdiction over ARTICLE 24 and any request for modifications from these Standards. Turn lanes and tapers are required for the following conditions:

A) The design speed of the accessed street is 35 MPH or greater.

B) The parcel of property accessing the street is projected to generate 500 or more vehicle trips per day, or 50 or more vehicle trips in any hour.

C) The parcel of property accessing the street is residential and has 50 or more dwelling units.

D) The parcel of property accessing the street is a development that characteristically experiences peaks in its trip generation pattern, i.e., schools, subdivisions, restaurants, public assembly places.

E) At any development as a Traffic Impact Analysis by a registered professional may warrant.

F) At any parcel of property where a use changes to one that meets one of the above conditions.

G) The main street has an average daily traffic count of 500 or more vehicles per day or 50 or more vehicles in any hour.

H) At any location, where grades or other unusual conditions indicate turn lanes to be desirable, as determined by the City. Turn lanes may be required on local streets at intersections for safety or capacity reasons.

I) The street is classified as a thoroughfare.

Section 24.02 DEDICATION OF ADDITIONAL RIGHT-OF-WAY

On any arterial or collector street within a minimum of 150 feet (or as required) of its intersection with another arterial or collector, or at any other location where provisions of this Section require additional right-of-way, the right-of-way shall be increased by at least 10 feet, or as required, to permit proper design of auxiliary lanes and tapers. This additional right-of-way shall be dedicated or conveyed as a public right-of-way. Twenty-five foot corner triangles shall be provided as a minimum at street intersections. A larger triangle may be required at the discretion of the City Engineer.

Section 24.03 RIGHT TURN DECELERATION AND STORAGE LANES

The desirable requirements for lengths of tapers and storage for right turn lanes are based on the speed limit of the road and shall be in accordance with FDOT Standards.

Section 24.04 ACCELERATION LANES AND TAPERS

The desirable requirements for lengths of acceleration lane and tapers are based on the speed limit of the road and shall be in accordance with FDOT Standards.

Section 24.05 LEFT TURN DECELERATION AND STORAGE LANES

The desirable requirements for lengths of acceleration lane and tapers are based on the speed limit of the road and shall be in accordance with FDOT Standards.

Section 24.06 ALTERNATE STORAGE LENGTHS FOR LEFT TURN LANES

Storage lengths for left turn lanes may be calculated in lieu of using the above tables (final approval by the City Engineer or his Designee) by one the of following methods:

A) At un-signalized intersections, the storage length, exclusive of taper, may be based on the number of turning vehicles which are likely to arrive in an average 2 minute period within the peak hour, i.e., SL (storage length in feet) = 2 x 25 ft (average vehicle length) x (number of left turning vehicles in peak hour/60).

B) At signalized intersections, the storage length may be based on the signal cycle length, the signal phasing arrangement, and the rate of arrivals and departures of left turning vehicles that would store per cycle to allow for occasional surges.

Section 24.07 BYPASS LANES

A bypass lane shall be provided for left turns when a median or adequate pavement width does not exist. The taper shall be based on the formula: turn lane = speed x width of lateral movement. Road sections disturbed by bypass and turn lanes shall be completely overlaid with a minimum of 1 inch of asphaltic concrete.

Section 24.08 EXCEPTIONS

Turn lane provisions (left and right) may be imposed unless roadway cross section, right-of-way width, or deficient frontage prohibits compliance and no other access location can be provided for the site. The lanes shall be installed by the Owner/Developer, in the future, when the right-of-way becomes available.

Section 24.09 REVERSE CURVES

Reverse curves shall not be used in place of straight tapers on curb and gutter sections.

ARTICLE 25

DRIVEWAYS

Index

25.01 GENERAL
25.02 REQUIRED SUBMITTALS
25.03 DESIGN CONSIDERATIONS
25.04 DESIGN SPECIFICATIONS
25.05 HANDICAP RAMPS
25.06 EXISTING DRIVEWAYS AND ACCESS POINTS

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Section 25.01 GENERAL

All curb cuts and driveways constructed, altered, or removed within the limits of the City of Ocoee shall be constructed, altered, or removed as provided for in this ARTICLE and the LDC. No person shall make any curb cut for a driveway, walkway or any other purpose within the street right-of-way or connect to an existing curb cut or driveway without first obtaining a permit from the City. Additional permits may be required from the County or FDOT for rights-of-way under their jurisdiction. The City Engineer has approval jurisdiction over the design, location, construction permits, materials, methods, and operational portion of this ARTICLE and any requests for modifications from these Standards.

Section 25.02 REQUIRED SUBMITTALS

Information required on plans submitted shall include:

A) A complete plot plan showing all proposed and/or existing buildings and parking layouts and shall include a north arrow, date, and dimensions.

B) Existing and proposed driveway locations and widths on the site and within 150 feet of the site on both sides of the street and in both directions.

C) Distances to the nearest public intersection and to the nearest median cut in both directions, if applicable.

D) Street pavement types and widths, lane layout and widths, curb types, and right-of-way widths.

E) Proposed and/or existing off-street loading and unloading facilities, interior parking arrangements and interior traffic circulating arrangements. (Non-residential requirement only.)

F) Retaining walls, drainage, utility poles, trees, fences, and other physical features which affect the driveway location and sight distance.

Section 25.03 DESIGN CONSIDERATIONS

A) The choice of the proper location of driveways must involve consideration of the amount of the conflict which can be expected to occur both within the parking area and on the abutting streets. One primary concept which shall be followed is to reduce the number of driveways to a practical minimum and to promote consolidated driveway usage wherever possible, thus providing fewer locations where conflicts may occur.

B) The area to which the driveway provides access shall be of sufficient size and design to allow all necessary functions for ingress, egress, loading, unloading, parking, circulation, and standing to be carried out on private property completely off the street right-of-way.

1) Parking areas shall be so designed and marked as to provide for orderly and safe movement and storage of vehicles and pedestrians.

2) No design shall be permitted which requires any vehicle to back out onto a public right-of-way, i.e., a public street, parkway, or sidewalk, except for single family residences.

3) Facilities with drive-in windows must be so designed that waiting vehicles do not extend into the street or right-of-way. A by-pass lane shall be required for all such facilities.

Section 25.04 DESIGN SPECIFICATIONS

25.04.01 Location

A) Single family residential driveways shall not be permitted in the radius return of an intersection.

B) No single family residential driveway, other than duplex or zero lot line, or temporary commercial driveway shall be permitted with its center nearer than 40 feet to the center of the next nearest driveway, except upon special approval of the City Engineer.

C) No centerline of a residential driveway, other than duplex or zero lot line, driveway shall be closer to the adjacent property than ½ of the driveway width plus 6 feet.

D) The centerline of all other types of driveways shall be no closer to the adjoining property than ½ the width of the driveway plus the return radius dimension and 3 feet.

E) No driveway shall be permitted which includes any facility such as traffic signal standards, trees, utility poles, site sign, catch basins, fire hydrants, or any other similar type structure, unless such facility is relocated at the property Owner's/Developer's expense. All setbacks shall meet the FDOT requirements for fixed object hazards.

D) No curb cut shall be made within 3 feet of a drainage inlet or property line.

G) Joint-use driveways shall be used when deemed necessary. The above criteria shall be complied with unless otherwise approved by the City Engineer.

25.04.02 Width

A) The minimum width of single family residential driveways shall be 10 feet and the maximum width shall be 18 feet, with 3 foot flares on either side. For driveways longer than 100 feet, the width may be increased at the discretion of the City of Ocoee Fire Rescue Department.

B) The minimum and maximum widths of commercial driveways, are based upon 12 foot travel lanes for two-way and emergency vehicles for one-way, shall be as specified below:

	Table 25-1	
	Minimum	Maximum
One-Way	16	20*
Two-Way	24	36*
*or as required for multi-lane driveways		

C) Non-residential driveways exceeding the maximum width shall only be considered when usage of 40 foot radius cannot be accommodated.

D) All driveway widths shall be measured at the throat.

E) For all residential driveways, the width of the curb opening shall not exceed the width of the driveway by more than 3 feet on each side.

25.04.03 Angle

A) All driveways shall be constructed as nearly to a right angle (90°) to the street or roadway as possible.

B) This requirement may be waived for one-way driveways, provided that the angle chosen represents improved ingress or egress compared to a right angle driveway and does not adversely affect the driver's sight distance.

25.05.04 Radii

A) On commercial and multi-family residential driveways, a proper radius which will accommodate the minimum turning radii and off-track of the design vehicle according to AASHTO Standards shall be provided. Normally, the design vehicle will be fire and emergency apparatus requiring a minimum radius of 40 feet based on a 24 foot wide two lane driveway. Consideration may be given to the street speed limit and width of driveway opening.

B) Tractor trailer combination shall be the design vehicle, when warranted, with a 55 foot radius as a minimum on all non-single family residential driveways.

C) A radius of less than 40 feet may be approved upon the applicant's demonstration to the City Engineer that the smaller radius is more appropriate for the particular parcel of property being served and that the traffic flow on the street being accessed is not impaired. The minimum radii for internal circulation shall be 20 feet. Three foot flares may be utilized on commercial projects where inadequate distance between the property and the road edge prohibits the use of radii, and shall be used on all non-single family residential driveways.

D) Contraction joints shall be tied at the radii to prevent uneven settlement.

25.04.05 Grade

A) All driveways shall cross the sidewalk/bikepath area at the sidewalk/bikepath grade as approved by the City Engineer. See the Typical City Details attached as part of this Manual.

B) In cases where property slopes down from the street, the driveway shall be constructed in such a manner as to raise the driveway to a height equal to the top of the curb at the right-of-way line or at a more appropriate point, as determined by the City Engineer, before the down slope or up slope of the driveway begins. See the Typical City Details attached as part of this Manual.

C) The driveway shall be designed so that approach, ramp and departure angles do not exceed the maximum as determined by the appropriate design vehicle.

Single Family Residential Driveway - Design Vehicle - Passenger Car

Table 25-2	
Angle Type	**Maximum Angle**
Approach Angle (A)	16.4°
Ramp Angle (B)	11.0°
Departure Angle (C)	10.9°

All Other Driveways - Design Vehicle - Emergency Fire Apparatus

Table 25-3	
Angle Type	**Maximum Angle**
Approach Angle (A)	14.14°
Ramp Angle (B)	7.26°
Departure Angle (C)	8.53°

D) All curb cuts shall consist of a 6 inch raised or flush header curb for non-concrete approaches from the point of curvature to the point of tangency on each side of the driveway, except in locations where the accessed road is constructed with an existing swale, then a flush concrete header curb shall be provided.

25.04.05 Construction Specifications

A) All driveways shall be constructed in conformance to the plans and specifications approved by the City Engineer.

B) Concrete for the construction of the driveway approaches (the portion of the driveway in the right-of-way) shall be at least 3,000 psi concrete and at least 6 inches in thickness and shall utilize 6 x 6 WWF installed on proper benching. Fiber reinforced concrete mixture conforming to the standards of ASTM C1116 may be used in addition to the WWF if desired. Break and expansion joints shall be installed at the property line.

C) Concrete for the construction of curbs shall be at least 3,000 psi concrete.

D) Subgrade of driveways, driveway approaches, and curbs shall be compacted to a minimum density of 98% of the maximum density as determined by AASHTO T-180.

Section 25.05 HANDICAP RAMPS

Handicap ramps shall be constructed for all sidewalks/bikepaths at their intersection with a driveway. All handicap ramps shall be constructed in accordance with ARTICLE 19 of this Manual.

Section 25.06 EXISTING DRIVEWAYS AND ACCESS POINTS

A) Existing driveways shall not be relocated, altered, or reconstructed without a permit approving the relocation, alteration, or reconstruction, and such driveway shall be subject to the provisions of this Section.

B) When the use of any driveway is discontinued, the Owner/Developer(s) of the abutting property shall, at the Owners'/Developers' own expense, remove the driveway and replace all curbs, gutters, sidewalks/bikepaths, swales, and grass areas.

C) When the use, building size or ownership of any property with a driveway(s) is changed, the Owner/Developer(s) of the subject property shall reconstruct the driveway in conformance with City Standards.

D) If an existing driveway becomes a hazard to the driving or pedestrian public using the public facilities within the public right-of-way, the City Engineer may require reconstruction, relocation, or removal of said driveway. Proper notice shall be made to the property Owner as required by law.

ARTICLE 26

UTILITY LINE INSTALLATION REQUIREMENTS

Index

26.01 JACK AND BORE OPERATIONS
26.02 PRESSURE PIPE RESTRAINT
26.03 PRESSURE CONNECTION

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Section 26.01 JACK AND BORE OPERATIONS

26.01.01 General

The installation of a casing pipe by the method of jacking and boring shall be covered by these Specifications. The overall work scope shall include, but not be limited to, jacking and boring pits and equipment, sheeting, steel casing pipe, skids, steel straps, coatings, location signs as required, miscellaneous appurtenances, and restoration to complete the entire work as specified in the Typical City Details attached as part of this Manual. Jack and bore operations shall be performed within the right-of-way and/or easements shown on the Drawings.

26.01.02 Pipe Material

A) Steel Casing

Steel casings shall conform to the requirements of ASTM A-139 (straight seam pipe only) Grade "B" with a minimum yield strength of 35,000 psi. The casing pipes shall have the minimum nominal diameter and wall thickness as shown on the following table:

Table 26-1

Carrier Pipe Nominal Diameter	Casing Outside Diameter	Casing Wall Thickness
4"	14"	.250"
6"	16"	.250"
8"	18"	.250"
10"	20"	.250"
12"	24"	.250"
16"	28"	.312"
18"	30"	.312"
20"	34"	.375"
24"	36"	.375"

Field and shop welds of the casing pipes shall conform with the American Welding Society (AWS) standard Specifications. Field welds shall be complete penetration, single-bevel groove type joints. Welds shall be airtight and continuous over the entire circumference of the pipe and shall not increase the outside pipe diameter by more than ¾ inch.

B) Carrier Pipe

The carrier pipe shall be minimum pipe as described in sequential ARTICLES per the appropriate application with all joints restrained. Ductile iron pipe shall comply with the specification outlined in this Manual.

26.01.03 Inspection

All casing pipe to be installed may be inspected at the site of manufacture for compliance with these Specifications by an independent laboratory selected and paid for by the City. The manufacturer's cooperation shall be required in these inspections.

All casing pipe shall be subjected to a careful inspection prior to being installed. If the pipe fails to meet the Specifications it shall be removed and replaced with a satisfactory replacement at no additional expense to the City.

26.01.04 Other Jurisdictions

For casing pipe crossings under roadways, railroads, or other installations not within the jurisdiction of the City, the Contractor shall comply with the regulations of said authority in regard to design, specifications and construction.

26.01.05 Workmanship

A) The jack and bore operations shall be done simultaneously with continuous installation until the casing pipe is in final position. Correct line and grade shall be carefully maintained. Add-on sections of casing pipe shall be full-ring welded to the preceding length, development water-tight total pipe strength joints. The casing installation shall produce no upheaval, settlement, cracking, movement or distortion of the existing roadbed or other facilities. Following placement of the carrier pipe within the steel casing, masonry plugs are to be installed at each open end. Casing pipe and welds shall be asphaltic coated using Koppers 300M or equal with a minimum final dry thickness of 20 mils.

B) Casing pipe holes shall be mechanically bored through the soil by a cutting head on a continuous auger mounted inside the pipe. The auger shall extend a minimum distance beyond the end of the pipe casing to preclude formation of voids outside of the pipe shell.

C) Required jacking and boring pits or shafts shall be excavated and maintained to the minimum dimension. Said excavations shall be adequately barricaded, sheeted, braced and dewatered as required.

26.01.06 Pipe Handling

Care shall be taken in loading, transporting and unloading to prevent injury to the pipe or coatings. Pipe shall not be dropped. All pipe shall be examined before laying, and no piece shall be installed which is found to be defective. Any damage to the pipe or coatings shall be repaired to the satisfaction of the City.

26.01.07 Work Coordination

It shall be the Contractor's responsibility to perform the jack and bore work in strict conformance with the requirements of the agency in whose right-of-way or easement the work is being performed. Any special requirements of the agency, such as insurance, flagmen, etc., shall be strictly adhered to during the performance of work. The special requirements shall be performed by the Contractor at no additional cost to the City.

26.01.08 Dewatering

Dewatering through the casing during construction shall not be permitted. All dewatering methods shall be approved by the City before construction work begins.

26.01.09 Carrier Pipe Support

The carrier pipes shall be supported within the casing pipes so that the pipe bells do not rest directly on the casing. The load of the carrier pipes shall be distributed along the casing by casing spacers. Casing spacers shall be bolt on style split shells made of either T-304 stainless steel or fusion coated steel (a minimum 0.010 inch thick coating of PVC shall be provided over the entire band). The shell shall be lined with a PVC liner 0.090 inch thick with 85-90 Durometer. All nuts and bolts shall be high strength, low alloy meeting AWWA C-lll. Runners shall be made of a high molecular weight polymer with inherent high abrasion resistance and a low coefficient of friction.

26.01.10 Jacking Pits

Excavation adjacent to the roads shall be performed in a manner to adequately support the roads. Bracing, shoring, sheeting or other supports shall be installed as needed. Contractor shall install suitable reaction blocks for the jacks as required. Jacking operations shall be continuous and precautions shall be taken to avoid interruptions which might cause the casing to “freeze” in place. Upon completion of jacking operations, the reaction blocks, braces, and all other associated construction materials shall be completely removed from the site.

Adjust to the roads creating a drop-off hazard as described in the FDOT PPM or Greenbook – Jacking Pits shall be adequately protected meeting FDOT standards.

26.01.11 Miscellaneous Requirements

Correct line and grade shall be carefully maintained. Earth within the casing shall not be removed too close to the cutting edge in order to prevent the formation of voids outside the casing. If voids are formed, they shall be satisfactorily filled with grout by pumping.

The sections of steel casing shall be field welded in accordance with the applicable portions of AWWA C-206 and AWS D-7.0 for field welded pipe joints. Contractor shall wire brush the welded joints and paint with a primer. After completion of jacking, Contractor shall clean the interior of the casing of all excess material. Refer to Approved Manufacturer's List for acceptable products.

The annular space between the carrier pipe and casing shall be filled with clean sand, if required. Masonry plugs are to be installed at each open end of the casing. Plugs shall be suitable for restraining the earth load while allowing drainage of the casing.

Section 26.02 PRESSURE PIPE RESTRAINT

26.02.01 General

Pressure pipe fittings and other items requiring restraint shall be braced with restraining assemblies as specified in this Manual.

All pressure pipe and fittings shall be restrained as specified in this Manual, preventing movement of lines under pressure at bends, tees, caps, valves, hydrants etc. Use of thrust blocks for pressure pipe and fittings 16 inches and larger shall not be allowed. Ductile iron pressure pipe and fittings 12 inches and smaller may be restrained following the criteria established in this Manual.

26.02.02 Thrust Block Construction

Thrust blocks shall not be typical and shall only be used when the City Engineer deems it a hardship or good engineering standards deem it necessary because restraining assemblies are impractical or insufficient. If thrust blocks are used, a thrust block table meeting City standards shall be provided by the Design Engineer. Where undisturbed trench walls are not available for thrust blocking, the Contractor shall furnish additional concrete or install suitable pipe harnesses or ties designed and manufactured specifically for this purpose. Additional concrete, harnesses and/or ties shall be approved by the Engineer and the City. Fittings shall be protected by polyethylene film, minimum 8 mil thick, prior to placing concrete for thrust block.

Concrete for thrust blocking shall have a minimum compressive strength of 3,000 psi. Concrete shall be placed against undisturbed material and shall not cover joints, bolts or nuts, or interfere with the removal of any joint. Wooden side forms shall be provided for thrust blocks where trench conditions require. Thrust blocks shall be properly set and adequately cured prior to pressurizing the system.

26.02.03 Restrained Joint Construction

Sections of piping requiring restrained joints shall be constructed using pipe and fittings with restrained "Locked-type" joints manufactured by the pipe and fitting manufacturer and the joints shall be capable of holding against withdrawal for line pressures 50% above the normal working pressure. Mechanical joint ductile iron pipe retainer glands shall not be permitted. Any restrained joints that allow for elongation upon pressurization will not be allowed in those locations where the pipe comes out of the ground.

The minimum number of restrained joints required for resisting forces at fittings and changes in direction of pipe shall be determined from the length of restrained pipe on each side of fittings and changes in direction necessary to develop adequate resisting friction with the soil.

The required lengths of restrained joint ductile iron pipe shall be determined by the Engineer and shown in a tabular form as depicted on the "Restrained Pipe Table" in the Typical City Details attached as part of this Manual. All calculations shall be based on the method outlined in the publication entitled "Thrust Restraint Design for Ductile Iron Pipe", latest edition (DIPRA).

Wherever two 45° bends are used in place of a 90° bend and the minimum restrained joints required from one 45° bend extend beyond the other 45° bend, the two 45° bends will be considered as though a 90° bend were located midway between the two 45° bends.

26.02.04 Mechanical Restraining Devices

Mechanical restraining devices as specified herein may be substituted for the restrained "Locked-Type" joints manufactured by the ductile iron pipe and fitting manufacturer. The required lengths of restrained joint ductile iron pipe shall be determined by the Engineer and shown in a tabular form as depicted on the "Restrained Pipe Table" in the Typical City Details attached as part of this Manual.

Mechanical joint restraint shall be incorporated in the design of the follower gland and shall include a restraining mechanism which, when actuated, imparts multiple wedging action against the pipe, increasing its resistance as the pressure increases. Flexibility of the joint shall be maintained after burial. Glands shall be manufactured of ductile iron conforming to ASTM A-536. Restraining devices shall be of ductile iron heat treated to a minimum hardness of 370 BHN. Dimensions of the gland shall be such that it can be used with the standardized mechanical joint bell and tee-head bolts conforming to ANSI A-21.11 and ANSI/AWWA C-153/A-21.53. Twist-off nuts shall be used to insure proper actuating of the restraining devices.

The mechanical joint restraint device shall have a working pressure of at least 250 psi with a minimum safety factor of 2 to 1.

Section 26.03 PRESSURE CONNECTION

26.03.01 General

Installations of pressure connections 4 inches and larger shall be made in accordance with this Section.

26.03.02 Tapping Sleeves

Tapping sleeves shall be mechanical joint sleeves or fabricated steel sleeves as specified below. All pressure connections to asbestos cement pipe and all "size on size" taps shall utilize full body mechanical joint sleeves.

A) Mechanical Joint Sleeves

Sleeves shall be cast of gray-iron or ductile-iron and have an outlet flange with the dimensions of the Class 125 flanges shown in ANSI B-16.1 properly recessed for tapping valve. Glands shall be gray-iron or ductile iron. Gaskets shall be vulcanized natural or synthetic rubber. Bolts and nuts shall comply with ANSI/AWWA C-lll/A-21.11. Sleeves shall be capable of withstanding a 200 psi working pressure.

B) Steel Tapping Sleeves

Sleeves shall be fabricated of stainless steel. Outlet flange shall meet AWWA C-207, Class "D" ANSI 150 lb drilling and be properly recessed for the tapping valve. Bolts and nuts shall be high strength low alloy steel to AWWA C-lll (ANSI A-21.11). Gasket shall be a full circumferential gasket be vulcanized natural or synthetic rubber.

26.03.03 Tapping Valves

Tapping valves shall meet the requirements of this Manual except that units shall be flange by mechanical joint ends. Valves shall be compatible with tapping sleeves as specified above and specifically designed for pressure connection operations.

26.03.04 Notification and Connection to Existing Mains

All connections to existing mains shall be made by the Contractor only after the connection procedure and work scheduling has been reviewed and approved by the City. The Contractor shall submit a written request to the City a minimum of 5 working days prior to scheduling said connections. In this request, the Contractor shall outline the following:

A) Points of Connection, fittings to be used, and method of flushing and disinfection if applicable.

B) Estimated construction time for said connections.

All connections shall be made only on the agreed upon date and time. If the Contractor does not initiate and complete the connection work in the agreed upon manner, the Contractor shall be required to reschedule the said connection by following the procedure outlined above. The Contractor shall not operate any valves in the system.

26.03.05 Construction Details

Sufficient length of main shall be exposed to allow for installation of the tapping sleeve and valve and the operation of the tapping machinery. The main shall be supported on concrete pedestals or bedding rock at sufficient intervals to properly carry its own weight, plus the weight of the tapping sleeve, valve and machinery. Any damage to the main due to improper or insufficient supports shall be repaired at the Contractor's expense. Adequate restrained joint fittings shall be provided on the existing main as well as the new main to prevent movement of the installation when test pressure is applied. Provisions of this Manual shall apply.

The inside of the tapping sleeve and valve, the outside of the main, and the tapping machine shall be cleaned and swabbed or sprayed with 10% liquid chlorine prior to beginning installation for water system pressure connections. After the tapping sleeve has been mounted on the main, the tapping valve shall be bolted to the outlet flange, making a pressure tight connection. Prior to beginning the tapping operation, the sleeve and valve shall be pressure tested at 150 psi to ensure that no leakage will occur.

For pressure connections through 12 inch diameter or less the minimum diameter cut shall be ½ inch less than the nominal diameter of the pipe to be attached. For 14 inch through 20 inch installations the minimum diameter shall be 1½ inches less; for larger taps the allowable minimum diameter shall be 2 to 3 inches less than the nominal diameter of the pipe being attached. After the tapping procedure is complete the Contractor shall submit the coupon to the City.

For pressure connections to wastewater force mains the tapping valve shall be placed horizontally. After the tapping procedure is complete a plug valve shall be attached to the tapping valve. The tapping valve shall be left in the open position prior to backfilling.

ARTICLE 27

WASTEWATER FACILITIES DESIGN

Index

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27.02 DESIGN STANDARDS
27.03 MANHOLES
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27.06 GREASE TRAPS

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Section 27.01 GENERAL

The following design criteria shall pertain to the general requirements of all sanitary manholes, gravity sanitary sewers, lift stations, and force mains. Additionally, the Water Environmental Federation (WEF), Manual of Practice No. 9, entitled "Design and Construction of Sanitary and Storm Sewers", latest edition, may generally be used as a design guide, if not in conflict with State, local, or other regulatory agency requirements or with any material presented herein.

27.01.01 Type of Sewers

The City will approve Plans for new sewer systems and extensions only when designed as separate systems in which precipitation, runoff and groundwater are excluded.

27.01.02 Design Period

Sewer systems shall be designed for the estimated ultimate tributary population as derived for the City's approved future land uses or as delineated in the approved City of Ocoee Wastewater Master Plan, latest edition, except when considering parts of the systems that can be readily increased in capacity.

27.01.03 Location

Gravity sewers shall be located in dedicated rights-of-way or utility easements. Whenever possible, sewers shall be located under pavement in dedicated rights-of-way. All sewers located outside of dedicated rights-of-way shall require a minimum 20' easement. If a gravity sewer is located adjacent to a road right-of-way, a minimum 10' easement shall be provided. Additional easement widths shall be provided if the pipe size or depth of cover so dictate. No gravity sewers shall be placed under retention ponds, tennis courts, or other structures. In general, gravity sewers shall not be located alongside of rear lot lines. Placement of a gravity sewer alongside a rear lot line may be allowed on a case-by-case basis if such a sewer configuration results in efficient placement and utilization of the sewer system. These criteria shall also apply to sewer placement in retention pond berms. In any event, no manholes shall be placed alongside of rear lot lines.

27.01.04 Design Calculations

Design Engineer shall submit signed, sealed and dated design calculations with the plans for all sewer projects. Calculations shall show that sewers will have sufficient hydraulic capacity to transport all design flows. In lieu of calculation, the Design Engineer may submit design computer model and associated information including inputs, assumption, model run result(s) that indicate system is designed to comply with City requirements and signed and sealed design report. Model shall be integrated into City model for simulations.

Section 27.02 DESIGN STANDARDS

Sanitary sewer force mains and gravity design shall specifically be in accordance with ARTICLE 28 and ARTICLE 29 of this Manual.

27.02.01 Average Daily Flow (ADF)

The average daily flow is the standard base reference in the design of all wastewater systems. It represents the annual average daily flow of wastewater generation. All service area generators such as domestic, commercial, institutional, and industrial shall be included in the determination of the total average daily flow. Either per capita unit flows, fixture unit methods, and/or historical flows shall be used by the designer in determining the ultimate project flow in accordance with those rates currently in effect and available at the City of Ocoee.

27.02.02 Peak Flow

The peak flow is used in the design of all wastewater systems. It is the product of a peaking factor and the average daily flow. The peaking factor is a ratio of the average daily flow and the peak discharge, occurring during the maximum daily flow of the year. The selection of the peaking factor is based upon the following table for flows (ADF) up to 3.0 MGD. Peaking factors for flows with larger average daily flows will be evaluated by the Engineer on an individual basis.

Table 27-1

Flow Range (MGD-ADF)	Peaking Factors (PF)
0.000-0.100	4.0
0.101-0.300	3.5
0.301-0.900	3.0
0.901-3.000	2.5

Section 27.03 MANHOLES

27.03.01 General

Manholes shall be in accordance with ARTICLE 17 and per the latest revision of the City's Typical City Details. Manholes shall be precast concrete with integral slab and lower ring, or be poured-in-place concrete slab with precast ring wall, or be of all fiberglass construction meeting ASTM D-3753 standards.

27.03.02 Location

Manholes shall be installed at the end of each gravity sewer; at all changes in grade, size or alignment; at all sewer intersections; and at distances not greater than 400 feet. When Private sewer systems must be separated from the City sewer system, a manhole shall be required at change of ownership.

27.03.03 Manhole Base

Bottom slabs for fiberglass and poured-in-place manholes shall be a minimum of 8" thick and reinforced with No. 4 bars at 9" on centers. Precast manholes shall be in accordance with FDOT Standard Specifications. All bases shall have proper lifting hooks in the bottom slabs (minimum of 3). There shall be no penetrating lifting holes on any structures, and no holes shall be allowed within 6" of any joint on structures.

27.03.04 Rings and Covers

See Atricle 16 Section 16.11 for more rings and covers details

27.03.05 Top Elevation

Precast manhole tops shall be adjustable between 6" and 12" by means of solid clay bricks or precast grade rings laid in mortar. Vertical walls of manhole entrances shall not exceed 18" in length, including the ring and cover.

27.03.06 Coating

Typical coating for concrete sanitary manholes shall be coated, at a minimum, with coal tar epoxy. All manholes with drop connections, force main connections, receiving manholes and large manholes shall be coated with spray on Green Monster™ Liner at a 90 to 110 mil thickness or approved equal. This work shall be accomplished prior to TV inspection.

27.03.07 Joint Sealer

A pre-formed plastic joint sealer shall be required. All exterior joints shall be sealed with approved rapid seal tape with a minimum of 8" width.

27.03.08 Connections to Manholes

Connections shall be as specified in the Typical City Details attached as part of this Manual. Connections shall be made with a wall penetration boot. The specific manufacturer and model are as listed in the approved materials list. Space between boot and pipe OD shall be filled with appropriately sized cavity O-ring. Clay pipe shall have a short nipple (18" or 24") between the manhole fitting and the first full length of pipe. All openings for pipes into existing structures shall be made by cutting with a power driven circular coring machine.

27.03.09 Non-Shrink Mortar

All holes in manholes and wet wells shall be thoroughly plugged with an approved non-shrinking mortar, applied and cured in strict conformance with the manufacturer's recommendations. The mortar shall be finished smooth and flush with the adjoining interior and exterior manhole and wet well wall surfaces. When mortar is set, coat with an approved coating as listed in the approved materials list.

27.03.10 Stubs and Stoppers

Pipe stoppers shall be installed in all manhole stubs. When connecting to an existing stub and prior to removing the existing stopper, brick the inside opening to prevent any flow until the new system has been tested and cleaned. The brick shall not be removed until the final inspection.

27.03.11 Bulkheading Stub Channels

The downstream end of all outlets in the manholes of sub-out-channels not in use shall be bulkheaded to prevent the creation of a septic condition resulting from ponding of sewage or debris.

Section 27.04 SERVICE CONNECTIONS

27.04.01 General

Service connections connecting the gravity sewer to the house or establishment being served, shall be through a lateral and miscellaneous appurtenances, all as specified in the Typical City Details attached as part of this Manual.

27.04.02 Size and Length

Service laterals and fittings shall be a minimum of 6" in diameter and shall be less than 100' in length.

27.04.03 Slope

Service laterals shall have a minimum slope of 1%.

27.04.04 Connection

In general, service laterals shall not be allowed to discharge into sanitary manholes, except at terminal manholes. A case-by-case exception to this requirement may be allowed if the lateral discharges at the same elevation as the manhole invert.

Section 27.05 LINE LOCATIONS

A) Mains shall be installed in the center of paved right-of-way on new construction.

B) Where sewers are to be installed in existing paved areas, mains may be installed in unpaved portions of the right-of-way. All utility lines to be dedicated to the public, located outside of dedicated rights-of-way, shall require a minimum 20' easement. If a utility line to be dedicated to the public is located adjacent to a road right-of-way, a minimum 10' easement shall be provided. Additional easement widths shall be provided if the pipe size or depth of cover so dictates.

C) Mains shall not be allowed inside of back lot easements unless approved by the Engineering Department prior to construction.

D) Mains shall not be installed beneath canals, retention areas, or swales without prior approval of the Engineering Department. Any lines in these areas must be installed within a pipe casing that extends the full length of the body being crossed.

ARTICLE 28

GRAVITY SANITARY SEWERS

Index

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Section 28.01 GENERAL

This ARTICLE shall govern the design and construction of gravity sewer mains, service laterals, manholes, stoppers, and other appurtenances.

Pipe used in gravity sewer construction shall be polyvinyl chloride (PVC) or ductile iron pipe with an approved interior coating/lining (DIP). Alternate pipe material use may be allowed if prior approval is obtained from the City Engineer. Where reference is made to an ASTM, ANSI or AASHTO designation, it shall be the latest revision.

The Contractor shall be responsible for all materials furnished and storage of same until the date of substantial completion. At the Contractor's expense, all materials found to be defective or damaged in handling or storage shall be replaced. The Contractor shall, if requested by the City, furnish certificates, affidavits of compliance, test reports, or samples for check analysis for any of the materials specified herein. All pipe delivered to project site for installation is subject to random testing for compliance with the designated Specifications.

Section 28.02 DESIGN CRITERIA

A) Design Flow: Sewers of 15" in diameter and less shall be designed to not exceed ½ pipe depth full at peak design flow. Sewers greater than 15" shall be designed to not exceed ¾ pipe depth full at peak design flow.

B) Minimum diameter

1) Main Sewer - 8 inches.
2) Single lateral - 6 inches.
3) Commercial user lateral - 6 inches.
4) Multi-Family user lateral - 6 inches.

C) Velocity in pipes

1) Minimum - 2 feet per second. (At the design flow)
2) Maximum - 7 feet per second.

D) Minimum Cover

The minimum cover over gravity sewers shall be no less than 3 feet, calculated from the finished grade. Exceptions to this requirement may be made for a short length of pipe where structural considerations are incorporated in the design.

E) Roughness Coefficient: For Manning's formula use an "n" value of 0.012 for PVC and 0.013 for other pipe materials.

F) Minimum Slope versus Pipe Diameter

Table 28-1		
Minimum Slope in Foot Per 100 Feet		
Sewer Size	PVC	Other Material
8"	0.30	0.33
10"	0.21	0.25
12"	0.17	0.19
15"	0.12	0.15
18"	0.10	0.11
21"	0.08	0.09
24"	0.07	0.08
27"	0.06	0.07
30"	0.05	0.06
36"	0.04	0.04

Slopes slightly less than those required for the velocity of 2.0 feet per second may be permitted under special conditions, when pipe is flowing full, if detailed justifiable reasons are given. Such decreased slopes shall only be considered where the depth of flow will be 0.3 of the diameter or greater for design average flow. Whenever such decreased slopes are selected, the Developer's Engineer must furnish computations of the depths of flow in such pipes at minimum, average, and peak rates of flow.

Sewers shall be laid with uniform slope between manholes.

G) Size and Alignments

Size conversion between manholes shall not be allowed. All sewers shall be laid with straight alignments between manholes.

H) Additional Requirements

Main drain and back wash systems for pools, spas and storm drain systems shall not connect to the gravity sewer system.

In general, all sewer extensions for future connections shall terminate at a manhole. The City may allow such extensions without a terminal manhole on a case-by-case basis subject to all of the following conditions:

A) Total sewer extension length shall be limited to 50 feet.

B) Sewer extension location at the initiating manhole shall be plugged to the satisfaction of the City.

C) Such sewer extensions shall not be a part of the accepted sewer facilities. This shall be clearly delineated on the plans.

D) All such sewer extensions shall be inspected and accepted as part of the future construction phase.

Section 28.03 MATERIALS

28.03.01 PVC Gravity Sewer Pipe

PVC Gravity Sewer Pipe (4" to 15"), ASTM D-3034, SDR 35. Uniform minimum "pipe stiffness" at 5% deflection shall be 46 psi. When the average depth of cover of the gravity sewer pipe is 12' or greater, SDR 26 PVC pipe shall be installed. The joints shall be integral bell elastomeric gasket joints manufactured in accordance with ASTM D-3212 and ASTM F-477. Applicable UNI-Bell Plastic Pipe Association standard is UNI-B-4.

PVC Gravity Sewer Pipe (18" to 27"), ASTM F-679, SDR 35. Uniform minimum "pipe stiffness" at 5% deflection shall be 46 psi. When the average depth of cover of the gravity sewer pipe is 12' or greater, SDR 26 PVC pipe shall be installed. The joints shall be integral bell elastomeric gasket joints manufactured in accordance with ASTM D-3212 and ASTM F-477. Applicable UNI-Bell Plastic Pipe Association standard is UNI-B-7.

All PVC pipe shall bear the NSF-DW seal. The minimum standard length of pipe shall be 13 feet.

28.03.02 DIP Gravity Sewer Pipe

The use of Ductile Iron Pipe (DIP) shall be limited to specific uses and shall be approved by the City Engineer. DIP shall conform to ANSI/AWWA A-21.51/C-151, class thickness designed per ANSI/AWWA A-21.50/C-150, with mechanical or push-on joints. An interior protective lining of Protecto 401 shall be provided with a minimum dry thickness of 40 mils or equivalent. DIP gravity sewers, where called for by the City, shall be wrapped with polyethylene film, AWWA C-105. (See approved Manufacturer's List attached as part of this Manual.) The minimum standard length of pipe shall be 18 feet.

28.03.03 Coatings and Linings (Iron Pipe)

All ductile iron pipe and fittings shall have an interior protective coating of Protecto 401 in accordance with the manufacturers recommendations. Interior coating shall be holiday free and holiday tested in accordance with ASTM G-62 and ASTM D5162.

Polyethylene Encasement, where required, shall be per ANSI A-21.5 (AWWA C-105). If Exterior polyethylene encasement is not required, the pipe exterior shall be bituminous coated.

28.03.04 Non-Shrink Mortar

All holes in manholes and wet wells shall be thoroughly plugged with an approved non-shrinking mortar, applied and cured in strict conformance with the manufacturer's recommendations. The mortar shall be finished smooth and flush with the adjoining interior and exterior manhole and wet well wall surfaces. When mortar is set coat with an approved coating material. For manholes and wet wells with sprayed on liners, treatment of exposed mortar shall follow manufacturer's recommendations.

28.03.05 Sanitary Manholes

Sanitary manholes shall be in accordance with ARTICLES 17 and 27 of this Manual.

Section 28.04 INSTALLATION

28.04.01 General

Trench excavating and backfill including sheeting and bracing, dewatering, bedding and foundation, and furnishing and disposal of materials shall be performed in such a manner as to promote the safe and expedient execution of the work and in all cases shall conform to the requirements of OSHA CFR 1926 Subpart P for trench safety.

28.04.02 Pipeline Trenching

A) Excavation of trenches shall not advance more than 50 feet ahead of completed pipe installation, except as approved by the City Engineer or his Designee.

B) Excavation in close proximity to existing utilities shall be performed in a manner to prevent damage. Representatives of utilities shall be contacted for assistance in locating buried lines.

C) All excavations should be made by open cut **unless otherwise indicated in this Manual**. See the Typical City Details attached as part of this Manual.

28.04.03 Sheeting, Shoring, and Bracing

Furnish, install, and maintain sheeting, bracing, and shoring support required to keep excavations within the easement or right-of-way, to support the sides of the excavation, and to prevent any movement which may damage adjacent pavements or structures, damage or delay the work, or endanger life and health. Voids outside the supports shall be immediately filled and compacted. Sheeting, bracing, and shoring to be used shall be designed by a Florida Registered Professional Engineer.

28.04.04 Dewatering and Drainage

At all times during construction keep excavations free from standing water. Sumps, if required, shall be located outside of load bearing areas so the bearing surfaces will not be disturbed. Water pumped from the excavation shall be discharged to prevent re-entry into the soil strata being dewatered. Water containing material such as silt in suspension or solids shall not be pumped into sewer lines or adjacent streams. The method of disposing of water pumped from the excavation shall be approved by the City Engineer or his Designee prior to actual disposal. Dewatering discharges shall comply with all Regulatory Agency Requirements.

28.04.05 Stabilization

If portions of the bottom of trenches or excavations consist of material unstable to such a degree that, in the opinion of the City Engineer, it cannot adequately support the pipe or structure, the bottom of the trench or excavation shall be over-excavated and stabilized with approved coarse granular stabilization material. Depth of stabilization shall be sufficient to provide unyielding Surface or a min thickness of 6 as directed by the City Engineer or his Designee.

28.04.06 Bedding of Piping

A) General

1) Haunching is defined as the shaped and tamped granular material which extends from the pipe bedding to the spring line of the pipe. Cover is defined as the compacted material which protects and covers piping, and which extends from the top of haunching material to a point 1' above the top of the pipe. Backfill, as specified hereafter, is defined as the material extending above the top of pipe cover to topsoil, paving subgrade, or foundation level.

2) All buried piping shall be continuously bedded and covered, except where concrete encasement, concrete cradles, or jack and bore are indicated.

B) Pipe Bedding

Any part of the trench bottom that is excavated below the pipe grade shall be backfilled to grade with a minimum of 6 inches of granular material and compacted as required in Section 26.04.07. Bedding materials shall be limited to Class I or Class II materials.

C) Pipe Cover

All cover materials shall be clean fill with no debris and carefully deposited to avoid damage to the pipe and shall be compacted as specified hereafter.

28.04.07 Trench Backfilling

Backfill shall be granular material or suitable previously excavated pipe trench material approved for use by the City Engineer. The granular backfill shall be carefully deposited in uniform lifts as specified below and each lift shall be wetted adequately as needed to obtain the required compaction density with vibratory compactors, as specified hereafter.

Unless otherwise indicated or approved by the City Engineer or his Designee, fills shall be placed in the loose lift thicknesses indicated hereafter and compact to a dry density, not less than the following percentage of maximum dry density, determined by the Modified Proctor Test, ASTM D-1557, unless otherwise noted.

28.04.08 Pipe Laying and Jointing

Gravity sewers shall be laid in the dry to the elevations and slopes shown on the approved construction drawings. Laser equipment shall be used to provide line and grade. Surveying equipment shall be used to set the laser. The laser equipment shall have a slope indicator to facilitate checking by both the pipe-laying foreman and the City Engineer. Since most gravity sewers are laid with extremely flat slopes, zero tolerance for errors in line and grade will be allowed. Upon completion of the work, the lines shall be cleaned, with all debris removed at downstream manhole. Each section of pipe shall be TV inspected to indicate any pipe defects such as bellies or other deformities, and, if necessary, shall be taken up and re-laid to provide the correct line and grade. Special attention shall be given to the requirement that the pipe be laid in a dry trench with properly compacted bedding and backfill. The pipe shall be laid with the spigot ends pointing in the direction of flow, starting at the lowest point. Joint contact surfaces shall be cleaned immediately prior to jointing. Lubricants, primers, or adhesives shall be used as recommended by the joint manufacturer. The minimum allowable cover for gravity sewers shall be 3 feet from the top of the pipe to the finished grade. However, should this depth not be feasible, where grade depressions along the alignment are unavoidable, ductile iron pipe shall be provided within the limits of the lesser cover. In no case shall the pipe cover be less than 18 inches, and any deviations from 3 feet of cover shall be approved in writing by the City Engineer. Pipes shall be installed to the alignment and grade as shown on the approved plans.

28.04.09 Branches

Wye branches are to be installed in conjunction with the laying of sewer pipe. Wyes to serve all existing and future dwelling units shall be installed. The longitudinal barrel of branch fittings shall conform to the line and grade, diameter, and quality of the sewer main. All service laterals shall be perpendicular to the longitudinal axis of the pipe.

28.04.10 Laterals

Laterals shall be extended to and located between 3 and 4 feet below the right-of-way line's finished grade, with a 6" clean out as near to right-of-way line as permitted. No double service laterals allowed for single or duplex homes. Laterals shall run in the most direct route and perpendicular to the sewer main at a minimum grade of 1% from the main to the right-of-way line. A wye branch fitting for each service line shall be provided. Double wyes are not acceptable. All laterals and service wyes at the last joint shall be plugged and securely sealed to withstand the internal pressure of leakage or air pressure testing. The plug shall be capable of removal without injury to the socket. An S shall be saw cut and painted green in the top of the curb directly over the lateral location. If curbing is not part of the work, a 4" x 4" x 3' wooden stake shall be painted green and installed at the end of the connection. Clean-out caps shall be of the inverted hex-nut type. If required by the City Engineer or his Designee, the terminal ends of laterals shall be marked by electronic location devices that are compatible with City owned equipment. Cleanouts shall not be permitted in driveways.

28.04.11 Protection of Water System Crossings

1. Separation of Water Mains and Sewers:

   A. Separation of potable water, reclaimed water, storm and sewer systems shall comply with FDEP regulations and STANDARD DRAWINGS

   B. Water pipes shall not pass through any part of a storm sewer or manhole. A three-foot minimum separation from storm water structures shall be maintained to facilitate maintenance and operation.

2. Compliance with F.A.C.Rule 62-555.314 shall be met as a minimum.

3. If required by the City Engineer, cathodic protection shall be provided.

28.04.12 Downstream Protection

Dirt and debris collected in the pipe during construction shall not be flushed downstream. The open end of pipe shall be closed daily to prevent foreign matter from entering.

Section 28.05 CONNECTIONS

28.05.01 Transition Connections

Where pipes of alternate materials (VC to CI, etc.) are to be connected between manholes, suitable approved transition couplings shall be installed. Specially designed units may be submitted for approval. Concrete collars are not acceptable.

28.05.02 Connections to Existing Lines

A collar wye saddle for 4 inch and 6 inch diameter connections to existing sewer lines shall be used. The existing line shall be cut using a template to accomplish a true and clean opening for the saddle. Gasketed saddles with stainless steel straps shall be used, where available from the manufacturer. The sewer main shall be protected and cleaned of debris.

28.05.03 Tall Riser Connections

Connections shall be provided, as specified in the Typical City Details attached as part of this Manual, where the depth of the sewer main invert exceeds 10 feet below the finished grade of the street, unless otherwise required by the City Engineer or his Designee. Lateral connections shall be made by individual single wyes. Double wyes for connection are not permitted. One tall riser connection may service no more than 2 connections, 1 to each side.

28.05.04 Connections to Manholes

Connections shall be as specified in the Typical City Details attached as part of this Manual. Connections shall be made with a Kor-N-Seal/**A-Lock** type or equal wall penetration boot. Space between boot and pipe OD shall be filled with appropriately sized cavity O-ring. Clay pipe shall have a short nipple (18 inch or 24 inch) between the manhole fitting and the first full length of pipe. All openings for pipes into existing structures shall be made by cutting with a power driven circular coring machine.

28.05.05 Connections to Wet Wells

One joint (18-20 feet) of ductile iron pipe shall extend outward from the structure. Perform connections as for manholes.

28.05.06 Conflicting Structures and Protection of Sanitary Sewer at Utility Crossing

Where it becomes necessary to extend sewers through structures, such as conflicting manholes, junction boxes, etc., the pipe shall be ductile iron within a casing pipe with no joints inside the conflicting structure. Where the vertical separation between sanitary sewer and storm sewer is less than 18 inches, the sanitary sewer shall be installed as polyethylene lined ductile iron pipe.

Section 28.06 TESTING

28.06.01 PVC Ring Deflection

Maximum diameter ring deflection shall not exceed 5% of the internal pipe diameter throughout the warranty period when tested by a mandrel. The mandrel shall be a GO-NO-GO type with an unequal number of runners, minimum of 9, and a maximum distance between the runners of 2 inches. A gauging ring certified for each size of pipe inside diameter and the mandrel size shall be as follows:

Table 28-2

Pipe Size	Mandrel Diameter
8"	7.37
10"	9.22
12"	10.98
15"	13.43

Should the test fail, necessary repairs shall be accomplished by the Contractor and the test repeated until within the established limits. The Contractor shall furnish the necessary labor, water, and all other items necessary to conduct the required testing and perform the necessary system repairs required to comply with the specified test. On pipes determined to have excessive deflection, the length in question shall be relayed or replaced.

28.06.02 Infiltration/Exfiltration

There shall be no detectable level of infiltration or exfiltration from the system at the time of inspection. Any evidence of exceeding the limits of 28.07.02 must be corrected prior to acceptance by the City. This includes both line and manholes.

Section 28.07 CCTV INSPECTION STANDARDS

28.07.01 PART 1 – GENERAL

28.07.01.01 Scope of Work

A) These specifications cover the testing and inspection for acceptance of wastewater and storm-water collection and transmission systems.

B) Requests for testing and acceptance of wastewater and storm-water collection and transmission systems shall be executed in accordance with Article 26 and Article 32.

C) Gravity Mains:
Shall be inspected with CCTV for alignment, grade variations, separated pipes, leaks, deflection, cracked, broken or otherwise defective pipe to ensure overall pipe integrity. The CCTV inspection contractor shall perform the CCTV inspection(s) and submit the electronic files and report(s) to the City Engineer as required**.**

28.07.02 PART 2 - PRODUCTS

28.07.02.01 CCTV Inspection Equipment

A) Closed Circuit Television Camera:
The television camera used for the inspection shall be color and one that is specifically designed and constructed for sanitary sewer inspection. Lighting for the camera shall be suitable to allow a clear picture of the entire periphery of the pipe. The camera shall be operative in 100 percent humidity/submerged conditions. The CCTV camera equipment will provide a view of the pipe ahead of the equipment and of features to the side of the equipment through turning and rotation of the lens. The camera shall be capable of tilting at right angles along the axis of the pipe while panning the camera lens through a full circle about the circumference of the pipe.

B) Lateral Video Camera
Lateral cameras may be push type or launched from the sewer main line. Lateral cameras shall be color, shall be self leveling, and equipped with a footage counter to provide on screen display of footage measurement.

C) Video Capture System:
The video recordings of the sewer inspections shall be made using digital video equipment. The digital recording equipment shall capture sewer inspection on DVD disks or hard drive, with each sewer reach inspection recorded as an individual movie file (.MPEG, .MPG, or .WMV) or approved equal.

1. The video file names will be referenced in the inspection database and in an inspection report generated in PDF format. The pipeline collection and real time video capture and data acquisition systems shall be provided.

2. The system shall use the most current PACP compliant application software and shall be fully object oriented or approved equal. It shall be capable of printing pipeline inspection reports with captured images of defects or other related significant visual information on a standard color printer.

3. The imaging capture system shall store digitized color picture images and be saved in digital format on a DVD, hard drive or approved equal. Also, this system shall have the capability to supply the City of Ocoee with inspection data reports for each line segment.

4. The contractor shall have the ability to store the compressed video files in industry standard and approved the City of Ocoee format and be transferable with the PACP compliant inspection database.

5. The contractor's equipment shall have the ability to "Link". “Linking” is defined as storing the video time frame code with each observation or defect with the ability to navigate from/to any previously recorded observation or defect instantaneously.

6. The system shall be able to produce data reports to include, at a minimum, all observation points and pertinent data. All data reports shall match the defect severity codes in accordance with PACP naming conventions

7. The data-sorting program shall be capable of sorting all data stored using generic sort key and user defined sort fields.

8. Camera footage, date & manhole numbers shall be maintained in real time and shall be displayed on the video monitor as well as the video character generators illuminated footage display at the control console.

9. Depth gage: The camera shall have a depth gage or approved method to measure deflection in the pipe and joint separation approved by the City of Ocoee.

28.07.02.02 Gravity Main Inspection CCTV Data

A) CCTV data shall be recorded and saved in MPEG format or Windows Media video format.

B) CCTV inspections shall use unique identification numbers established and provided by the City of Ocoee in pipe segment reference, upstream manhole number and the downstream manhole number fields.

C) The video files will be named in accordance with the City of Ocoee file naming convention:
Upstream MH ID _ Downstream MH ID _ Inspection Date (year_month_day).wmv.
Example: 39540008_39540007_2009_08_05.wmv

D) Reports shall be submitted in an electronic version (.pdf) generated by the computer software and shall be consistent with PACP requirements, observation report with still images; and CCTV inspection results.

1. PACP export pipe inspection database (.mdb) saved on CD-R's, DVD, or portable hard drives

2. Inspection digital photographs in JPEG format saved on CD-Rs, DVD or portable hard drives

E) The video file names will be referenced in the inspection database and in an inspection report generated in PDF format. The pipeline collection and real time video capture and data acquisition systems shall be provided

F) The system shall use the most current PACP compliant application software and shall be fully object oriented or approved equal. It shall be capable of printing pipeline inspection reports with captured images of defects or other related significant visual information on a standard color printer.

G) The imaging capture system shall store digitized color picture images and be saved in digital format on a DVD, hard drive or approved equal. Also, this system shall have the capability to supply the City of Ocoee with inspection data reports for each line segment.

H) The CONTRACTOR shall have the ability to store the compressed video files in industry standard and approved the City of Ocoee format and be transferable with the PACP compliant inspection database.

I) The CONTRACTOR'S equipment shall have the ability to "Link". "Linking" is defined as storing the video time frame code with each observation or defect with the ability to navigate from/to any previously recorded observation or defect instantaneously.

J) The system shall be able to produce data reports to include, at a minimum, all observation points and pertinent data. All data reports shall match the defect severity codes in accordance with PACP naming conventions

K) The data-sorting program shall be capable of sorting all data stored using generic sort key and user defined sort fields.

L) Camera footage, date and manhole numbers shall be maintained in real time and shall be displayed on the video monitor as well as the video character generators illuminated footage display at the control console.

28.07.03 PART 3 – EXECUTION

28.07.03.01 Gravity Main Requirements Before CCTV Inspection

A) All manhole flow channels and benching per specifications shall be constructed and coated (if applicable) prior to CCTV inspection.

B) CCTV inspections shall be received, reviewed and approved by the City of Ocoee prior to installation of pavement.

C) The CONTRACTOR shall clean gravity mains to remove debris and stains from the pipe prior to televising. Flushing water or debris will not be allowed to enter pump station wet wells. Water will be pumped from the sewer system during flushing to an acceptable discharge location. A visual inspection shall be made and all obstructions removed.

D) Gravity Mains/Pipes that are dirty (dirty walls and/or debris in the inverts) shall be re-flushed and cleaned before rescheduling a CCTV inspection. If necessary, swabbing may be required of specific sections of pipe.

E) The CONTRACTOR shall pass a mandrel through the PVC pipe to confirm if ring deflection is in excess of five percent (5%). The base inside diameter shall be used to determine mandrel size as per ASTM D 3034 and/or ARTICLE 28.

F) Dewatering systems shall not be operated within 48 hours prior to CCTV inspection.

G) Backfill from the gravity main to the subgrade shall be compacted and stabilized for inspection and cleaning vehicle access prior to CCTV.

28.07.03.02 Notification

A) Contractor shall notify the City of Ocoee a minimum of 48 hours prior to performing any CCTV gravity main inspection work.

28.07.03.03 Televising of Gravity Mains

A) Wherever possible, gravity mains shall be televised in the downstream direction.

B) Sufficient water shall be run through each section of main until water runs through each downstream manhole no more than 24 hours prior to televising. Lines that are dry or that enough water has not run through to reach the downstream manhole shall not be televised.

C) Gravity mains shall be televised from manhole to manhole utilizing a 360-degree pan and tilt color camera driven through at a moderate rate of speed not more that 30 feet per min. The camera shall be of the self-propelled tractor type with a measuring device mounted to the front capable of being read as the tractor moves and capable of accurately measuring depth of standing water up to, and including, three inches.

D) Begin video recording at the top of the manhole to see the condition of the manhole and any pipe that is connected to the manhole. Record going down into the manhole all the way to the preset footage with continuous recording until the down stream manhole.

E) Lighting should be set to allow for clear visibility without excessive reflection and should allow realistic colors to be visible.

F) The iris of the camera should be adjusted to allow for a sharp focused image and the lens should be kept clean and free of obstructions.

G) The operator should follow the manufacturer's instructions to achieve the proper color correction.

H) All notes or coded references shall have footages recorded with them

I) The camera should be centered within the pipe.

J) The distance between manhole centers shall be accurate within 0.5 percent.

K) The camera shall be stopped at all laterals adjusted for a clear picture and an orbital scan of the lateral taken pausing at the invert at the service lateral to detect dirt or infiltration.

L) All laterals shall be televised when reaching the lateral if a launch type camera is utilized.

M) The camera shall also be stopped at any suspected or confirmed defects, the focus properly adjusted and a clear digital video taken.

N) Areas suspected of leaking shall be paused long enough to determine if a leak exists currently or if deposits have occurred.

O) A digital photo shall be taken of all areas noted on the report including laterals and any confirmed or suspected defects.

P) Manholes upstream and downstream shall be measured from rim to invert and the depth recorded on the inspection header in feet and inches.

Q) Manhole material and defects shall be noted.

R) Manholes that have laterals tied into them shall have sufficient water run through them and then a CCTV inspection to the property line will be conducted.

28.07.03.04 CCTV QA/QC Inspection Procedures and Causes for Rejection of CCTV Work

A) The CONTRACTOR shall submit their Quality Assurance Plan and Quality Control procedures to the City of Ocoee. The CONTRACTOR shall ensure data quality and submit the results of the internal quality control checks performed on submitted data.

28.07.03.05 Gravity Main Inspection CCTV Report

A) The CONTRACTOR will be required to submit the following deliverables on a weekly basis.

1. Inspection Reports are to include:

a) Inspection session header information (see required fields in Section 2.02 above)
b) Defect log report including photo captures from CCTV video
c) Schematic drawing of pipe showing defects
d) Format: Adobe Acrobat PDF files – 1 report PDF per pipe with the following
e) File name format: <upstream MH ID>_<downstream MH ID>_<Date
f) (year_mo_day format)>.PDF
g) Example: 30060002_30060001_2010_02_16.pdf

B) The CONTRACTOR shall submit quality control forms that include a hard copy print out of the inspection reports checked with errors and omissions clearly marked

C) Inspection video files on DVD or portable hard drive, labeled as follows: DVD/Hard drive Labels - Typed labels shall be attached to the face of each DVD. The typed index labels shall include the following information:

1. Content (CCTV)

2. Contractor name

3. Purpose of Survey

4. Tributary Pump station number

5. Reaches included (from Manhole Number ## to Manhole Number ##)

6. Date of survey

7. Contract Number / Delivery Order Number (if applicable)

a) Electronic Inspection Data stored and exported in a NASSCO Pipeline
b) Assessment and Certification Program (PACP) compliant Microsoft Access
c) database (.MDB) version 4.4 delivered on DVD or portable hard drive.
d) Inspection photograph digital files (jpeg) indexed to NASSCO PACP
e) compliant database.

28.07.03.06 Causes for Rejection of Gravity Mains

A) The CONTRACTOR shall be required to replace the pipeline if the CCTV inspection reveals cracked, broken or defective pipe, and/or in the case of PVC pipe if a ring deflection is in excess of five percent (5%).

B) Joint separation shall be no greater than one inch between the spigot and bell of the pipe or as required by the pipe manufacture.

C) No evidence of leakage will be acceptable for private gravity mains connecting to the City of Ocoee's collection system.

D) Misalignment resulting in vertical sags in excess of ¾ " will require replacement of the gravity main.

E) The following NASSCO PACP codes or notes shall be cause for rejection of gravity sewer systems

1. PACP coding of "Line" (L) shall be accompanied by a measurement of the line, grade or angular deviation. Variance of established line and grade at any point along the length of the pipe shall not be greater than 1 inch, provided such variation does not result in a level or reverse sloping invert. An approved method shall be used to determine this deviation. A PACP coding of MWLS with a percentage of pipe greater than 12.5% on 8-inch sewer, 15% on 10-inch sewer etc. will be corrected by excavation and repair.

2. PACP coding of "Infiltration" (I) for pipe joints shall be replaced or the pipe joint shall be reseated at the joint. Grouting shall not be considered a method of repair and will not be accepted. Replace the leaking gravity main segment if there is visible infiltration at any point other than the pipe joint.

3. Any PACP coding in the category of "Structural Family".

4. PVC pipe having ID tears will be rejected.

5. PACP condition grading of "OB" (obstruction) in pipe shall be rejected, the obstruction shall be removed and the line cleaned and re-televised.

28.07.03.07 Acceptance

A) Successful passage of both the leakage test and CCTV inspection is required before acceptance by the City of Ocoee.

B) Prior to repair or replacement of failed sewer pipe, the method of repair or replacement shall be submitted to the City of Ocoee for approval. Pressure grouting of pipe or manholes shall not be considered as an acceptable method of repair.

Section 28.08 TESTING PRIOR TO SURFACING

28.08.01 General

All tests shall be completed and accepted by the City Engineer before any trench or pavement is asphalted. Contractor shall provide all testing equipment and material. Lines shall be televised to determine if they were acceptably constructed. Lines to be dedicated to the City and private lines shall be televised by a reputable company experienced in sewer examination. The Contractor shall be present to note required corrections, if any, and schedule remedial action prior to acceptance by the City. In all cases, a stabilized driving surface shall be prepared to allow access to all manholes by TV inspection trucks. The cost of the TV inspections shall be borne by the Contractor installing the line.

28.08.02 Test Procedure

A) All gravity sanitary sewer collection lines and manholes, public and private, which are directly connected to the City collection system shall be tested to insure the minimal exfiltration of wastewater and infiltration of groundwater and stormwater. Lines and manholes shall be tested by either exfiltration and/or infiltration. In the event the exfiltration and/or infiltration test cannot be taken or is inconclusive, the City Engineer at his sole discretion may require a low pressure air test of all or portions of the gravity sewer to be put in service.

B) Line and manholes must be cleaned of all material and meet all other conditions as described by this ARTICLE before proceeding with a test.

C) Exfiltration Test: Where groundwater at the time of testing is near the lowest invert of gravity system to be tested, a passing exfiltration test is required. Exfiltration loss shall not exceed 100 gallons per inch of diameter of pipe per mile tested after a two (2) hour duration.

D) Infiltration Test: Test sewer system when piping is submerged in groundwater above crown of pipes. Infiltration loss shall not exceed 100 gallons per inch diameter of pipe per mile tested after two (2) hours duration.

E) Measured Loss: Exfiltration or infiltration loss shall be measured by summing the volumes lost in all test sections of the manholes and pipe.

F) The low pressure air test method shall be in accordance with ASTM F1417-90 (most current version). Line must be slowly pressurized to four (4) psig (10 psig relief valve required) and hold for two (2) minutes and then slowly release to obtain a pressure to 3.5 psig. Line pressure must not experience a pressure drop greater than 1 psi during the specified testing interval per the following table.

Table 28-3

Pipe Diameter (In.)	Minimum Test Interval Minutes	Length for Minimal Time (Feet)	Time for Longer Lengths (Feet)
8	7:34	298	1.520 x Length
10	9:26	239	2.374 x Length
12	11:20	199	3.418 x Length
15	14:10	159	5.342 x Length
16	15:10	149	6.282 x Length
18	17:00	133	7.692 x Length

In the event no pressure loss is experienced within half the test interval specified, the test can be discontinued.

G) Test Sections: Test sections shall be divided to ensure proper testing method. In test sections where groundwater influence cannot be determined, the City Engineer may require both exfiltration and infiltration tests.

Section 28.09 FINAL INSPECTION

After all manholes are raised to grade and paving operations are completed, a final visual inspection shall be made by the City Engineer or his Designee. All manholes shall be examined for proper grade and water tightness. The Contractor shall assist the City Engineer or his Designee by providing all labor as required. The Contractor shall make note of any corrections required and shall perform all remedial actions prior to the acceptance by the City.

Section 28.10 GREASE INTERCEPTORS

The City of Ocoee has a pretreatment program that requires all new sewer usages to comply with all applicable requirements and regulations.

Section 28.11 IDENTIFICATION

For connections of gravity sewer smaller than 12” to pipes larger than 12”, the connecting shall be made using a manhole. The crown elevation of the smaller pipe will be required to match the crown elevation of the larger pipe.

ARTICLE 29

SANITARY SEWER FORCE MAINS

Index

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Section 29.01 GENERAL

This ARTICLE shall govern the design and construction of force mains including valves, fittings, and other appurtenances.

Pipe used in wastewater force main systems shall be either Polyvinyl Chloride (PVC). Ductile Iron Pipe (DIP) or HDPE/Directional Drill may be allowed if prior approval is obtained from the City.

The Contractor shall be responsible for all materials furnished and storage of the same until the date of substantial completion. At the Contractor's expense, all materials found to be defective or damaged in handling or storage shall be replaced. The Contractor shall, if requested by the City, furnish certificates, affidavits of compliance, test reports, or samples for check analysis for any of the materials specified herein. All pipe delivered to project site for installation is subject to random testing for compliance with the designated Specifications.

Section 29.02 DESIGN CRITERIA

29.02.01 Design Period

Force main systems shall be designed for the estimated ultimate tributary population, as derived from the City's approved future land uses and/or historical flows. In the event the approved City of Ocoee Wastewater Master Plan, latest edition, identifies components of the force main under consideration, the largest capacity consideration shall be required.

29.02.02 Design Calculations

Owner's/Developer's Engineer shall submit signed, sealed and dated design calculations with the plans for all force main projects. Calculations shall show that force mains will have sufficient hydraulic capacity to transport all design flows. The Design Flow shall be the Peak Flow Rate.

29.02.03 Sanitary Sewer Collection System Hydraulic Modeling

The City of Ocoee maintains a sanitary sewer collection hydraulic model (Bentley SewerCAD) which is used for but not limited to determining system performances, pump runtimes and efficiencies, and offsite impacts. For developments that may substantially add to or impact the City sanitary sewer collection system, the Owner/Developer shall cause the incorporation of the development elements into the City's model and the simulation/analyzing of the model. Unacceptable operating conditions and/or offsite impacts created by the proposed development shall be remediated by the Owner/Developer.

This effort to be undertaken by Owner/Developer can be done by either the developer's engineer performing the model work with a City review or by electing to have the City undertake the work. The election for the City to perform the work shall require City approval. All costs incurred by the incorporation and outside reviews by the City shall be at the Owner/Developer's expense. All final products shall become the property of the City.

29.02.04 Velocity and Diameter

At design pumping rates, a cleansing velocity of at least 2 feet per second shall be maintain/Achieve. Maximum velocity at design pumping rates shall not exceed 5 feet per second. The minimum force main diameter shall be 4 inches with the exception of 2" sleeved applications in conjunction with the application of a minor lift station. Only 4", 6", 8", 10", 12", 16", 20", 24", 30", 36", 42", 48" and 54" diameter force mains shall be permitted.

29.02.05 Design Friction Losses

Friction losses through force mains shall be based on the Hazen-Williams formula. In the use of Hazen-Williams formula, the value for "C" shall be 100 for ductile iron pipe, 120 for PVC pipe and HDPE pipe. When initially installed, force mains may have a significantly higher "C" factor. The higher "C" factor shall be considered only in calculating maximum power requirements and duty cycle time of the motor.

29.02.06 Design Pressure and Restraint

The force main and fittings, including all restrained joint fittings and thrust blocking, shall be designed to withstand pump operating pressures and pressure surges, but not less than 150 psi. The required lengths of restrained joints shall be determined by the Engineer and shown in a tabular form as depicted on the "Restrained Pipe Table" in the Typical City Details attached as part of this Manual. Thrust blocks shall not be typical and shall only be used when the City Engineer deems it a hardship or good engineering standards deem it necessary because restraining assemblies are impractical or insufficient. If thrust blocks are used, the bearing area of thrust blocks shall be adequate to prevent any movement of the fitting. The sizes and dimensions of the thrust blocks shall be shown in a thrust block table.

29.02.07 Termination

Force mains shall not terminate directly into a gravity sewer line. Force mains shall enter the terminal facility, gravity sewer manhole, pumping station wet well or other, at a point equal to the operational water level of said receiving unit and not more than 1 foot above the flow line. Should an elevation drop be required to obtain the outlet connection, the prior down-slope of the force main shall not exceed 45°. Adequate air venting shall be provided at the profile break-point.

29.02.08 Air Release and Vacuum Relief Valves

Where the force main profile is such that air pockets or entrapment could occur, resulting in flow blockage, provisions for air release shall be provided. Automatic air release assemblies shall be installed, where venting is required, on all major force mains and at critical points on lesser mains. At profile break points on major force mains, such as tops of hills, etc., where free flow will occur during operation or after pumping stops, combined air release and vacuum valve assemblies shall be provided. Air and vacuum valves and/or air release valves shall be as capacity requires and, if in an open area, they shall be suitably housed in a properly vented, underground chamber (vault/manhole). All such valves shall be clearly delineated on the force main profile in the detail sheets. The Owner's/Developer's Engineer shall submit calculations to the City justifying the valve sizing.

29.02.09 Aerial Crossings

A) Structural Support

Support shall be provided for all joints in pipes utilized for aerial crossings. The supports shall be designed to prevent overturning and settlement.

B) Expansion Protection

Expansion joints shall be provided between the aerial and buried sections of the pipe.

C) Flood Clearance

For aerial stream crossings, the impact of flood waters and debris shall be considered. The bottom of the pipe shall be placed no lower than 1 foot above the 100 year flood elevation.

D) Pipe Material and Joints

Flanged joints shall be used. Pipe and flange material shall be a lined ductile iron, minimum class 53. All aboveground pipe shall be painted as specified in ARTICLE 29 of this Manual for aboveground wastewater force mains. Use of epoxy coated steel pipe may be allowed on a case-by-case basis.

E) Valves

Underground valves shall be provided at both ends of the crossing so that the section can be isolated for testing or repair. The valves shall be easily accessible and not subject to flooding. An air release/vacuum relief valve shall be installed at the high point of the crossing.

F) Guards

Appropriate guards shall be installed at both ends of the crossing to prevent pipe access to the public.

G) Permits and Requirements of Other Agencies

It shall be the responsibility of the Owner/Developer to obtain all applicable regulatory permits. When the Aerial Crossing is accomplished by attachment to a bridge or drainage structure, the Owner/Developer shall meet all requirements of the Agencies who own or have jurisdiction over such structures.

29.02.10 Underwater Crossings

A) Pipe Material and Cover

Underwater Crossings shall be directional drilled with HDPE pipe. Fusible PVC may be used with Specific Approval. The Owner/Developer shall provide, for City approval, a signed, sealed and dated design report. Report shall include but not be limited to a geotechnical report with installation recommendations. Both design and geotechnical reports must be signed, dated and sealed by a Florida licensed Professional Engineer.

B) Valves

Valves shall be provided at both ends of the water crossings so that the section can be isolated for testing or repair. The valves shall be easily accessible and not subject to flooding. Both valves shall be provided in a manhole or a valve vault.

C) Permits

It shall be the responsibility of the Owner/Developer to obtain all applicable regulatory permits, including dredge and fill permits and/or sovereign lands.

29.02.11 Additional Requirements

While designing force main systems, consideration shall be given to possible future connecting pumping stations. If applicable, this requirement shall be reviewed with the City prior to finalization of the design.

Section 29.03 MATERIALS

29.03.01 PVC Pipe

All PVC pipe of nominal diameter 4" through 12 inches shall be manufactured in accordance with AWWA standard C-900. The PVC pipe shall have a minimum working pressure rating of 150 psi and shall have a dimension ratio (DR) of 25. Pipe shall be the same OD as ductile iron pipe. PVC pipe shall be AWWA Standard C-900, DR 18.

29.03.02 PVC Joints

PVC pipe shall have integral bell push-on type joints conforming to ASTM D-3139.

29.03.03 Fittings for PVC Pipe

Fittings used with PVC pipe shall conform to Section 27.03.05.

29.03.04 Ductile Iron Pipe

All ductile iron pipe of nominal diameter 4 through 54 inches shall conform to ANSI/AWWA A-21.51/C-151. A minimum of Pressure Class 350 pipe shall be supplied for all sizes of pipe unless a higher class pipe is specifically called out or required by the City.

29.03.05 Fittings

All fittings shall be mechanical joint ductile iron or gray iron conforming to ANSI/AWWA A-21.10/C-110, 250 psi minimum pressure rating, or ductile iron compact fittings 4 through 12 inches in accordance with ANSI/AWWA A-21.53/C-153.

29.03.06 Joints for DIP

Joints for ductile iron pipe and fittings shall be push-on or mechanical joints conforming to ANSI/AWWA A-21.11/C-111, unless otherwise specifically called out or required by the City. Where called for on the Drawings, restrained or flanged joints shall be provided. Flanged joints shall conform to ANSI Standard B-16.1-125 lb restrained joints shall conform to ARTICLE 26 of this Manual.

29.03.07 Coatings and Linings for DIP

Where ductile iron pipe and fittings are to be below ground or installed in a casing pipe the coating shall be a minimum 1.0 mil thickness in accordance with ANSI/AWWA A-21.51/C-151. Where ductile iron pipe and fittings are to be installed above ground, the pipe, fittings and valves shall be thoroughly cleaned and given one field coat (minimum 1.5 mils dry thickness) of rust inhibitor primer. Intermediate and finished field coats of Alkyd shall also be applied by the Contractor (minimum 1.5 mils dry thickness each coat). Primer and field coats shall be compatible and shall be applied in accordance with the manufacturer's recommendations. (See approved Manufacturer's List attached as part of this Manual.) Final field coat color shall be green for raw wastewater.

All ductile iron pipe and fittings shall have interior protective lining of Protecto 401 shall be provided with a minimum dry thickness of 40 mils or equivalent applied by the pipe manufacturer.

29.03.08 Polyethylene Encasement

The pipe shall be polyethylene encased (8 mil) where shown in the Typical City Details or required by the City in accordance with ANSI/AWWA A-21.51/C-105.

29.03.09 Directional Drill/HDPE

HDPE pipe shall be used for directional drill application. See ARTICLE 33 for requirements.

Section 29.04 VALVES

Sufficient valves shall be provided on force main systems to facilitate effective isolation of the pipe system for repairs and maintenance. On straight runs of force mains, valve spacing shall not exceed 1,000 feet. Additional valves shall be provided where force mains intersect to facilitate isolation of pipe segments.

29.04.01 Plug Valves

Plug valves shall have a semi-steel body, non-lubricated, eccentric type, 100% port opening with resilient faced plugs capable of drip-tight, bi-directional, shut-off at the full rated pressure. Exposed valves shall have flanged connections. Buried valves shall have mechanical joint connections. Gear actuators for valves 8 inches or larger shall be provided.

29.04.02 Check Valves

Check valves shall have an iron body, bronze-mounted, stainless steel hinge pin, outside spring operated, swing non-slam type, equipped with removable inspection covers. Units shall be rated for 150 psi minimum working pressure and permit full flow area equal to that of the connecting pipe.

29.04.03 Air Release Valves

Air release valves shall have a polimer or stainless steel body, minimum 150 psi working pressure, equipped with a vacuum ball to prevent air return and a properly sized blow off valve. All pipe, hardware, and isolation ball valves shall be per Standard Manufacturer's List Detail.

29.04.04 Tapping Sleeves and Valves

Tapping Sleeves shall be a joint type with flanged outlet per ANSI B-16.1, Class 125. Valves shall be gate valves specially designed for wet tapping and compatible with the connecting sleeve.

29.04.05 Valve Boxes

Valve boxes shall be adjustable, cast iron and suitably sized to the valve with a minimum diameter of 5 inches. The cover shall have the word "SEWER" legibly cast into the face. Boxes shall be suitable for H-20 loading.

Section 29.05 INSTALLATION

29.05.01 General

Excavation and backfill including sheeting and bracing, dewatering, bedding and foundation, and furnishing and disposal of materials shall be as required in ARTICLE 6 Table 6-1of this Manual.

29.05.02 Pipe Laying

All pipe shall be laid "in-the-dry" along straight lines and grades between fittings, manholes, or other defined points, unless definite alignment deflections or grade changes are necessary. The standard minimum cover for sewage force main systems shall be 3 feet from the top of the pipe to finished grade. Where waterways, canals, ditches, or other cuts are crossed, either jack and bore, or directional drill shall be required. Additionally, approved utility crossing signs shall be placed on the pipe alignment at each side of the canal, etc. All materials shall be maintained and all coatings shall be protected from damage and kept clean. The interior of the pipe shall be maintained clean and free of dirt and debris. When work is not in progress, plug all open ends. Underground piping shall not be driven to grade by striking it with an unyielding object. Bell holes in the bedding shall be provided to allow uniform load bearing along the pipe barrel.

29.05.03 Push-on Joints

The pipe bell and spigot shall be thoroughly cleaned immediately prior to inserting the gasket and jointing. The gasket shall be properly faced and positioned. Lubrication shall be in accordance with the manufacturer's recommendations. Pipe shall be protected against damage from jointing equipment by using timber headers, etc.

29.05.04 Mechanical Joints

The socket and plain end shall be wiped clean. The plain end, socket, and gasket shall be washed with a soap solution immediately prior to jointing. The joint shall be kept straight during assembly with the gasket pressed firm and even into the recess. Bolts shall be tightened such that the gland remains reasonably parallel to the flange by alternating from bolt to bolt in cycles. The required bolt size (pipes 4 inches to 24 inches in diameter) shall be ¾ inches, torqued to 75-90 ft-lbs.

29.05.05 Flange Joints

Make all flanged joints tight, without applying undue strain upon the joint or other appurtenances. Joints shall be fitted such that contact surfaces bear uniformly on the gasket with relatively uniform bolt stresses.

29.05.06 Connections at Structures

Where pipes are to extend into or through structures, Link Seal-Type penetration seals shall be provided at the wall face. Openings in existing structures shall be made with a circular core boring machine.

29.05.07 Pipe Cutting

Cutting of pipes for the insertion of valves, fittings, or closure pieces shall be done in a neat, workmanlike manner without damaging pipe coatings or linings. The pipe shall be cut with an abrasive pipe saw, rotary wheel cutter, guillotine pipe saw, or milling wheel saw. Cut ends and rough edges shall be ground smooth and, for push-on joint connections, the cut end shall be beveled. Where castings or linings have been damaged, apply two coats of a Coal Tar/Bitumastic Coating. Where protective linings are provided within the interior of the pipe, repair of the lining shall be completed in accordance with the lining manufacturer's recommendations. All coatings and lining materials shall be in accordance with the Approved Manufacturer's List.

29.05.08 Pipe Restraint

All plugs, caps, tees, and bends, unless otherwise specified, shall be restrained by the use of approved restraint glands, and/or restrained joints. Components of dissimilar metal shall be protected against corrosion by hand application of a bituminous coating. Backfilling over pipe restraints shall not proceed until inspected by the City Engineer or his Designee. Thrust blocks shall not be typical and shall only be used when the City Engineer deems it a hardship or good engineering standards deem it necessary because restraining assemblies are impractical or insufficient. If thrust blocks are used, the bearing area of thrust blocks shall be adequate to prevent any movement of the fitting. The sizes and dimensions of the thrust blocks shall be shown in a thrust block table.

29.05.09 Polyethylene Encasement

Extra protection shall be provided for underground cast or ductile iron pipe and fittings within areas of severe corrosive conditions. This shall be accomplished by the installation of polyethylene encasement through the area of concern. The soil-test evaluation to determine the necessity for extra protection in suspect areas shall be as set forth in ANSI Standard A-21.5.

29.05.10 Aboveground Pipe Support

Support exposed systems, as necessary, to hold the piping and appurtenances in a firm substantial manner to the required lines and grades with no undue piping stresses transmitted to the equipment. All above ground pipe, outside of buildings, shall be supported by concrete supports.

29.05.11 Connections

Tapping shall be by tapping sleeve and valve installed with a tapping device designed for the pipe material.

29.05.12 Valve Installation

Valves shall be installed on all subsidiary force mains at the point of connection to the major main, in order to isolate said pipeline for maintenance. Where force mains are to be extended, valves shall be placed at the future connection points so as to preclude line shut-down at the time of extension. All valves shall be opened wide and then tightly closed. Nuts and bolts shall be inspected for tightness. Special care shall be taken to prevent joint materials, stones, and other substances from becoming lodged in the valve seat. Any valve that does not operate correctly shall be replaced.

Unless otherwise noted, set valve stems vertically above the center-line of the pipe. Where extension stems are required within valve boxes, insert stems shall be provided.

29.05.13 Valve Boxes

All valve boxes shall be centered over the operating nut of underground valves to permit a valve wrench to be easily fitted to the nut. Top of boxes shall be set to final grade. The valve box shall not transmit surface loads directly to either the pipe or valve. Excessive care shall be used to prevent earth and other materials from entering the boxes. Any valve box that becomes out of alignment or is not to grade shall be dug out and adjusted. A concrete collar shall be provided as specified in the Typical City Details attached as part of this Manual.

29.05.14 Air and Vacuum Valves

Where the force main profile is such that air pockets or entrapment could occur, resulting in flow blockage, provisions for air release shall be provided. Automatic air release assemblies shall be installed, where venting is required, on all major force mains and at critical points on lesser mains. At profile break points on major force mains, such as tops of hills, etc., where free flow will occur during operation or after pumping stops, combined air release and vacuum valve assemblies shall be provided. Air and vacuum valves and/or air release valves shall be as capacity requires and, if in an open area, they shall be suitably housed in a properly vented, underground chamber (manhole).

29.05.15 Terminal Discharge

Force mains shall not terminate directly into a gravity sewer line. Force mains shall enter the terminal facility, gravity sewer manhole, pumping station wet well or other, at a point equal to the operational water level of said receiving unit and not more than 1 foot above the flow line. The receiving manhole shall be either lined with an approved liner or be constructed of an approved material that prevents degradation due to the creation of gas in the structure. Should an elevation drop be required to obtain the outlet connection, the prior down-slope of the force main shall not exceed 45°. Adequate air venting shall be provided at the profile break-point.

Section 29.06 IDENTIFICATION

In order to preclude possible domestic water tapping, all installed underground PVC sanitary sewer force mains shall be green in color. DIP or HDPE pipe shall be marked with a continuous stripe painted in accordance with 62-655-320 (21) (b) 3 F.A.C. Said stripe shall be a minimum 2 inches in width and shall be green in color. Backfill shall not be placed for 30 minutes following paint application. In addition, all pipe shall be buried with non-metallic warning/identification tape above the top of the pipe, see the Typical City Details. The tape shall indicate the presence of a sanitary force main plainly on the tape face. PVC pipe shall be buried with a locating wire properly affixed to the main.

Section 29.07 CROSS CONNECTION CONTROL

In order to protect the public water supply system from contamination due to cross connections, the Developer shall install City approved backflow prevention devices where there is the potential of a non-potable substance coming into contact with the public water system. All backflow prevention devices shall comply with the City of Ocoee's Manual of Cross Connection Control and the Foundation for Cross Connection Control and Hydraulic Research, University of Southern California (FCCCHR)

Section 29.08 HYDROSTATIC TESTING

This test shall be performed by the Contractor, with the Contractor's labor and equipment, in the presence of the City Engineer or his Designee. No testing shall proceed until all restraining devices are installed or thrust blocks have cured. Clean and flush all piping thoroughly prior to testing. The amount of water to be used shall be twice the volume of the pipe being tested and the velocity of flow shall be a minimum of 3 fps. During filling of water, all air shall be carefully permitted to escape through release cocks installed as required.

The hydrostatic test shall be performed at 150 psi for a period of 2 hours per AWWA C-600. The maximum allowable leakage shall not exceed that determined by the following formula:

$$L = \frac{(N)\,(D)\,(P)^{.5}}{3700} = \text{Allowable leakage in gals per 2 hr}$$

L = 0.00270 ND; for 100 psi test for 2 hours

N = Number of joints in the section tested

D = Nominal pipe diameter in inches

P = Average test pressure maintained during the leakage test in psig (gauge)

During the 2 hour period of the test, the Contractor shall maintain a continuous pressure of 150 psi by means of a pump taking supply from a container suitable for the measurement of water loss. Should the test fail, the leak shall be located and repaired and the test performed again until it meets the above specified limits.

ARTICLE 30

SANITARY SEWER PUMP STATION

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Section 30.01 GENERAL

This ARTICLE shall govern the design, construction and application of all wet pit sewage pumping stations, typical and minor, to include the wet well, influent piping from receiving manhole, effluent piping (to the wye), valves, valve boxes and covers, pumps and motors, hatches, bypass pumping appurtenances, control panel, flow meter, telemetry system, electrical service and wiring, and testing for a complete installation ready to operate. Design and layout of the system must be approved by the City Engineer or his Designee prior to construction. The system shall be designed and sized for peak flow.

Section 30.02 LIFT STATION STANDARDS AND THIS ARTICLE

The City maintains both Major and Minor Lift Station Standards and Details that shall be used in conjunction with ARTICLE 30 to establish the requirements for any lift stations to be dedicated to or constructed by the City. Any conflicts between ARTICLE 30 and the standard details shall be resolved in the more stringent criterion and/or requirement.

Section 30.03 SITE

Pump station sites shall be sized as delineated in the Typical City Details attached as part of this Manual. Owner/Developer shall dedicate pump station site by warranty deed or plat to the City. Dedicated easements shall also be required around the site as delineated in the Typical City Details attached as part of this Manual. In general, the site for the paved access road shall also be dedicated to the City by warranty deed or plat. Exceptions to this requirement may be allowed by the City Engineer or his Designee on a case by case basis in the form of an ingress/egress easement for the access road. The pumping station shall be readily accessible by maintenance vehicles during all weather conditions. All access to the pumping station shall be paved. The facility shall not be located in road rights-of-way. In a phased development, a stabilized access road may be accepted during the initial phase with paving to be accomplished in the later phase.

Wastewater pumping station structures and electrical and mechanical equipment shall be protected from physical damage by the 100 year flood by setting the top slab elevation a minimum of one foot above the 100 year flood elevation determined for the site and shall not be located within the flood way. Wastewater pumping stations shall remain fully operational and accessible during the 100 year flood event. Regulations of Local, State and Federal agencies regarding flood plain obstructions shall be considered.

Section 30.04 BUOYANCY

Buoyancy of the pump station structures shall be considered and adequate provisions shall be made for protection. Signed and sealed calculations shall be provided to the City by the Design Engineer.

Section 30.05 EXCAVATION AND BACKFILL

Excavation and backfill (including sheeting and bracing), dewatering, bedding and foundation, and furnishing and disposal of materials shall be as required in ARTICLE 6, Table 6-1.

Section 30.06 GRADING

The site shall be graded so as to direct runoff away from structures and appurtenances and electrical system. Pavement slopes shall not be less than 0.6% or exceed 2% within station confines. Earth grading extending from pavement for the first 10 feet shall not exceed 10: 1 cross slope and thereafter not exceed 3:1.

Section 30.07 HANDLING

All parts and equipment shall be properly protected so that no damage or deterioration will occur during a prolonged delay from the time of shipment until installation is completed and the units and equipment are ready for operation. Finished surfaces of all exposed pump openings shall be protected by wooded planks, strongly built and securely bolted thereto. Finished iron or steel surfaces not painted shall be properly protected to prevent rust and corrosion.

Section 30.08 WET WELLS

Wet wells shall be to the same requirements as sanitary sewer manholes with the following additional requirements:

A) The base shall be monolithic with lower ring.

B) The base slab and top slab shall be constructed to the dimensions specified in the Typical City Details attached as part of this Manual. The wall thickness and inside diameter of the wet well shall be constant over its full depth. Generally, the minimum acceptable inside diameter for a wet well shall be 6 feet, however sufficient space for installed equipment, required suction pipe submergence and spacing shall be provided. A minimum of 24 inches between shut off and lead pump start levels shall be provided. Low water level shall provide adequate submergence to prevent pump inlet from vortexing, air binding, or other operational problems.

C) A minimum 5 foot depth from the lowest invert and the off Float shall be provided.

D) The maximum high water level shall be less than the low pipe influent invert, with the high water alarm no higher than the mid-depth point of said pipe.

E) Brick construction shall not be acceptable.

F) Wet well shall be free from all detectable leaks. Any leaks detected shall be corrected prior to acceptance by the City.

G) Coating per the Approved Manufacturer's List.

H) All concrete sanitary wetwells shall be lined with spray on Green Monster ™ Liner at a 90 to 110 mil thickness or approved equal approved by the City.

Section 30.09 PIPE, VALVES AND FITTINGS

30.09.01 General

All exposed pipe shall have flanged joints with 316 stainless steel bolts with stainless steel plastic inserted nylock nuts. All buried pipes shall have restrained joints. All exposed metallic piping shall be coated with an approved material refer to Approved Manufacturer's List. The riser pipe from the pump base to the valve vault shall be fusion welded HDPE and shall be joined to the equipment with the proper fusion welded flange adapters and shall include support as specified in the Typical City Details attached as part of this Manual.

30.09.02 Pipe Material

All piping from valve box to one (1) joint past wye including bypass pumping extension shall be ductile iron pipe. Pipe material from receiving manhole to wetwell shall be HDPE of equal inside diameter to pipe entering receiving manhole.

Section 30.10 PUMPS

30.10.01 General

The equipment covered by these Specifications is intended to be standard pumping equipment of proven ability as manufactured by a reputable firm having at least 5 years experience in the production of such equipment. The equipment furnished shall be designed, constructed, and installed in accordance with the best practices and methods, and shall operate satisfactorily when installed as specified in the Typical City Details attached as part of this Manual.

Pumps shall be submersible and of a dual rail system - dual rail pumps with dual rails. Pump station shall be capable of pumping the peak design flow with any one pumping unit out of service. Pumps shall be capable of meeting all system hydraulic conditions without motors overloading. In addition, a minimum 5 HP motor shall be required. Head-capacity (performance) curves shall verify that pumps are operating at peak efficiency for application. The system head-capacity analysis shall provide the following and be subject to review by the City Engineer or his Designee:

A) System operation under peak flow conditions, with one pump or multiple parallel pumping, as designed. If the receiving force main system is interconnected to additional pumping stations, hydraulic modeling conditions shall also include said pumping systems operating at rated capacity.

B) Pumping capability with one pump running, all units operating in parallel and other combinations, if applicable.

C) Design engineer shall provide Hydraulic Analysis for peak, average and low pressure conditions and verify that new station will not adversely impact existing stations.

All parts shall be so designed and proportioned as to have liberal strength and stiffness, and to be especially adapted for the work to be done. Ample space shall be provided for inspection, repairs, and adjustment. All necessary foundation bolts, plates, nuts, and washers shall be furnished by the equipment manufacturer, and shall be of Type 316 stainless steel. Brass or stainless steel nameplates giving the name of the manufacturer, voltage, phase, rated horsepower, speed, and any other pertinent data shall be attached to each pump. The nameplate rating of the motors shall not be exceeded.

Two pumps shall be required for all stations discharging 2,000 gallons per minute or less. Additional pumps shall be required as necessary for larger flows. A minimum 5 minutes run time and no more than 8 successive starts of pumps must be maintained for peak flow conditions. Pumps shall alternate operation automatically. The pumps shall be capable of handling raw unscreened domestic wastewater and minimum 3 inch diameter solid spheres. Pump operation shall be controlled automatically by means of a SCADA Control System with a float back-up system. Pumps shall be mounted in the wet well as specified in the Typical City Details attached as part of this Manual. See approved Manufacturer's List attached as part of this Manual. For approved pumps and SCADA equipment.

30.10.02 Installation

Equipment shall be installed in accordance with approved shop drawings and manufacturer's instructions to operate as intended by the manufacturer. Shop drawings shall be sent to the Engineering Department for review prior to installation of equipment. Upper guide rail holders shall be located exactly as required.

A) Shaft

The pump shaft shall be of Series 300 or 400 series stainless steel or carbon steel. When a carbon steel shaft is provided, the manufacturer shall demonstrate that any part of the shaft which will normally come in contact with the wastewater has proven to be corrosion resistant in this application. The shaft and bearings shall be adequately designed to meet the maximum torque required for any start-up or operating condition and to minimize vibration and shaft deflection. As a minimum, the pump shaft shall rotate on 2 permanently lubricated bearings. The upper bearing shall be a single row ball bearing. The lower bearing shall be a 2 row angular contact ball bearing, if required, to minimize vibration and provide maximum bearing life.

B) Impeller

The impeller shall be constructed of gray cast iron, ASTM A-48, class 30. All external bolts and nuts shall be of Type 304 stainless steel. Each pump shall be provided with a replaceable metallic wear ring system to maintain pump efficiency. As a minimum, one stationary wear ring provided in the pump volute or one rotating wear ring provided on the pump impeller shall be required. A two part system is acceptable.

C) Mechanical Seal

Each pump shall be provided with a tandem double mechanical seal running in an oil reservoir, composed of two separate lapped face seals, each consisting of one stationary and one rotating tungsten carbide ring with each pair held in contact by a separate spring, so that the outside pressure assists spring compression in preventing the seal faces from opening. The compression spring shall be protected against exposure to the pumped liquid. Silicone carbide may be used in place of tungsten carbide for the lower seal. The pumped liquid shall be sealed from the oil reservoir by one face seal and the oil reservoir from the air-filled motor chamber by the other. The seals shall require neither maintenance nor adjustment, and shall be easily replaceable. Conventional double mechanical seals with a single spring between the rotating faces, requiring constant differential pressure to effect sealing and subject to openings and penetration by pumping forces shall not be considered equal to tandem seal specified and required.

D) Guides

A sliding guide bracket shall be an integral part of the pump casing and shall have a machined connecting flange to connect with the cast iron discharge connection, which shall be bolted to the floor of the wet well with stainless steel anchor bolts and so designed as to receive the pump discharge flange without the need of any bolts or nuts. Sealing of the pumps to the discharge connection shall be accomplished by a simple linear downward motion of the pump with the entire weight of the pumping unit guided by no less than 2 Type 316 seamless tubular stainless steel guides per pump, which will press it tightly against the discharge connection. No portion of the pump shall bear directly on the floor of the wet well and no rotary motion of the pump shall be required for sealing. Sealing at the discharge connection by means of a diaphragm or similar method of sealing shall not be accepted as an equal to a metal to metal contact of the pump discharge and mating discharge connection specified and required. Approved pump manufacturers, if necessary to meet the above specification, shall provide a sliding guide bracket adapter. The design shall be such that the pumps shall be automatically connected to the discharge piping when lowered into place on the discharge connection. The pumps shall be easily removable for inspection or service, requiring no bolts, nuts or fastenings to be removed for this purpose, and no need for personnel to enter the wet well. Each pump shall be fitted with a minimum ¼ inch 316 stainless steel cable, air craft rating, to remove the pumps from the wet well. The cable shall be of sufficient size to accommodate removal of the pump without breaking.

30.10.03 Pump Warranty

The pump manufacturer shall warrant the units being supplied to the City against defects in workmanship and material for a period of 5 years or 10,000 hours.

Section 30.11 MOTORS

30.11.01 General Requirements

All motors shall be built in accordance with latest NEMA, IEEE, ANSI and AFBMA Standards and be UL listed where applicable. Pump motors shall be housed in an air-filled, water-tight casing and shall have Class F insulated windings which shall be moisture resistant. Motors shall be NEMA Design B, rated 155°C maximum. Pump motors shall have cooling characteristics suitable to permit continuous operation, in a totally, partially or non-submerged condition. The pump shall be capable of running continuously in a non-submerged condition under full load without damage, for extended periods. The motor shall be capable of a minimum of 10 starts per hour. If required by the City, and before final acceptance, a field running test demonstrating this ability, with 24 hours of continuous operation under the above conditions, shall be performed for all pumps being supplied. Motors below 20 horsepower shall be rated 240/480 volt, 3 phase. Motors 20 horsepower and greater shall be 480 volt, 3 phase.

30.11.02 Heat Sensors

Each motor shall incorporate a minimum of 1 ambient temperature compensated overheat sensing device. This protective device shall be wired into the pump controls in such a way that if excessive temperature is detected the pump will shut down. This device shall be self-resetting.

30.11.03 Cables

Cables shall be designed specifically for submersible pump applications and shall be properly sealed. The cable entry junction chamber and motor shall be separated by a stator lead sealing gland or terminal board, which shall isolate the motor interior from foreign material gaining access through the pump top. Sealing systems utilizing epoxy potting compounds may be used. All cables shall be continuous without splices from the motor to the control panel, unless otherwise approved by the City.

The junction chamber, containing the terminal board, shall be perfectly leak proof.

Section 30.12 SHOP PAINTING

Before exposure to weather and prior to shop painting, all surfaces shall be thoroughly cleaned, dry and free from all mill-scale, rust, grease, dirt and other foreign matter. All pumps and motors shall be shop coated with a corrosion resistant paint proven to withstand an environment of raw wastewater. All nameplates shall be properly protected during painting.

Gears, bearing surfaces, and other similar surfaces obviously not to be painted shall be given a heavy shop coat of grease or other suitable rust-resistant coating. This coating shall be maintained as necessary to prevent corrosion during periods of storage and erection and shall be satisfactory to the City up to the time of the final acceptance test.

Section 30.13 TELEMETRY SYSTEMS

Telemetry systems shall be provided on all public stations. The system shall be the newest version of the radio transmission unit Hyper Server Module from Data Flow Systems. System shall be able to monitor/calculate such information as flow rates, cycle times and ambient/run system pressures as well as proving control for the station.

Section 30.14 ELECTRICAL POWER AND CONTROL SYSTEM

30.14.01 General

This Section specifies the electrical power and control system requirements for wastewater pump stations. These requirements apply to duplex pump panels. Similar requirements shall apply when more than 2 pumps are involved except for the quantity of control equipment and panel size shall be increased accordingly. The manufacturer of the control panel shall provide data to indicate that the manufacturer has a minimum of 3 years experience in the building of pump control panels.

Lightning arrester, surge suppressor, pump disagree sensors, emergency disconnect switch, telemetry system, flow meter and totalizer, emergency generator plug, red alarm light, and convenience outlet shall be provided as specified in the Typical City Details attached as part of this Manual.

30.14.02 Control Panel

A pump station control panel shall be provided for each wastewater pump station. (See approved Manufacturer's List attached as part of this Manual.) The control panel shall be factory assembled and tested prior to installation at the pump station. Contractor shall provide for coordination between pump manufacturer and panel manufacturer to assure that the control panel as a whole, as well as the individual components, comprise a system which is intimately compatible with the pumps. The following equipment shall be included in the panel for duplex pump stations: Main breakers (2), pump circuit breakers (2), 20 amp panel circuit breaker, starters (2), alternator, elapsed time meter for each pump, run lights (2), HOA switches (2), pump disagree timer, phase voltage monitor relay, SCADA RTU with a radio telemetry unit, and an Auto-dialer. All switches, main circuit wiring, breakers and other devices shall be clearly and neatly labeled inside the control panel. Quantities will be required to be increased for stations with more than two pumps. See the Typical City Details attached as part of this Manual. A single line wiring diagram shall be included within the panel with a copy provided for the City's records.

30.14.03 Pump Alternator

An 8 pin plug-in solid state alternator (see approved Manufacturer's List attached as part of this Manual) shall be provided to change the pump starting sequence on each pumping cycle. A 3 position alternator test switch shall be provided to control the alternation operation. Switch positions to include the “Auto” to provide normal automatic sequence, “Off” position to disable alternator, and “Test” position with a spring return to allow the alternating of the pump sequence to check alternator operation.

30.14.04 Motor Starter and Selector Switches

The panel shall contain 2 motor starters. The motor starter shall be across the line magnetic starter with individual overload protection on each power leg with reset installed through the inner door unit. (See approved Manufacturer's List attached as part of this Manual.) Local Power Company Regulations shall govern.

Selector switches shall be installed on the face of the inner door unit. Selector switch shall be a heavy duty oil tight “Hand-Off-Auto” 3 position switch to control the operation mode of each pump motor starter.

30.14.05 Motor Circuit Protectors

Each pump motor shall be protected by a 3 pole motor circuit protector. (See approved Manufacturer's List attached as part of this Manual.) The Motor Circuit Protector shall be operated by a toggle-type handle and shall have a quick-make, quick-break, over center switching mechanism that is mechanically trip-free from the handle so that the contacts cannot be held closed against a short circuit and abnormal current, causing the Motor Circuit Protector to trip. Tripping shall be clearly indicated by the handle automatically assuming a position midway between the normal ON and OFF positions. All latch surfaces shall be ground and polished. All poles shall be so constructed that they open, close, and trip simultaneously. Motor Circuit Protector must be completely enclosed in a high-strength, glass polyester molded case. Ampere ratings shall be clearly visible. Contacts shall be of non-welding silver alloy. Arc extinction must be accomplished by means of arc chutes. A manual push-to-trip button shall be provided for manual exercising of the trip mechanism. Each pole of these Motor Circuit Protector's shall provide instantaneous short circuit protection by means of an adjustable magnetic-only element.

30.14.06 Power Supply and Main Disconnect

Power supply to the control panel shall be either 240 volt, 3 phase, 4 wire or 480 volt, 3 phase, 4 wire. Minimum service shall be 100 amp. Single phase power shall not be accepted.

Non-fusible safety service main disconnects shall be installed at all stations. In all 240 volt systems, disconnects shall be installed between the meter and the panel and on all 480 volt systems disconnect shall be installed ahead of the meter. LED power available indicators shall be supplied on all legs.

30.14.07 Circuit Breakers

A) General

The control-panel shall include main circuit breakers and generator breaker with mechanical interlock, a circuit breaker and magnetic starter for each pump motor, and 20 amp, 120 volt circuit breakers as required.

B) Main Breakers

The panel shall have an inter-lock system between the normal power main breaker and the emergency breaker to ensure only one breaker is in the "on" position at a time. Both breakers shall be equal in size. (See approved Manufacturer's List attached as part of this Manual.)

C) Circuit Breakers

All circuit breakers shall be heavy duty molded case breakers. The handle on the circuit breakers shall be operational through the inner door. (See approved Manufacturer's List attached as part of this Manual.)

D) Padlock Attachment

A Square D HPAFK (or approved equal) handler padlock attachment shall be installed on all motor circuit breakers.

30.14.08 Emergency Power Receptacle

This item shall only be required on stations that do not have a permanent standby generator system. The panel shall have an external mounted generator receptacle of the required size. (See approved Manufacturer's List attached as part of this Manual.)

30.14.09 Wiring

All power wires shall be THW or THWN 75°C insulated stranded copper conductors, and shall be appropriately sized for the given load application. All control circuit wire shall be type THW, size 14, stranded type. All wiring within the enclosure shall be neatly routed by the use of slotted type wiring duct with snap on type covers. Wiring on the rear of the inner door shall be neatly bundled with nylon ties and include sufficient loop across the hinges to prevent wire damage, with each end of conductor marked (I.D.). Colors shall be red for 24 volt, white for neutral, black for 120 volts.

30.14.10 Terminal Points

Terminal points of all terminal strips shall be permanently identified. All terminal numbers and identifying nomenclature shall correspond to and be shown on electrical diagrams. All wiring shall be permanently shown on electrical schematic diagrams.

30.14.11 Engraved Nameplates

All circuit breakers, control switches, indicator pilot lights, and other control devices shall be identified with permanently affixed legend plates and lamicoid-type engraved nameplates where applicable.

30.14.12 Surge Protector

A surge protector shall be included and wired to protect motors and control equipment from lightning induced line surges. All surge protectors shall be UL approved and installed per respective power company requirements and manufacturers' specifications, surge protectors shall be attached to the main disconnects.

30.14.13 Elapsed Time Meters

Elapsed time meters shall be 115 volt non-reset type and shall totalize pump running time in hours and tenths of hours to 99999.9 hours.

30.14.14 Convenience Receptacle

On the face of the inner door unit, there shall be installed a 20 amp, 120 volt, duplex convenience receptacle. It shall be provided with it's own single pole, 20 amp circuit breaker for protection. Ground fault interrupt type shall be required.

30.14.15 Control Terminal Blocks

Control terminal blocks shall be of the clamp screw type, rated for 600 volts. Amperage rating shall accommodate the control circuit amperage. An additional 10 space terminal strip shall be installed in the cabinet for future use, in addition to the required number of terminals for alarms or signals as specified in the Typical City Details attached as part of this Manual.

30.14.16 Control Power Transformers

There shall be a control power transformer with a minimum size of 500 volt (AC) to provide 120 volt (AC) power for: coils for starters, 20 amp duplex receptacle, indicator pilot lights, alarm horn, alarm light, pump alternator, elapsed time meters etc. The secondary side shall have one leg fused and the other grounded. This control power transformer is required only on 480 volt control panels.

The signal required by the float switches and relays shall be 24 volt (AC). This shall be provided by a 24 volt (AC) control power transformer properly sized with a fused secondary.

30.14.17 Control Relay

The level control relays shall operate from 24 volt (AC). They shall be enclosed, plug-in 8 pin type with octal-style screw terminal sockets.

30.14.18 Electrical Schematic

There shall be permanently affixed to the interior side of the exterior enclosure door an electrical schematic diagram and a copy supplied to City personnel at start-up. The schematic diagram shall include the rated amperage and voltage for all components.

30.14.19 Phase Monitor

For all 240 volt stations an eight pin plug-in type phase monitor shall be provided for protection of electrical components due to phase loss. Adequate dummy pin protection shall be provided to prevent accidental interchanging of the eight pin phase monitor with the eight pin alternator. All 480 volt stations shall have surface mount type phase monitors.

30.14.20 Battery Backup

A 12 volt (DC) battery shall be supplied on all lift stations to insure operation of the SCADA system in the case of a power outage. Refer to the Typical City Details attached as part of this Manual.

30.14.21 Operation

The control panel shall respond to a pressure transducer coupled with SCADA control system as well as redundant liquid level float switches to automatically start and stop pumps as well as sound an alarm upon high or low wet well levels.

The control panel shall operate 2 electrical submersible pumps at the power characteristics stipulated. The control function shall provide for the operation of the lead pump under normal design conditions. If the incoming flow exceeds the pumping capacity of the lead pump, the lag pump shall automatically start to handle this increased flow. As the flow decreases, pumps shall be cut off at elevation as shown on the plans. Pumps shall alternate positions as lead pump at the end of timing cycle. A failure of the alternator shall not disable the pumping system. The alternator shall include a safe, convenient method of manual alternation and also have provisions to prevent automatic alternation without disturbing any wiring. Should the “pump off” regulator fail, the system shall keep the station in operation and provide a visual indication of the regulator failure.

Normal operations shall be governed by the pressure transducer coupled with the SCADA control system. Upon abnormal wet well levels all pump control operations shall automatically revert to the redundant float type liquid level control system. These control components shall be mounted in one common enclosure. Control switches shall provide means to operate each pump manually or automatically. When operated in the automatic mode, the control assembly shall provide means to manually select or automatically alternate the position of the “lead” and “lag” pumps after each pumping cycle. A float type liquid level control system shall continuously monitor wet well liquid level and control

operation of the low-level cutoff for the pumps and shall operate off a 24 volt circuit. Alternate methods of liquid level measurement in the wet well may be considered on a case by case basis.

30.14.22 Housing

The duplex pump panel shall be housed in a NEMA 3R, Type 304, 14 Gauge stainless steel enclosure. Enclosure shall have provisions for padlocking the door and a dead front inner door unit for mounting controls. All exterior hardware and hinges shall be stainless steel. The outer door shall include a 3-point latch and stainless steel door handle as manufactured by Hoffman or approved equal.

There shall be, permanently affixed to the interior side of the exterior enclosure door, both a nameplate and a 10 inch x 12 inch pocket for log sheet storage. The nameplate shall contain the following information: voltage, phase, rated horsepower, speed, date manufactured and pump and control panel manufacturer's name, address and telephone number, pump data, including impeller data, operating point and head, KW input, and amperes at the operating point and at least 2 other points on the pump curve.

The control panel enclosure shall be Underwriters Laboratories (UL) 50 type 4X Listed.

30.14.23 Testing and Warranty

After fabrication in the control panel manufacturer's plant, an operational test shall be performed to check out the entire panel before delivery. Three phase source voltage to which the panel is intended for shall be used for the testing. The control panel manufacturer shall maintain a service organization in the State of Florida that is available for service. The manufacturer shall furnish a 5 year warranty against defects in materials and workmanship covering parts and labor on all items supplied under this Section.

Section 30.15 LIGHTS AND ALARMS

30.15.01 Indicator Lights

Heavy duty, oil tight, indicator lights as specified in the Typical City Details attached as part of this Manual shall be installed on the face of the inner door unit.

30.15.02 High Level Alarm

Two mercury float ball switches shall be provided as high and low level backup alarm switches to the telemetry system and to the red alarm signal light. A vapor proof red light and horn shall be mounted on top of the control panel enclosure for high level alarm. Also, there shall be an alarm silence push button on the inner door and a silence relay which will silence the horn and automatically reset when these signals are restored to normal. The push button shall be heavy duty oil tight. The red globe shall be the screw-on type.

Section 30.16 ELECTRICAL GROUNDING SYSTEM

30.16.01 General

A grounding system shall be installed as per National Electrical Code, Local Codes and Ordinances. The Drawings shall clearly show the Electrical Grounding System. An underground perimeter cable grounding system shall be installed with connections to at least the following equipment:

A) Wet well cover.

B) Valve vault cover.

C) Control panels.

D) Generator.

E) Utility company transformer.

F) Main disconnect switch.

G) Fence.

30.16.02 Material and Installation

The Drawings shall show details of material and installation to construct a completely functional and operational Electrical Grounding System.

Section 30.17 STANDBY POWER GENERATOR SYSTEM

30.17.01 General

A standby power generator system shall be installed at pump stations as required by this Manual for electrical power during the loss of normal power. Standby power generators shall be provided at all stations having the following characteristics:

A) 35 or greater total combined brake horsepower.

B) Peak design capacity of 1,000 gpm or more.

C) Arterial stations receiving flow from at least one other service area.

D) Service area includes critical users as determined on a case by case review.

E) Station with three or more pumps.

Generators shall be complete with all controls, automatic switchgear and shall produce 240 volts (AC), or 480 volts (AC), 3 phase, 4 wire power. Generator and controls shall be installed in an approved enclosure.

30.17.02 Generator Set General

The generator set shall consist of a diesel engine directly coupled to an electric generator, together with the necessary controls and accessories to provide continuous electric power to the lift station for the minimum duration of a 48 hour failure of the normal power supply.

A complete engine generator system shall be furnished and installed with fuel transfer pump, fuel day tank, battery, battery charger, muffler, radiator, control panel, remotely mounted automatic transfer switch (part of the control panel), and all other accessories required for an operational system. All materials and parts of the generator set shall be new and unused. Each component shall be of current manufacture from a firm regularly engaged in the production of such equipment. The set shall be of a standard model in regular production at the manufacturer's place of business. Units and components offered under the Specifications shall be covered by the manufacturer's standard warranty on new machines.

30.17.03 Requirements

The emergency generator set and accessories shall be of a type that complies with the latest edition of the National Electrical Code and all applicable state and local building codes.

The material and workmanship used in the manufacture of this equipment shall be of the highest quality consistent with the current standards for like equipment, and the equipment shall be manufactured in such a manner so as to conform to the latest applicable IEEE, ANSI, ISA, NEMA, and EEIA Standards.

The equipment supplier shall be liable for any latent defects due to faulty materials or workmanship in the equipment which may appear within 1 year from the date of equipment start-up.

30.17.04 Tests

Equipment shall be completely assembled and tested at the factory prior to shipment. Certified copies of the data obtained during these tests shall be submitted to the City.

Final tests, in the presence of the City's representative, shall be conducted at the site after installation has been completed. The emergency generator manufacturer shall furnish a service representative to operate the engine during the tests, to check all details of the installation and to instruct the City's representatives in proper equipment operation.

Field tests shall include operating the diesel generating set for 8 hours, carrying normal lift station loads. The Contractor shall refill the main fuel tank at the completion of the tests.

30.17.05 Ratings

The rating of the generator shall be as specified in the Typical City Details attached as part of this Manual. These ratings must be substantiated by the manufacturer's standard published curves. Special ratings shall not be acceptable. The set shall be capable of supplying the specified usable KW for the specified duration, including the power required for the pump start-up, without exceeding its safe operating temperature.

30.17.06 Engine

The engine shall be water cooled, four stroke cycle, compression ignition diesel, LP or natural gas. The engine shall be equipped with fuel, lube oil and intake air filters; lube oil coolers, fuel transfer pump, fuel priming pump, and gear-driven water pump, where applicable. The engine and generator shall be torsionally compatible to prevent damage to either engine or generator.

An engine instrument panel shall be installed on the generator set in an approved location. The panel shall include oil and fuel pressure and water temperature gauges. A mechanically driven engine hour meter shall also be provided.

The engine governor shall be of the isochronous electronic type. Frequency regulation shall not exceed ±0.25% under steady state conditions. The engine shall start and assume its rated load within 10 seconds, including transfer time.

30.17.07 Generator

The generator shall be a 3 phase, 60 hertz, single bearing, synchronous type, built to NEMA Standards. Epoxy impregnated Class F insulation shall be used on the stator and the rotor.

The excitation system shall employ a generator-mounted, volts-per-hertz type regulator. Voltage regulation shall be ±2% from no load to full load. Readily accessible voltage drop, voltage level and voltage gain controls shall be provided. Voltage level adjustment shall be a minimum of ±5%.

30.17.08 Engine Generator Control Panel

A generator mounted NEMA 3R type 304, vibration isolated, 14 gauge stainless steel control panel shall be provided. Panel shall contain, but not be limited to, the following equipment:

A) Control Equipment

Control equipment shall consist of all necessary exciter control equipment, generator voltage regulators, voltage adjusting rheostat, speed control equipment, and automatic starting controls, as required to satisfactorily control the engine/generator set. In addition, an automatic safety shut down shall be provided for low oil pressure and/or high temperature conditions in the engine. An emergency shut down lever switch shall be provided on the air intake.

B) Metering Equipment

Metering equipment shall include 3½ inch meters (dial or digital type frequency meter, 2% accuracy voltmeter, and ammeter and ammeter-voltmeter phase selector switch). The control panel shall also include the engine water temperature, lube oil pressure and hour meter.

C) Fault Indicators

Individual press-to-test fault indicator lights for low oil pressure, high water temperature, low water level, over speed, over crank, and for day tank high and low fuel level shall be provided.

D) Function Switch

A four position function switch marked “Auto”, “Manual”, “Off/Reset”, and “Stop” shall be provided.

30.17.09 Battery Charger

The battery charger shall be so designed that it shall not be damaged and shall not trip its circuit protective device during engine cranking or it shall be automatically disconnected from battery during cranking period. The charger shall be mounted in the emergency generator control panel. The charger shall have a 7 day/24 hour timer control.

30.17.10 Battery

The battery shall be lead-acid type with sufficient capacity to provide 90 seconds total cranking time without recharging. The battery shall be adequately rated for the specific generator set. The battery shall be encased in hard rubber or plastic and shall be furnished with proper cables and connectors, together with rack and standard maintenance accessories. The battery shall be provided with a 48 month warranty for replacement if found to be defective.

30.17.11 Base and Mounting

A suitable number of spring-type vibration isolators with a noise isolation pad shall be provided to support the set and its liquids.

30.17.12 Utility Connections

All connections to the generator set shall be flexible.

30.17.13 Cooling System

The generator set shall be equipped with an engine mounted radiator sized to maintain safe operation at 110°F maximum ambient at the pump station altitude. A blower type fan shall be used directing the air flow from the engine through the radiator. The entire cooling system shall be filled with 50% glycol-water solution.

30.17.14 Fuel System

An above ground, vaulted, main fuel oil storage tank with float switch, and fuel level indication, LP or natural gas tank shall be furnished and installed by the Contractor. The emergency system shall include low fuel level contacts for remote alarm. If necessary to guard against loss of prime to pump, a check valve shall be mounted on pump intake. The emergency system shall include a float switch, fuel level gauge and standard control panel.

Above ground vaulted fuel oil tanks shall be equipped with an overfill containment system supplied by the tank manufacturer.

Fuel oil piping, including mounting of any required fuel tanks, shall be furnished and installed by the Contractor and shall have double wall containment for all piping. The Contractor shall be required to permit the fuel system through the County and FDEP.

30.17.15 Exhaust System

The generator set supplier shall provide a critical-type silencer, with flexible exhaust fittings, properly sized and installed, according to the manufacturer's recommendation. The silencer shall be mounted so that its weight is not supported by the engine. The exhaust system shall not exceed residential noise limit requirements.

Exhaust pipe size shall be sufficient to ensure that measured exhaust back pressure does not exceed the maximum limitations specified by the generator set manufacturer. The exhaust system shall include a flexible, seamless, stainless steel connection between the engine exhaust outlet and the rest of the exhaust system. The exhaust system shall be a part of generator enclosure.

30.17.16 Weatherproof Enclosure

Enclosure and all other items shall be designed and built by engine manufacturer as an integral part of the entire generator set, and shall be designed to perform without overheating in the ambient temperature specified. Enclosure shall be constructed of 14 or 16 gauge sheet metal suitably reinforced to be vibration free in the operating mode. Four hinged doors shall be provided to allow complete access without their removal. Each door shall have at least 2 latch-bearing points. Side and rear panels shall be completely and simply removable for major service access. Roof shall be peaked to allow drainage of rain water. Baked enamel finish with primer and finish coat shall be painted before assembly. All fasteners shall be rust resistant. Unit shall have sufficient guards to prevent entrance by small animals. Padlocks shall be provided. Batteries shall be designed to fit inside enclosure and alongside the engine. Batteries under the generator are not acceptable. Unit shall have coolant and oil drains outside the unit to facilitate maintenance. Each drain line shall have a high quality valve located near the fluid source. Fuel filter shall be inside the base perimeter and located so spilled fuel cannot fall on hot parts of engine or generator. A cleanable primary fuel strainer shall be used to collect water and sediment between tank and main engine fuel filter. Crankcase fumes disposal shall terminate in front of the radiator to prevent oil from collecting on the radiator core and reducing cooling capacity.

30.17.17 Automatic Transfer Switch

The automatic transfer switch shall be part of the control panel. The transfer switch shall be provided with the following features:

A) Complete protection, close differential voltage sensing relays monitoring all 3 phases (pick-up set for 95% of nominal voltage, drop-out set for 85% nominal voltage).

B) Voltage sensing relay on emergency source (pick-up set for 95% of nominal frequency).

C) Time delay on engine starting--adjustable from 1 second to 300 seconds (factory set at 3 seconds).

D) Time delay normal to emergency transfer--adjustable from 0 second to 300 seconds (factory set at 1 second). The Contractor shall request time delay settings in accordance with the priority rating or their respective loads.

E) Time delay emergency to normal transfer--adjustable 30 seconds to 30 minutes (factory set at 5 minutes), and time delay bypass switch shall be provided on door of the switch cabinet.

F) Unload running time delay for emergency engine generator cooling down-adjustable from 0 to 5 minutes (factory set at 5 minutes) unless the engine generator control panel includes the cool down timer.

30.17.18 Warranty

Products shall be guaranteed to be free from defects in material and workmanship under normal use and service for a period of 1 year after start-up.

Section 30.18 FENCING

All pump station sites shall be fenced. However, exception to this requirement on a case by case basis and subject to sufficient landscape screening. The Contractor shall furnish and erect the chain link fence and gate in accordance with these Specifications and in conformity with the lines, grades, notes and typical sections as specified in ARTICLE 20 and the Typical City Details attached as part of this Manual.

Chain link fence shall be 6 feet high, in accordance with this Manual. One 12 foot double swing drive gate (two 6 foot leaves),hinged to swing through 180° from open to close to open, with center drop rod assembly latch (no post) and gate hold backs for both leaves shall be installed, complete with latches, locking device, stops keeper, hinges, fabric and braces. Gate shall open outward from station. Gates shall be the same height as the fence and the gate fabric shall be the same as the fence fabric. Gate leaves less than 8 feet wide shall have truss rods or intermediate braces and gate leaves 8 feet or more in width shall have intermediate braces and diagonal truss rods or shall have tubular members as necessary to provide rigid construction, free from sag or twist.

All posts shall be set 3 feet deep in concrete footings, 12 inches in diameter for line posts, gate and corner posts. After the post has been set, aligned and plumbed, the hole shall be filled with 3,000 psi concrete. The concrete shall be thoroughly worked into the hole so as to leave no voids. The exposed surface of the concrete shall be crowned to shed water.

Section 30.19 TOOLS AND SPARE PARTS

One set of all special tools required for normal operation and maintenance shall be provided. All such tools shall be furnished in a suitable steel tool chest complete with lock and duplicate keys.

The pump and control panel manufacturer(s) shall provide a suggested list of spare parts for the equipment being supplied for the pump station. The cost of the spare parts shall not be less than $5,000.00 based upon the manufacturers published suggested list price for the parts. The City will review the recommended list and will either approve or modify the list as they deem necessary. Any modifications made to the list will be made so that the cost remains within the above required limit. All spare parts are required to be provided to the City prior to final inspection and start-up of the station.

Section 30.20 PUMP STATION WATER SYSTEM

All wastewater pump stations shall be provided with a water system with adequate capacity and pressure for station wash down and other requirements. The station water system shall be completely separated from the potable water supply by means of a metered, reduced pressure type backflow preventer

Section 30.21 INSPECTION AND TESTING

A factory representative knowledgeable in pump operation and maintenance shall inspect and supervise a test run at the pumping station in the presence of the City Engineer or his Designee. The City shall be provided 24 hour notice before this inspection is to commence. A minimum of 1 working day shall be provided for the inspections. Additional time made necessary by faulty or incomplete work or equipment malfunctions shall be provided as necessary to meet the requirements in this Manual at no additional cost to the City. Upon satisfactory completion of the test run, the factory representative shall issue the required manufacturer's certificate.

The test run shall demonstrate that all items of this Manual have been met by the equipment as installed, and shall include, but not be limited to, the following tests:

A) That all units have been properly installed.

B) That the units operate without overheating or overloading any parts and without objectionable vibration.

C) That there are no mechanical defects in any of the parts.

D) That the pumps can deliver the specified pressure and quantity.

E) That the pumps are capable of pumping the specified material.

F) That the pump controls perform satisfactorily.

Section 30.22 LIFT STATION SERVICES

The necessary utility services (electrical power, telephone, water) shall be provided by the Owner/Developer and accounts for such services shall be transferred to the City of Ocoee prior to issuance of a Certificate of Completion for facilities that are to be dedicated to the City.

Section 30.23 REQUIRED SUBMITTALS

Submittals shall be provided to the City, for any lift stations to be taken over by the City, in triplicate and include the following:

A) As-Built Drawings providing a detail showing fencing, gates, all important details of construction, dimensions, anchor bolt locations, and the flow meter and valve pit relative to the lift station, including but not limited to all elevations, such as inverts, floor elevations and finished grades, etc. All the above improvements shall be included inside the fenced-in area. The approach road and driveway shall also be shown. The Drawing shall be fully dimensioned and in State Plane coordinates.

B) Descriptive literature, bulletins, and/or catalogs of the equipment, both hard copy as well as electronic "PDF" files.

C) Data on the characteristics and performance of each pump. Data shall include guaranteed performance curves, based on actual shop tests of similar units, which show that they meet the specified requirements for head, capacity, efficiency, NPSHR, submergence and horsepower. Curves shall be submitted on 8½" by 11" sheets, at as large a scale as is practical. Curves shall be plotted from no flow at shut off head to maximum manufacturer recommended pump capacity. Catalog sheets showing a family of curves will not be acceptable.

D) Complete layouts, wiring diagrams, telemetry or control schematics, including coordination with other electrical control devices operating in conjunction with the pump control system. Suitable outline drawings shall be furnished for approval before proceeding with manufacture of any equipment. Standard preprinted sheets or drawings simply marked to indicate applicability will not be acceptable.

E) A drawing showing the layout of the pump control panel shall be furnished. The layout shall indicate all devices mounted on the door and the panel shall be completely identified.

F) The weight of each pump.

G) Complete motor data shall be submitted including:

1) Nameplate identification.

2) No-load current.

3) Full load current.

4) Full load efficiency.

5) Locked rotor current.

6) High potential test data.

7) Bearing Inspection report.

Section 30.24 MINOR LIFT STATION

The City has developed a minor wastewater pump station for small service areas to promote the City's effort to extend centralized sewer and mitigate certain impacts to development for land owners. This application of this station is limited as stated below and is only applicable to stations that will be dedicated to the City. The City established the application of a minor lift station, by specifically specifying pump make, model, and size, wetwell type and size, and all the stations applicable appurtenances. The modification and/or substitution of any critical element of the minor station shall not be allowed.

The approved application of the Minor Lift station shall be subject to all of the following conditions:

1. Developments that cannot feasibly gravity flow to an existing City sewer collection manhole or pump station; and.

2. Developments provide an acceptable lift station site with collection and discharge routing access to either be by fee simple dedication(s) or granted easement(s); and

3. Developments connecting to a manhole or existing forcemain where pumping from the minor lift station discharge is not less than (4) feet per second at peak system pressures and ultimate service shall not require runtime of greater than 60% during peak hour; and

4. Station shall ultimately realize service to three (3) or more developments; and

5. Ultimate volume-metric service to the station shall be 10 or greater equivalent residential units (ERU) but no more than 40 ERUs.

ARTICLE 31

POTABLE WATER SYSTEMS

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Section 31.01 GENERAL CONSIDERATIONS

31.01.01 Type of Water Mains

The City will approve plans for potable water supply mains and extensions (herein this ARTICLE as water main) only when such mains are designed and constructed in accordance with the criteria set forth in this Manual.

31.01.02 Design Period

Water mains shall be shall be designed for the estimated ultimate tributary population, as derived for the City's approved future land uses and/or historical flows. Potable water main shall also consider flows for fire protection demand. In the event the approved City of Ocoee Water Master Plan or Study, latest edition, identifies components of the watermain under consideration, the largest capacity consideration shall be required.

31.01.03 Location

Water mains shall be located in dedicated rights-of-way or utility easements. When installed in rights-of-way, water mains shall, in general, maintain a consistent alignment with respect to the centerline of the road. All water mains located outside of dedicated rights-of-way shall require a minimum 20 foot easement. Additional easement widths shall be provided when the pipe size or depth of cover so dictate. If a water main is located adjacent to a road right-of-way, a minimum 10 foot easement shall be provided. Additional easement widths shall be provided if the pipe size or depth of cover so dictate. Water mains shall not be placed under retention ponds, tennis courts, or other structures. In general, water mains shall not be located along side or rear lot lines. Placement of a water main along side or rear lot line may be allowed on a case by case basis if such a water main configuration results in efficient placement and utilization of the water main network. The criteria shall also apply to water mains in retention pond berms.

Section 31.02 DESIGN BASIS

31.02.01 Average Daily Flow and Peak Flow

Average daily water flow shall be calculated by referencing the Equivalent Residential Unit (ERU) flow rates as outlined below. Peak flow, at a minimum, shall be the average daily flow times a peaking factor of 4. The average daily flow for domestic use shall be calculated at the minimum rate of 100 gallons per day per capita, with 3.5 persons per single family residence, and 2.5 persons per multi-family or mobile home dwelling unit. Maximum hour demand to be used for design shall be 1.0 gallons per minute (gpm) per single family residence and 0.7 gpm per dwelling unit for each multi-family or mobile home unit. Flow demands for commercial, industrial or other special developments shall be established from the estimates provided in current City Ordinance. At the discretion of the City Engineer, existing records of like facilities or estimated projections, using the best available data, may be considered.

31.02.02 Fire Flow Requirements

Fire flow requirements shall be determined in accordance with applicable City Codes. As a minimum, the requirements outlined in the ISO. "Guide to Determining Needed Fire Flow", latest edition, shall be met. In no case shall needed fire flow be less than 750 gpm. Maximum daily flow with fire flow shall not exceed 10 fps. Maximum daily flow, at a minimum, shall be the average daily flow times a factor of 2.

31.02.03 Design Calculations

Owner's/Developer's Engineer shall submit signed, sealed and dated design calculations with the Plans for all water distribution projects. Calculations shall show that the water mains will have sufficient hydraulic capacity to transport:

A) Peak hourly flows.

B) A combination of maximum daily flows and fire flows.

All calculations shall meet the requirements of Section 29.03.0l. Head losses through meters and backflow devices shall also be included in calculations. The Owner's/Developer's Engineer, at the request of the City, shall perform a nodal analysis of the proposed project along with its effects upon the City's entire system. The City's nodal model shall be obtained and used for this purpose.

31.02.04 Potable Water System Hydraulic Modeling

The City of Ocoee maintains a potable water hydraulic model (Bentley WaterCAD) which is used for but not limited to determining system performances and offsite impacts. For developments that may substantially add to or impact the City's potable water distribution system, the Owner/Developer shall cause the incorporation of the development elements into the City's model and the simulation/analysis of the model. Unacceptable operating conditions and/or offsite impacts created by the proposed development shall be remediated by the Owner/Developer.

This effort to be undertaken by Owner/Developer can be done by either the developer's engineer performing the model work with a City review, or by electing to have the City undertake the work. The election for the City to perform the work shall require City approval. All costs incurred by the incorporation and outside reviews by the City shall be at the Owner/Developer's expense. All final products shall become the property of the City.

The Owner/Developer may request the City to develop the project's nodal model, with input from the Owner's/Developer's Engineer, but this will be performed at the availability of City Staff and at a rate to cover City's cost.

Section 31.03 DETAILS OF DESIGN AND CONSTRUCTION

31.03.01 Pressure

All water mains shall be designed in accordance with Section 29.02.03 above. The system shall be designed to maintain a minimum pressure of 20 psi at all points in the distribution system under all conditions of flow. Higher pressures may be required at commercial, industrial and high density residential areas. The normal working pressure in the distribution system should be approximately 55 psi, but in no case less than 35 psi on the downstream side of a meter. For pressures greater than 90 psi special provisions may be required. Design Friction Losses for water mains shall be determined using the Hazen-Williams friction coefficient of C=100. Peak hourly flow shall not exceed 5 fps. Maximum daily flow with fire flow shall not exceed 10 fps.

31.03.02 Diameter

Only 4", 6", 8", 12", 16", 20", 24", 30", 36", 42", 48" and 54" diameter water mains shall be permitted. Four inch water mains shall be permitted only in cul-de-sac areas with a maximum length of 500 feet of pipe. In cul-de-sac areas only, 4 inch looped connections are required to prevent dead ends. As a minimum, 6 inch looped systems shall be required in low density residential projects. Where looping of mains is not practical, minimum 8 inch mains shall be required, unless detailed calculations are submitted to substantiate the sufficiency of a 6 inch main. In commercial, industrial, and high density residential areas, minimum 8 inch looped mains shall be required. Larger size mains shall be required if necessary to allow the withdrawal of the required fire flow while maintaining the minimum residual pressure specified in Section 29.03.01.

31.03.03 Dead Ends

In order to provide increased reliability of service and reduce head loss, dead ends shall be minimized by making appropriate tie-ins wherever practical, as determined by the City. System looping is required wherever possible to increase overall capacity, service and to maintain quality. Where dead-ends occur, they shall be provided with a fire hydrant or blow-off for flushing purposes. Blow offs shall be sized to provide flows which will give a velocity of at least 2.5 feet per second in the water main being flushed. Where routine and continuous flushing is predicted or determined based on water quality issues, an automatic flushing appurtenance shall be required.

No flushing device shall be directly connected to any sewer.

31.03.04 Valves

Valves shall be provided for all branch connections, loop ends, fire hydrant stubs, or other locations as required to provide an operable, easily maintained, and repaired water distribution system. Valves are to be placed so that the maximum allowable length of water main required to be shutdown for repair work shall be 500 feet in commercial, industrial or multi-family residential areas, or 800 feet in other areas.

31.03.05 Air Relief Valves

At high points in water mains where air can accumulate, provisions shall be made to remove the air by means of hydrants or automatic air relief valves. Automatic air relief valves shall not be used in situations where flooding of the manhole or chamber may occur. Refer to the Typical City Details attached as part of this Manual.

31.03.06 Fire Hydrants

Fire Hydrants shall be considered and designed in accordance with this ARTICLE.

31.03.07 Chamber Drainage

Chambers, pits or manholes containing valves, blow-offs, meters, or other such appurtenances to a distribution system shall not be connected directly to any storm drain or sanitary sewer, nor shall blow-offs or air relief valves be connected directly to any sewer.

31.03.08 Disinfection Following Repair or Replacement

Any part of the City water system which has direct contact with finished water and has been out of service for repair, alteration, or replacement shall be disinfected as outlined in this Manual or AWWA C-651.

Section 31.04 WATER METERING

31.04.01 General

All water service connections shall be metered. In general, the method of metering shall follow the guidelines listed below. However, the Owner's/Developer's Engineer must obtain approval before finalizing the design of the metering system. Master metering for irrigation for common grounds shall be reviewed and approved by the City Engineer on a case-by-case basis.

31.04.02 Single Family, Duplex, and Multi-Family Subdivisions

Each unit shall be individually metered. However, a variance may be requested for multi-family subdivisions. Single and Double services shall be installed at property lines as specified in the Typical City Details attached as part of this Manual.

31.04.03 Commercial, Industrial, and Institutional Projects

In general, each building shall be individually metered. Meter(s) shall be located in the public rights-of-way at the property line.

31.04.04 Shopping Centers

Each unit shall be individually metered. The meters shall be located either in the right-of-way or within a Utility Easement. The meters shall be located within an unpaved area to facilitate removal, repair and/or replacement without damage to paved surfaces.

31.04.05 Meter Installation

All meter boxes shall be installed by the Contractor at finished grade and level. All meters 2 inches and smaller will be installed by the City after payment of applicable fees and charges. All meters 2 inches in size and smaller shall be installed underground in an approved meter box. Meters larger than 2 inches shall be installed above ground. In general, meters larger than 2 inches shall be located in a meter easement located adjacent to the public right-of-way.

31.04.06 Meter Sizing

Size of all meters shall be determined by the Owner's/Developer's Engineer and approved by the City Utilities Division. The Owner's/Developer's Engineer shall provide sufficient information on estimated peak flows and low flows so that meter size can be evaluated. The Owner's/Developer's Engineer shall include head-losses through metering device when designing the water system.

Section 31.05 WATER SERVICES AND CONNECTIONS

Water services and connections shall conform to the applicable provisions of this Manual and the Typical City Details attached as part of this Manual. Only 1", 1 ½", 2", 3", 4", 6", 8", 10" and 12" services shall be permitted. Where water services greater than 12 inches are required dual services shall be provided. New services and connections to the water system, either new or existing, shall be made by the Contractor.

Water service piping and connection shall be installed as specified in the Typical City Details attached as part of this Manual. The location of all service lines shall be as specified in the Typical City Details attached as part of this Manual and shall be either single or dual service. On curbed streets, the exact location for each installed service shall be marked by etching or cutting a "W" in the concrete curb. Where no curb exists, locations shall be adequately marked by a method approved by the City.

Section 31.06 SERVICE PIPE, STOPS, FITTINGS, AND SERVICE SADDLES

31.06.01 Service Pipe

All service lines shall be 1", 1 ½" or 2" polyethylene tubing conforming to specifications in AWWA C-800 and AWWA C-901.

31.06.02 Stops

Corporation stops shall be 1", 1 ½" or 2" brass, equipped with connections compatible with the polyethylene tubing and threaded in accordance with specifications in AWWA C-800 and AWWA C-901. Curb stops shall be sized to match the meter size and conform to the specifications in AWWA C-800 and AWWA C-901.

31.06.03 Fittings

Fittings shall be brass, cast and machined in accordance with specifications in AWWA C-800 and AWWA C-901, with compatible polyethylene tubing connections.

31.06.04 Service Saddles

A service saddle may be used for all service line taps. Service saddles shall be double strap, anchored by a minimum 4 bolt pattern on a ductile iron saddle body. The City may require a stainless steel strap and fusion epoxy or nylon coated ductile iron body with stainless steel hardware in areas designated as corrosive.

Section 31.07 WATER MAIN MATERIALS

31.07.01 General

These Specifications cover the pipe, fittings, and accessory items used for water distribution systems.

Pipe used in water distribution systems shall be ductile iron pipe (DIP).

The Contractor shall be responsible for all materials furnished and storage of same, until the date of substantial completion. The Contractor shall replace, at the Contractor's expense, all materials found to be defective or damaged in handling or storage. The Contractor shall, if requested by the City, furnish certificates, affidavits of compliance, test reports, or samples for check analysis for any of the materials specified herein. All pipe delivered to project site for installation is subject to random testing for compliance with the designated specifications.

31.07.02 Ductile Iron Pipe

All ductile iron pipe of nominal diameter 4 through 54 inches shall conform to ANSI/AWWA A-21.51/C-151. A minimum of Pressure Class 350 pipe shall be supplied for all sizes of pipe unless specifically called out in the detail sheets, or required by the City.

31.07.03 Fittings

Any fittings required shall be mechanical joint ductile iron or gray iron conforming to ANSI/AWWA A-21.10/C-ll0, 250 psi minimum pressure rating, or ductile iron compact fittings 4 through 12 inches in accordance with ANSI/AWWA A-21.53/C-153.

31.07.04 Joints

Joints for ductile iron pipe and fitting joints shall be push-on or mechanical joints conforming to ANSI/AWWA A-21.11/C-111. Where called for in the plans, restrained or flanged joints shall be provided. Flanged joints shall conform to ANSI Standard B-16.1-125 lb. Restrained joints shall conform to ARTICLE 26 of this Manual.

31.07.05 Coatings and Linings

Where ductile iron pipe and fittings are to be below ground or installed in a casing pipe the exterior coating shall be a minimum 1.0 mil thick in accordance with ANSI/AWWA A-21.51/C-151. Where ductile iron pipe and fittings are to be installed above ground, pipe, fittings and valves shall be thoroughly cleaned and given one field coat (minimum 1.5 mils dry thickness) of rust inhibitor primer. Intermediate and finished field coats of Alkyd shall also be applied by the Contractor (minimum 1.5 mils dry thickness each coat). Primer and field coats shall be compatible and shall be applied in accordance with the manufacturer's recommendations. (See approved Manufacturer's List attached as part of this Manual.) Final field coat shall be dark blue for raw water and blue for finished water.

All ductile iron pipe and fittings shall have an interior protective lining of cement-mortar with an NSF approved seal coat material in accordance with ANSI/AWWA A-21.4/C-104.

31.07.06 Polyethylene Encasement

The pipe shall be polyethylene encased (8 mil) where shown on the detail sheets or required by the City in accordance with ANSI/AWWA A-21.51/C-105.

31.07.07 Resilient Seat Gate Valves

All gate valves 12 inches and smaller shall be resilient seat gate valves. Such valves shall be resilient seated, manufactured to meet or exceed the requirements of AWWA C-515, latest revision, and in accordance with the following Specifications. Valves shall have an unobstructed waterway equal to or greater than the full nominal diameter of the Connecting Pipe. (See approved Manufacturer's List attached as part of this Manual.)

The valve body, bonnet, and bonnet cover shall be ductile iron. All ferrous surface inside and outside shall have a fusion-bonded epoxy coating. A 2 inch wrench nut shall be provided for operating the valve. All valves are to be tested in strict accordance with AWWA C-515. The valve shall be operated opening counterclockwise.

The valves shall be non-rising stem with the stem made of cast, forged, or rolled bronze as specified in AWWA C-515. Two stem seals shall be provided and shall be of the O-ring type. The stem nut must be independent of the gate.

The resilient sealing mechanism shall provide zero leakage at the water working pressure when installed with the line flow in either direction.

All shut-off valves 16” and larger shall be resilient seat gate with horizontal mechanical gearing and clear passage for pigging devices. Valve shall be as listed in the Approved Manufacturer’s List.

31.07.08 Butterfly Valves

Butterfly valves are **not** allowed.

31.07.09 Valve Boxes

All buried valves shall have cast-iron three piece valve boxes. Valve boxes shall be provided with suitable heavy bonnets and shall extend to such elevation at, or slightly above, the finished grade surface as directed by the City. The barrel shall be 2 piece, sliding type, having 5¼ inch shaft. The upper section shall have a flange at the bottom having sufficient bearing area to prevent settling and shall be complete with cast iron covers. Covers shall have “WATER” cast into the top for all water mains. The actuating nuts for deeper valves shall be extended to come up to 4 foot depth below finished grade.

Care shall be taken while constructing valve boxes to ensure that valve stems are vertical and the cast iron box has been placed over the stem with base bearing on compacted fill and top flush with final grade. Boxes shall have sufficient bracing to maintain alignment during backfilling. Contractor shall remove any sand or undesirable fill from valve box prior to final inspection.

31.07.10 Air Release Valves

The air release valves for use in water mains shall be installed as specified in the Typical City Details attached as part of this Manual and the make and model per the approved Manufacturer's List. Valves shall be provided with a vacuum check to prevent air from reentering the line. The fittings shall be threaded.

Section 31.08 WATER MAIN INSTALLATION

31.08.01 General

Pipe shall be installed in accordance with the manufacturer's specifications and instructions for the type of pipe used and applicable AWWA Standards, such as C-600 and C-603, unless otherwise stated in these Specifications. A 2" jumper connection shall be provided for purposes of filling and testing the installed water line prior to clearance for use. The jumper is to be installed per the Typical City Details attached as part of this Manual.

31.08.02 Pipe Handling

All types of pipe shall be handled in such manner as will prevent damage to the pipe or coating. Accidental damage to pipe or coating shall be repaired to the satisfaction of the City or be removed from the job. When not being handled, the pipe shall be supported on timber cradles or on properly prepared ground, graded to eliminate all rock points and to provide uniform support along the full length. When being transported, the pipe shall be supported at all times in a manner which will not permit distortion or damage to the lining or coating. Any unit of pipe that, in the opinion of the City, is damaged beyond repair by the Contractor shall be removed from the site of the work and replaced with another unit. Joint gaskets shall be stored in clean, dark, dry location until immediately before use.

Dirt or other foreign material shall be prevented from entering the pipe or pipe joint during handling or laying operations, and any pipe or fitting that has been installed with dirt or foreign material in it shall be removed, cleaned and relaid. At times when pipe laying is not in progress, the open ends of the pipe shall be closed by a water-tight plug or by other means approved by the City to ensure absolute cleanliness inside the pipe.

Section 31.09 VALVE INSTALLATION

All valves shall be inspected upon delivery in the field to insure proper working order before installation. They shall be set and jointed to the pipe in the manner as set forth in the AWWA Standards for the type of connection ends furnished. All valves and appurtenances shall be installed true to alignment and rigidly supported. Any damage to the above items shall be repaired to the satisfaction of the City before they are installed. Valves shall be installed in a vertical position and be provided with a standard valve box so arranged that no shock will be transmitted to the valve. The box shall be vertically centered over the operating nut, and the cast iron box cover shall be set flush with the road bed or finished surface. After installation, all valves shall be subjected to the field test for piping as outlined in these Specifications. Should any defects in materials or workmanship appear during these tests, the Contractor shall correct such defects to the satisfaction of the City.

Flanged joints shall be made with hot dipped galvanized bolts, nuts and washers. Mechanical joints shall be made with mild corrosion resistant alloy steel bolts and nuts. All exposed bolts shall be painted the same color as the pipe.

Section 31.10 IDENTIFICATION

In order to preclude possible domestic water tapping, all installed underground DIP or HDPE water mains shall be marked in accordance with 62.555.320 (21) (b) 3. Florida Administrative Code. Said stripe shall be a minimum 2 inches in width and shall be light blue in color. Backfill shall not be placed for 30 minutes if field painting is required. In addition, all pipe shall be buried with non-metallic warning/identification tape above the top of the pipe, see the Typical City Details. The tape shall indicate the presence of the water main plainly on the tape face. All PVC pipe shall be buried with a locating wire properly affixed to the main.

Section 31.11 SEPARATION OF WATER MAINS AND SEWERS

31.11.01 General

No water pipe shall pass through or come in contact with any part of a sanitary or storm sewer manhole.

Extreme caution shall be exercised when locating water mains at or near certain sites such as sewage treatment plants or industrial complexes. Individual septic tanks must be located and avoided.

Water mains that are laid in the vicinity of pipe lines designated to carry raw wastewater or reclaimed water (wastewater effluent) shall meet the horizontal and vertical separations specified below. Compliance with all separation requirements of F.A.C. Rule 62-555.314 shall be met as a minimum.

31.11.02 Horizontal Separation

Under normal conditions, water mains shall be located at least 10 feet horizontally from pipes carrying raw wastewater, and 3 feet horizontally from pipes carrying stormwater or reclaimed water. The distance shall be measured from inside edge of pipe to inside edge of pipe.

31.11.03 Vertical Separation

Under normal conditions, water mains shall be laid to provide a separation of at least 18 inches between the bottom of the water main and the top of the wastewater or storm sewer. Under unusual conditions, when construction conditions prevent a vertical separation of 18 inches, a lesser separation in accordance with 62.555.314 may be allowed.

31.11.04 Crossing of Water Mains and Sewers

Water mains shall be above the sewer whenever they cross. A vertical separation shall be maintained as described above. Adequate structural support for both the water main and sewers shall be provided to prevent excessive deflection of joints and settling.

Section 31.12 TRENCH PREPARATION AND PIPE BEDDING

31.12.01 Trench Preparation and Pipe Bedding

Applicable provisions of ARTICLE 6 of this Manual shall apply. Also refer to the Typical City Details attached as part of this Manual.

31.12.02 Pipe Preparation, Handling and Laying

All pipe and fittings shall be inspected prior to lowering into trench to insure no cracked, broken, or otherwise defective materials are being used. Contractor shall clean ends of pipe thoroughly and remove foreign matter and dirt from inside of pipe and keep clean during and after laying.

Contractor shall use proper procedures tools, and facilities for the safe and proper protection of the work. Contractor shall lower pipe into the trench in such a manner as to avoid any physical damage to the pipe and shall remove all damaged pipe from the job site. Care shall be taken to not drop or dump pipe into trenches under any circumstances.

Contractor shall prevent foreign material from entering the pipe while it is being placed in the trench. Contractor shall remove all foreign material from the pipe or joint ring before the next pipe is placed. If the pipe laying crew cannot put the pipe into the trench and in place without getting earth into the pipe, the City may require that snugly-fitted, tightly-woven canvas bags be placed over each end before lowering the pipe. The bags shall be left in place until the connection is to be made to the adjacent pipe. During laying operations, Contractor shall keep debris, tools, clothing, or other materials out of the pipe.

All ductile iron pipe shall be installed in accordance with AWWA C-600 unless such Standards conflicts with this Manual, in which case this Manual shall apply. Contractor shall cut pipe only as necessary to comply with alignment shown on the plans. Flame cutting of pipe shall not be allowed. Contractor shall provide special tools and devices, such as special jacks, chokers, and similar items required for proper installation. Lubricant for the pipe gaskets shall be furnished by the pipe manufacturer, and no substitutes shall be permitted under any circumstances.

The pipe shall be polyethylene encased (8 mil) where shown on the detail sheets in accordance with ANSI/AWWA A-21.51/C-105.

31.12.03 Trench Dewatering and Drainage Control

Contractor shall prevent water from entering the trench during excavation and pipe laying operations to the extent required to properly grade the bottom of the trench and allow for proper compaction of the backfill. Pipe shall not be laid in water.

31.12.04 Survey Line and Grade

Pipe shall be laid to the lines and grades shown on the plans. The Contractor shall provide line and grade stakes at a 100 foot maximum spacing and at all line and/or grade change locations. Contractor shall provide Temporary Bench Marks at maximum 1,000 foot intervals. The minimum pipe depth shall be 3 feet below the finished grade surface or 3 feet below the elevation of the edge of pavement of the road surface, whichever is greater.

31.12.05 Laying of Pipes on Curves

Pipe installed on long radius curves, either horizontal or vertical, may be installed with standard pipe by deflections at the joints. Maximum deflections at pipe joints, fitting and laying radius for the various pipe lengths shall not exceed 75 percent of the pipe manufacturer's recommendation.

The maximum allowable tolerance in the joint due to variances in installation is 0.75 degrees (3-inches per joint per 20 ft stick of pipe). No bending tolerance in the pipe barrel shall be accepted. Alignment change shall be made only with sleeves and fittings.

31.12.06 Pipe Restraining and Thrust Block

Requirements specified in ARTICLE 26 of this Manual shall apply.

31.12.07 Bedding and Backfill for Pipes

Requirements specified in ARTICLE 6 of this Manual shall apply.

Section 31.13 HYDROSTATIC TESTS

31.13.01 General

Hydrostatic tests shall consist of pressure test and leakage test. Hydrostatic tests shall be conducted on all newly laid pressure pipes, joints and valves including all service lines to the curb stops. Air testing of pressure pipes shall not be permitted under any circumstance. Tests shall not be made on sections exceeding 2,000 feet. Contractor shall furnish all necessary equipment and material, make all taps, and furnish all closure pieces in the pipe as required. Equipment to be furnished by the Contractor shall include graduated containers, pressure gauges, hydraulic force pumps, and suitable hoses and piping. The City will monitor and approve a satisfactory test.

The Contractor may conduct hydrostatic tests after the trench has been partially backfilled with the joints left exposed for inspection for informational purposes only. The hydrostatic tests for acceptance shall only be conducted after the trenches have been completely backfilled and compacted as specified. Where any section of pipe is provided with concrete thrust blocking, pressure test shall not be made until at least 5 days have elapsed after the thrust blocking is installed. If high-early cement is used for the concrete thrust blocking, the time may be reduced to 24 hours if the City concurs that the concrete has cured and reached adequate strength.

31.13.02 Testing Criteria

All pipe sections to be pressure tested shall be subjected to a hydrostatic pressure of 150 psi. The duration of each pressure test shall be for a period of 2 hours. If during the test, the integrity of the tested line is in question, the City may require a 6 hour pressure test. The basic provisions of AWWA C-600 shall be applicable.

31.13.03 Procedure for Pressure Test

Each section of pipe to be tested, as determined by the City, shall be slowly filled with water and the specified test pressure shall be applied by means of a pump connected to the pipe in a satisfactory manner. Before applying the specified test pressure, all air shall be expelled from the pipe. To accomplish this, taps shall be made and appropriate valves installed to ensure bleeding of all air from the main. If defective pipes, fittings, valves, or hydrants are discovered in consequence of this pressure test, all such items shall be removed and replaced by the Contractor with sound material and the test shall be repeated until satisfactory results are obtained. Provisions of AWWA C-600, where applicable, shall apply.

31.13.04 Procedure for Leakage Test

After completion of the pressure test, a leakage test shall be conducted to determine the quantity of water lost by leakage under the specified test pressure. Applicable provisions of AWWA C-600 shall apply.

Allowable leakage in gallons per hour for pipeline shall not be greater than that determined by the formula:

$$L = \frac{SD\,(p)^{1/2}}{133{,}200}$$

Note: L = Allowable leakage in gallons per hour.
S = Length of pipe tested, in feet.
D = Nominal diameter of the pipe in inches.
P = Average test pressure during leakage test in pounds per square inch gauge.

Leakage is defined as the quantity of water to be supplied in the newly laid pipe or any valved section under test, which is necessary to maintain the specified leakage test pressure after the pipe has been filled with water and the air expelled. Should any test of pipe laid disclose leakage greater than that allowed, Contractor shall locate and replace or repair the defective joints, pipe or valve until the leakage from subsequent testing is within the specified allowance.

Section 31.14 DISINFECTION OF WATER MAINS

31.14.01 General

Before being placed in service, all new water mains shall be chlorinated in accordance with the Specifications below and the procedures outlined in AWWA C-651 “Standard Procedure for Disinfecting Water Mains”.

31.14.02 Flushing

Sections of pipe to be disinfected shall first be flushed to remove any solids or contaminated material that may have become lodged in the pipe. If no hydrant is installed at the end of the main, then a blow-off valve shall be provided large enough to develop a velocity of at least 2.5 feet per second in the main.

All taps required for chlorination or flushing purpose, or for temporary or permanent release of air shall be provided for by the Contractor as a part of the construction of water mains. After the disinfection, all such taps shall be sealed to the satisfaction of the City.

31.14.03 Disinfection Criteria

Before being placed into service, all new mains and repaired portions of, or extensions to existing mains shall be chlorinated so that the initial chlorine residual is not less than 50 mg/l and that a chlorine residual of not less than 25 mg/l remains in the water after standing 24 hours in the pipe.

31.14.04 Form of Applied Chlorine

Chlorine may be applied as a liquid chlorine (gas-water mixture), or a mixture of water and high-test calcium hypochlorite. Contractor shall assume responsibility for safe handling of chlorine and shall meet requirements of OSHA and other regulatory agencies for safe handling of chlorine.

31.14.05 Point of Application

The preferred point of application of the chlorinating agent is at the beginning of the pipe line extension or any valved section of it, and through a corporation stop inserted in the pipe. The water injector for delivering the chlorine-bearing water into the pipe shall be supplied from a tap made on the pressure side of the gate valve controlling the flow into the pipe line extension. Alternate points of applications may be used when approved or directed by the City.

31.14.06 Chlorinating Valves and Hydrants

In the process of chlorinating newly laid pipe, all valves or other appurtenances shall be chlorinated while the pipe line is filled with the chlorinating agent and under normal operating pressure.

31.14.07 Operation of City Valves

Valves shall be manipulated by the City personnel so that the strong chlorine solution in the line being treated shall not flow back into the line supplying the water.

31.14.08 Retention Period

Treated water shall be retained in the pipe at least 24 hours. After this period, the chlorine residual at pipe extremities and at other representative points shall be at least 25 mg/l.

31.14.09 Final Flushing and Testing

Following chlorination, all treated water shall be thoroughly flushed from the newly laid pipe at its extremity until the replacement water throughout its lengths shows upon test, a free chlorine residual not in excess of that normally carried in the system. Flushed chlorinated water shall be de-chlorinated by an approved method before or during discharge.

After flushing, water samples collected on 2 successive days from the treated piping system, as directed by the FDEP permit, shall show acceptable bacteriological results. All bacteriological testing shall be performed by a certified laboratory or City and paid for by the Contractor. All such bacteriological analysis must be performed by a laboratory certified by the State of Florida.

Proper chain of custody procedures must be followed and samples shall only be collected by certified laboratory personnel in the presence of City personnel.

Copies of testing results and all related correspondence with the FDEP shall be submitted to the City.

31.14.10 Repetition of Flushing and Testing

Should the initial treatment result in an unsatisfactory bacterial test, the original chlorination procedure shall be repeated by the Contractor until satisfactory results are obtained.

Section 31.15 FIRE HYDRANTS

31.15.01 Material

Fire hydrants shall have a minimum 5¼ inch valve opening and shall comply with AWWA Standard C-502 for fire hydrants for water works service, unless in conflict with Manual, in which case this Manual shall apply. Each hydrant shall have 6 inch mechanical joint ends with harnessing lugs ("dog ears") and shall open by turning to the left (counter-clockwise). Fire hydrant shall be of ample length for a minimum 3½ foot depth of bury. It shall be provided with two 2½ inch hose nozzles and one 4½ inch pumper nozzle, all having National Standard hose threads. Nozzles shall have caps attached by chains. Operating nuts shall be AWWA Standard (pentagonal, measuring 1½ inch point to flat). Fire hydrants shall be equipped with O-Ring packing. (See approved Manufacturer's List attached as part of this Manual.)

31.15.02 Painting

All iron parts of the hydrant, both inside and outside, shall be painted in accordance with AWWA C-502. All inside surfaces and outside surfaces below the ground line shall be coated with asphalt varnish. They shall be covered with 2 coats, the first having dried thoroughly before the second is applied. The outside of the hydrant above the furnished ground line shall be thoroughly cleaned and thereafter painted with 1 coat of paint of a durable composition, Hydrant Green for bonnet and Hydrant Yellow for body. Products shall be as identified in the Approved Manufacturer List.

31.15.03 Construction Details

Hydrants shall be plumb and shall be set so that the lowest hose connection is, at least, 18 inches above the surrounding finished grade. All hydrants shall be inspected in the field upon delivery to the job to insure proper operation before installation. The resetting, moving, and reconnecting of existing hydrants shall be handled in a manner similar to a new installation. Hydrant shall be constructed as specified in the Typical City Details attached as part of this Manual. Fire hydrants shall be required to have approved restraint glands.

31.15.04 Location and Spacing

Fire hydrants shall be as specified in the Typical City Details attached as part of this Manual. The Fire Chief or his Designee shall review the actual placement locations and final field locations of all hydrants. Hydrants shall be located no less than 5 and no more than 10 feet from the edge of pavement of the adjacent roadway and no less than 5 feet away from any physical feature which may obstruct access or view of any hydrant unless otherwise approved by the City. Hydrants shall not be placed on private distribution systems unless specifically approved in writing by the City of Ocoee Fire Rescue Department. Hydrants shall be within a right-of-way or an easement.

Hydrants shall be spaced and installed according to the following schedule in all buildings falling under the LDC regulations, unless specifically permitted by City to do otherwise

A) Single-Family Residential sprinklered and non- sprinklered:

1) 500 feet between hydrants.

2) No building further than 250 feet from a hydrant.

B) All other non-sprinklered and sprinklered (commercial, multifamily or industrial areas)

1) 350 feet between hydrants.

2) No building further than 200 feet from a hydrant.

C) These areas may require additional hydrants due to required fire flows.

Section 31.16 CROSS CONNECTION CONTROL

In order to protect the public water supply system from contamination due to cross connections, the Developer shall install City approved backflow prevention devices where there is the potential of a non potable substance or contamination coming into contact with the public water system. All backflow prevention devices shall comply with the City of Ocoee's Manual of Cross Connection Control and the Foundation for Cross Connection Control and Hydraulic Research, University of Southern California (FCCCHR).

ARTICLE 32

RECLAIMED WATER SYSTEM

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Section 32.01 GENERAL CONSIDERATIONS

32.01.01 Types of Reclaim Water Supply Mains

The City will approve plans for reclaim water supply mains and extensions (herein this article referred to as "reclaim mains") only when such mains are designed and constructed in accordance with the criteria set forth in this Manual.

32.01.02 Design Period

Reclaim mains shall be designed for the estimated ultimate tributary population, as derived for the City's approved future land uses and/or historical flows. Reclaim mains shall not include considerations for flows for fire protection demand and shall be subject to system or area shut downs. In the event the latest edition of an approved City of Ocoee Reclaim Master Plan or Study identifies components of the reclaim system that are under consideration, the largest capacity consideration shall be used in the design.

32.01.03 Location

Reclaim mains shall be located in dedicated rights-of-way or utility easements. When installed in rights-of-way, reclaim mains shall, in general, maintain a consistent alignment with respect to the centerline of the road. All reclaim mains located outside of dedicated rights-of-way shall require a minimum 20-foot easement. If a reclaim water main is located adjacent to a right-of-way, a minimum 10-foot easement shall be provided. Additional easement widths shall be provided when the pipe size or depth of cover so dictates. Reclaim mains shall not be placed under retention ponds, tennis courts, and other structures or within 75 feet of public or private potable water supply wells. In general, reclaim mains shall not be located alongside rear lot lines or pond berms unless approved by the City.

Section 32.02 DESIGN BASIS

32.02.01 Average Daily Flow and Peak Flow

Reclaim peak hourly flow shall be used as the design basis for the neighborhood and commercial (local) reclaim systems. Reclaim peak-hour flow shall be based on the application of a 1" depth of irrigation per week applied over two days a week from 5 P.M. to 7 A.M. (15 hours), multiplied by a factor of safety. The factor of safety shall be 3 divided by any alternating irrigation days per address for the area to be serviced.

32.02.02 Reclaim System Hydraulic Modeling

The City of Ocoee maintains a reclaim hydraulic model (Bentley WaterCAD) which is used for but not limited to determining system performances, offsite impacts and residual times. For developments that may substantially add to or impact the City's reclaim system, the Owner/Developer shall initiate the incorporation of the development's elements into the City's model, and the simulation/analysis of the model. Unacceptable operating conditions and/or offsite impacts created by the proposed development shall be remediated by the Owner/Developer.

This effort to be undertaken by the Owner/Developer can be accomplished by either the developer's engineer performing the model work with a City review or by electing to have the City undertake the work. Electing to have the City to perform the work shall require City approval. All costs incurred by the incorporation of and outside reviews by the City shall be at the Owner/ Developer's expense. All final products shall become property of the City.

Section 32.03 DETAILS OF DESIGN AND CONSTRUCTION

32.03.01 Pressure

All reclaim mains shall be designed in accordance with Section 30.02.01 above. The system shall be designed to maintain a minimum pressure of 40 psi 98% of the time. The normal working pressure in the distribution system should be approximately 60 psi. For pressures points greater than 90 psi, special provisions may be required. Design Friction Losses for reclaim mains shall be determined using the Hazen-Williams friction coefficient of C=120. Peak flow shall not exceed 5 fps.

32.03.02 Diameter

Only 4", 6", 8", 12", 16", 20", 24", 30", 36", 42", 48" and 54" diameter reclaim mains shall be permitted. Reclaim mains with a 4” diameter shall be permitted in cul-de-sac areas with a maximum length of 800 feet of pipe. As a minimum, 6” looped systems shall be required in low density residential projects. Where looping of mains is not practical, 8” minimum mains shall be required, unless detailed calculations are submitted to substantiate the sufficiency of a 6” main. In commercial, industrial, and high density residential areas, minimum 8” looped mains shall be required.

32.03.03 Dead Ends

In order to provide increased reliability of service and reduce head loss, dead ends shall be minimized by making appropriate tie-ins wherever practical, as determined by the City. System looping is required wherever possible to increase overall capacity and service. Where dead-end mains occur, they shall be provided with a hydrant or if approved blow-off for flushing purposes. Flushing devices shall be sized to provide flows which will give a velocity of at least 2.5 feet per second in the reclaim main being flushed. No flushing device shall be directly connected to any sewer.

32.03.04 Valves

Valves shall be provided for all branch connections, loop ends, fire hydrant stubs, or other locations as required to provide an operable, easily maintained, and repairable reclaim distribution system. Valves are to be placed so that the maximum allowable length of reclaim main required to be shut down for repair work shall be 500 feet in commercial, industrial or multi-family residential areas, or 800 feet in other areas.

32.03.05 Air Relief Valves

At high points in reclaim mains where air can accumulate, provisions shall be made to remove the air by means of hydrants or automatic air relief valves. Automatic air relief valves shall not be used in situations where flooding of the manhole or chamber may occur. Refer to the Typical City Details attached as part of this Manual.

32.03.06 Chamber Drainage

Chambers, pits or manholes containing valves, blow-offs, meters, or other such appurtenances to a distribution system shall not be connected directly to any storm drain or sanitary sewer, nor shall blow-offs or air relief valves be connected directly to any sewer.

Section 32.04 RECLAIM METERING

32.04.01 General

All reclaim service connections shall be metered. In general, the method of metering shall follow the guidelines listed below. However, the Owner's/Developer's Engineer must obtain approval before finalizing the design of the metering system. Master metering for irrigation for common grounds shall be reviewed and approved by the City Engineer on a case-by-case basis.

32.04.02 Single Family, Duplex, and Multi-Family Subdivisions

Each unit's private irrigation areas shall be individually metered. Joint common irrigation areas shall be master metered. Single and double services shall be installed at property lines as specified in the Typical City Details attached as part of this Manual.

32.04.03 Commercial, Industrial, and Institutional Projects

In general, each building shall be individually metered. Meter(s) shall be located in the public rights-of-way at the property line.

32.04.04 Shopping Centers

Common irrigation areas shall be master metered. Each unit's private irrigation area shall be individually metered. The meters shall be located either in the right-of-way or within a Utility Easement. The meters shall be located within an unpaved area to facilitate removal, repair and/or replacement without damage to paved surfaces.

32.04.05 Meter Installation

All meter boxes shall be installed by the Contractor at finished grade and level. All meters 2” in size and smaller will be installed by the City after payment of applicable fees and charges. All meters 2” in size and smaller shall be installed underground in an approved meter box. Meters larger than 2” shall be installed aboveground. In general, meters larger than 2” shall be located in a meter easement located adjacent to the public right-of-way.

32.04.06 Meter Sizing

Size of all meters shall be determined by the Owner's/Developer's Engineer and approved by the City Engineer. The Owner's/Developer's Engineer shall provide sufficient information on estimated peak flows and low flows so that meter size can be evaluated. The Owner's/Developer's Engineer shall include head-losses through metering device when designing the reclaim system.

Section 32.05 RECLAIM SERVICES AND CONNECTIONS

Reclaim services and connections shall conform to the applicable provisions of this Manual and the Typical City Details attached as part of this Manual. Only 1", 1 ½”, 2", 3", 4", 6", 8", 10” and 12" services shall be permitted. Where reclaim services greater than 12” are required, dual services shall be provided. New services and connections to the reclaim system, either new or existing, shall be made by the Contractor.

Reclaim service piping and connection shall be installed as specified in the Typical City Details attached as part of this Manual. The location of all service lines shall be as specified in the Typical City Details attached as part of this Manual and shall be either single or dual service. On curbed streets, the exact location for each installed service shall be marked by etching or cutting a “W” in the concrete curb. Where no curb exists, locations shall be adequately marked by a method approved by the City.

Section 32.06 SERVICE PIPES, STOPS, FITTINGS, AND SERVICE SADDLES

32.06.01 Service Pipes

All service lines shall be 1”, 1 ½” or 2” standard AWWA C-901-88 PE 3406 (purple) polyethylene tubing, 200 psi rating. Single and double residential service lines shall be 1” diameter. Double service lines shall use 1" x 1" x 1" wye branch (Ford No. Y44-264) or equivalent.

32.06.02 Stops

Corporation stops shall be 1", 1 ½" or 2" brass, equipped with connections compatible with polyethylene tubing and threaded in accordance with specifications in AWWA C-800 and AWWA C-901. Curb stops shall be sized to match the meter size and conform to the specifications in AWWA C-800 and AWWA C-901.

32.06.03 Fittings

Fittings shall be brass, cast and machined in accordance with specifications in AWWA C-800 and AWWA C-901, with compatible polyethylene tubing connections.

32.06.04 Service Saddles

A service saddle may be used for all service line taps. Service saddles shall be double strap, anchored by a minimum 4 bolt pattern on a ductile iron saddle body. The City may require a stainless steel strap and fusion epoxy or nylon coated ductile iron body with stainless steel hardware in areas designated as corrosive.

Section 32.07 RECLAIM MAIN MATERIALS

32.07.01 General

These Specifications cover the pipe, fittings, and accessory items used for reclaim distribution systems.

Pipe used in reclaim distribution systems shall be generally Polyvinyl Chloride Pipe (PVC) with direct burial applications. For directional drill applications High Density Polyethylene Pipe (HDPE) shall be required.

The Contractor shall be responsible for all materials furnished and storage of same, until the date of substantial completion. The Contractor shall replace, at the Contractor's expense, all materials found to be defective or damaged in handling or storage. The Contractor shall, if requested by the City, furnish certificates, affidavits of compliance, test reports, or samples for check analysis for any of the materials specified herein. All pipe delivered to project site for installation is subject to random testing for compliance with the designated specifications.

32.07.02 Pipe Material

All PVC mains of nominal diameter 4" through 12" shall be AWWA C900 SDR18 and mains greater than 12" shall be C905 SCR18. Refer to ARTICLE 33 Horizontal Directional Drilling for HDPE material requirements.

32.07.03 Fittings

Any fittings required shall be mechanical joint ductile iron or gray iron conforming to ANSI/AWWA A-21.10/C-ll0, 250 psi minimum pressure rating, or ductile iron compact fittings 4" through 12" in accordance with ANSI/AWWA A-21.53/C-153.

32.07.04 Joints

Joints for ductile iron pipe and fitting joints shall be push-on or mechanical joints conforming to ANSI/AWWA A-21.11/C-111. Where called for in the plans, restrained or flanged joints shall be provided. Flanged joints shall conform to ANSI Standard B-16.1-125 lb. Restrained joints shall conform to ARTICLE 26 of this Manual.

32.07.05 Resilient Seat Gate Valves

All gate valves 12" and smaller shall be resilient seat gate valves. Such valves shall be resilient seated, manufactured to meet or exceed the requirements of AWWA C-509, latest revision, and in accordance with the following Specifications. Valves shall have an unobstructed waterway equal to or greater than the full nominal diameter of the valve. (See approved Manufacturer's List attached as part of this Manual.)

The valve body, bonnet, and bonnet cover shall be cast iron ASTM A-126, Class B. All ferrous surfaces inside and outside shall have a fusion-bonded epoxy coating. A 2" wrench nut shall be provided for operating the valve. All valves are to be tested in strict accordance with AWWA C-509. The valve shall be operated opening counterclockwise.

The valves shall be non-rising stem with the stem made of cast, forged, or rolled bronze as specified in AWWA C-509. Two stem seals shall be provided and shall be of the O-ring type. The stem nut must be independent of the gate.

The resilient sealing mechanism shall provide zero leakage at the working pressure when installed with the line flow in either direction.

All shut-off valves 16" and larger shall be resilient seat gate with horizontal mechanical gearing and clear passage for pigging devices. Valve shall be American Flow Control Series 2500 NRS "Bevel Gearing Dimensions" or equal.

32.07.06 Valve Boxes

All buried valves shall have cast-iron three-piece valve boxes. Valve boxes shall be provided with suitable heavy bonnets and shall extend to such elevation at, or slightly above, the finished grade surface as directed by the City. The barrel shall be a 2-piece, sliding type, having 5¼" shaft. The upper section shall have a flange at the bottom having sufficient bearing area to prevent settling and shall be complete with cast iron covers. Covers shall be 5¼" square and shall have "RECLAIM" cast into the top for all reclaim mains. The actuating nuts for deeper valves shall be extended to come up to a 4' depth below finished grade.

Care shall be taken while constructing valve boxes to ensure that valve stems are vertical and the cast iron box has been placed over the stem with base bearing on compacted fill and top flush with final grade. Boxes shall have sufficient bracing to maintain alignment during backfilling. Contractor shall remove any sand or undesirable fill from valve box prior to final inspection.

32.07.07 Air Release Valves

The air release valves for use in reclaim mains shall be installed as specified in the Typical City Details attached as part of this Manual and the make and model per the approved Manufacturer's List. Valves shall be provided with a vacuum check to prevent air from reentering the line. The fittings shall be threaded.

Section 32.08 RECLAIM MAIN INSTALLATION

32.08.01 General

Pipe shall be installed in accordance with the manufacturer's specifications and instructions for the type of pipe used and applicable AWWA Standards, such as C-600 and C-603, unless otherwise stated in these Specifications. A 2" jumper connection shall be provided for purposes of filling and testing the installed reclaim line prior to clearance for use. The jumper is to be installed per the Typical City Details attached as part of this Manual.

32.08.02 Pipe Storage and Staging

All types of pipe shall be handled in such a manner as will prevent damage to the pipe or coating. Accidental damage to pipe or coating shall be repaired to the satisfaction of the City or be removed from the job. When not being handled, the pipe shall be supported on timber cradles or on properly prepared ground, graded to eliminate all rock points and to provide uniform support along the full length. When being transported, the pipe shall be supported at all times in a manner which will not permit distortion or damage to the lining or coating. Any unit of pipe that, in the opinion of the City, is damaged beyond repair by the Contractor shall be removed from the site of the work and replaced with another unit. Joint gaskets shall be stored in a clean, dark, dry location until immediately before use.

Dirt or other foreign material shall be prevented from entering the pipe or pipe joint during handling or laying operations, and any pipe or fitting that has been installed with dirt or foreign material in it shall be removed, cleaned and re-laid. At times when pipe-laying is not in progress, the open ends of the pipe shall be closed by a water-tight plug or by other means approved by the City to ensure absolute cleanliness inside the pipe.

Section 32.09 VALVE INSTALLATION

All valves shall be inspected upon delivery in the field to insure proper working order before installation. They shall be set and jointed to the pipe in the manner as set forth in the AWWA Standards for the type of connection ends furnished. All valves and appurtenances shall be installed true to alignment and rigidly supported. Any damage to the above items shall be repaired to the satisfaction of the City before they are installed. Valves shall be installed in a vertical position and be provided with a standard valve box so arranged that no shock will be transmitted to the valve. The box shall be vertically centered over the operating nut, and the cast iron box cover shall be set flush with the road bed or finished surface. After installation, all valves shall be subjected to the field test for piping as outlined in these Specifications. Should any defects in materials or workmanship appear during these tests, the Contractor shall correct such defects to the satisfaction of the City.

Flanged joints shall be made with hot dipped galvanized bolts, nuts and washers. Mechanical joints shall be made with mild corrosion-resistant alloy steel bolts and nuts. All exposed bolts shall be painted the same color as the pipe. All buried bolts and nuts shall be heavily coated with 2 coats of bituminous paint.

Section 32.10 IDENTIFICATION

In order to preclude possible interconnections and/or improper use of reclaim water, all reclaim lines, tubing, meter boxes and locate wire/tape shall be purple Pantone 522c in color. PVC or HDPE reclaim mains shall be marked with a continuous stripe within the top 90° of the pipe. Said stripe shall be a minimum of 2" in width and shall be light purple in color. Backfill shall not be placed for 30 minutes if field painting is required. In addition, all pipe shall be buried with identification tape above the top of the pipe, see the Typical City Details attached as part of this Manual. The tape shall indicate the presence of the reclaim main plainly on the tape face. Indicator tape buried with PVC pipe shall be able to be detected by standard metal detection equipment.

All new reclaim usages shall include the proper placement of signage notifying the public of the use of reclaim. Subdivisions shall require signs located at each entrance and all common/landscape areas. Commercial sites shall have signs located where public could come in contact with reclaim water. See Typical City Details as part of this Manual for sign details.

Section 32.11 SEPARATION OF WATER MAINS AND SEWERS

32.11.01 General

No reclaim main shall pass through or come in contact with any part of a sewer manhole. Individual septic tanks must be located and avoided. Reclaim mains shall be laid such as to ensure no cross-connection, line confusion and/or improper connection will occur with potable water mains and facilities. Water main shall have a minimum of 3' vertical and 18" horizontal separation, outside to outside, or the separation requirements of F.A.C. Rule 62-555.314 shall be met as a minimum, whichever is greater.

Section 32.12 TRENCH PREPARATION AND PIPE BEDDING

32.12.01 Trench Preparation and Pipe Bedding

Applicable provisions of ARTICLE 6 of this Manual shall apply. Also refer to the Typical City Details attached as part of this Manual.

32.12.02 Pipe Preparation, Handling and Laying

All pipe and fittings shall be inspected prior to lowering into trench to ensure no cracked, broken, or otherwise defective materials are being used. Contractor shall clean ends of pipe thoroughly and remove foreign matter and dirt from inside of pipe and keep clean during and after laying.

Contractor shall use proper implements, tools, and facilities for the safe and proper protection of the work. Contractor shall lower pipe into the trench in such a manner as to avoid any physical damage to the pipe and shall remove all damaged pipe from the job site. Care shall be taken to not drop or dump pipe into trenches under any circumstances.

Contractor shall prevent foreign material from entering the pipe while it is being placed in the trench. Contractor shall remove all foreign material from the pipe or joint ring before the next pipe is placed. If the pipe laying crew cannot put the pipe into the trench and in place without getting earth into the pipe, the City may require that snugly-fitted, tightly-woven canvas bags be placed over each end before lowering the pipe. The bags shall be left in place until the connection is to be made to the adjacent pipe. During laying operations, Contractor shall keep debris, tools, clothing, or other materials out of the pipe.

All pipe shall be installed in accordance with AWWA C-600 unless such Standards conflicts with this Manual, in which case this Manual shall apply. Contractor shall cut pipe only as necessary to comply with alignment shown on the plans. Flame cutting of pipe shall not be allowed. Contractor shall provide special tools and devices, such as special jacks, chokers, and similar items required for proper installation. Lubricant for the pipe gaskets shall be furnished by the pipe manufacturer, and no substitutes shall be permitted under any circumstances.

32.12.03 Trench Dewatering and Drainage Control

Contractor shall prevent water from entering the trench during excavation and pipe laying operations to the extent required to properly grade the bottom of the trench and allow for proper compaction of the backfill. Pipe shall not be laid in water.

32.12.04 Survey Line and Grade

Pipe shall be laid to the lines and grades shown on the plans. The Contractor shall provide line and grade stakes at a 100' maximum spacing and at all lines and/or grade change locations. Contractor shall provide Temporary Bench Marks at maximum 1,000' intervals. The minimum pipe depth shall be 3' below the finished grade surface or 3' below the elevation of the edge of pavement of the road surface, whichever is greater.

32.12.05 Laying of Pipes on Curves

Long radius curves, either horizontal or vertical, may be laid with standard pipe by deflections at the joints. Maximum deflections at pipe joints and laying radius for the various pipe lengths shall be as recommended by the pipe manufacturer.

32.12.06 Pipe Restraining and Thrust Block

Requirements specified in ARTICLE 26 of this Manual shall apply.

32.12.07 Bedding and Backfill for Pipes

Requirements specified in ARTICLE 6 of this Manual shall apply.

Section 32.13 HYDROSTATIC TESTS

32.13.01 General

Hydrostatic tests shall consist of pressure test and leakage tests. Hydrostatic tests shall be conducted on all newly laid pressure pipes, joints and valves including all service lines to the curb stops. Air testing of pressure pipes shall not be permitted under any circumstances. Tests shall not be made on sections exceeding 2,000'. Contractor shall furnish all necessary equipment and material, make all taps, and furnish all closure pieces in the pipe as required. Equipment to be furnished by the Contractor shall include graduated containers, pressure gauges, hydraulic force pumps, and suitable hoses and piping. The City will monitor and approve a satisfactory test.

The Contractor may conduct hydrostatic tests after the trench has been partially backfilled with the joints left exposed for inspection for informational purposes only. The hydrostatic tests for acceptance shall only be conducted after the trenches have been completely backfilled and compacted as specified. Where any section of pipe is provided with concrete thrust blocking, pressure tests shall not be made until at least 5 days have elapsed after the thrust blocking is installed. If high-early cement is used for the concrete thrust blocking, the time may be reduced to 24 hours if the City concurs that the concrete has cured and reached adequate strength.

32.13.02 Testing Criteria

All pipe sections to be pressure tested shall be subjected to a hydrostatic pressure of 150 psi. The duration of each pressure test shall be for a period of 2 hours. If during the test, the integrity of the tested line is in question, the City may require a 6 hour pressure test. The basic provisions of AWWA C-600 shall be applicable.

32.13.03 Procedure for Pressure Test

Each section of pipe to be tested, as determined by the City, shall be slowly filled with water and the specified test pressure shall be applied by means of a pump connected to the pipe in a satisfactory manner. Before applying the specified test pressure, all air shall be expelled from the pipe. To accomplish this, taps shall be made and appropriate valves installed to ensure bleeding of all air from the main. If defective pipes, fittings, valves, or hydrants are discovered in consequence of this pressure test, all such items shall be removed and replaced by the Contractor with sound material and the test shall be repeated until satisfactory results are obtained. Provisions of AWWA C-600, where applicable, shall apply.

32.13.04 Procedure for Leakage Test

After completion of the pressure test, a leakage test shall be conducted to determine the quantity of water lost by leakage under the specified test pressure. Applicable provisions of AWWA C-600 shall apply.

Allowable leakage in gallons per hour for pipeline shall not be greater than that determined by the formula:

$$L = \frac{SD\,(p)^{1/2}}{133{,}200}$$

Note: L = Allowable leakage in gallons per hour.
S = Length of pipe tested, in feet.
D = Nominal diameter of the pipe in inches.
P = Average test pressure during leakage test in pounds per square inch gauge.

Leakage is defined as the quantity of water to be supplied in the newly laid pipe or any valved section under testing, which is necessary to maintain the specified leakage test pressure after the pipe has been filled with water and the air expelled. Should any of the test pipe laid disclose leakage greater than that allowed, Contractor shall locate and replace or repair the defective joints, pipe or valve until the leakage from subsequent testing is within the specified allowance.

Section 32.14 FINAL FLUSHING AND TESTING

All material, sediment and debris shall be thoroughly removed from the newly laid pipe at its extremity until the replacement water throughout its length is clear, including all mains and services. Repeating of the cleaning procedures shall be required in the event that material, sediment and/or debris is observed or system continuity is interrupted.

32.14.01 Pigging/Swabbing Procedures

a. All new reclaimed water mains shall be hydraulically or pneumatically cleaned with a polypropylene swabbing device to remove dirt, sand, and debris from main.

b. If swabbing access and egress points are not provided in the design drawings, it will be the responsibility of the CONTRACTOR to provide temporary access and egress points as required for the cleaning.

c. Passage of cleaning poly swabs through the system shall be constantly monitored, controlled and all poly swabs entered into the system shall be individually marked and identified so that the exiting of the poly swabs from the system can be confirmed.

d. Cleaning of the system shall be done in conjunction with the initial filling of the system for its hydrostatic test.

e. The CONTRACTOR shall insert flexible polyurethane foam "swabs" (2 pounds per cubic foot density) complete with rear polyurethane drive seal, into the first section of pipe. The "swabs" shall remain there until the pipeline construction is completed.

f. The line to be cleaned shall only be connected to the existing distribution system at a single connection point.

g. Locate and open all new in-line valves beyond the point of connection on the pipeline to be cleaned during the swabbing operation.

h. At the receiver or exit point for the poly swab, the CONTRACTOR is responsible for creating a safe environment for collection of debris, water and the swab. Considerations shall be made for protecting surrounding personnel and property and safe retrieval of the swab.

i. Only City personnel shall operate the supply valve from the existing distribution system. Cleaning and flushing shall be accomplished by propelling the swabbing swab down the pipeline to the exit point. Flushing shall continue until the water is completely clear and swab is retrieved.

    1. Re-apply a series of individual swabs in varying diameters and/or densities as required, to attain proper cleanliness of pipeline.

2. Swabbing speed shall range between two and five feet per second.

j. After the swabbing process, pressure testing of the pipe shall be completed in accordance with this ARTICLE.

Section 32.15 SYSTEM BLOWOFFS AND SUPPLY HYDRANT

32.15.01 Spacing

System blow offs shall be required on each reclaim main run with a maximum spacing of 3,000'. Where reclaim mains are 12" or greater, or system blow offs are at extreme ends of the reclaim system, the system blow off shall be replaced with supply hydrants. The City Engineer shall approve the replacement of a system blow off with supply hydrant. Fire hydrants as specified in ARTICLE 31 shall be used as supply hydrants and shall be painted purple.

ARTICLE 33

HORIZONTAL DIRECTIONAL DRILLING

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Section 33.01 GENERAL CONSIDERATIONS

33.01.01 Type of Horizontal Installation

The City will approve plans for horizontal directional drill installation of pipe and /or casing pipe for utility extensions as required for crossing under roadways, rail lines, streams, or other vertical conflicts as necessary in accordance with approved design and recommendation of the Engineer of Record. Such installations may be required to meet minimum standards as set forth by other jurisdictions having authority over the feature being crossed including Orange County, FDOT, or Railroad. The utility mains and extensions shall be installed in conjunction with the horizontal drilling only when such mains are designed and constructed in accordance with the criteria set forth in other Articles of this Manual.

Section 33.02 DESIGN BASIS

33.02.01 General

A. Horizontal directional drilling is a method of installation commonly referred to as directional drilling or guided horizontal boring.

B. Refer to applicable water, reclaimed water and force main design standards in ARTICLE 29, ARTICLE 31, and ARTICLE 32.

33.02.02 Location

A. Directional drilling is allowed for pressurized mains and is not allowed for gravity mains.

B. Directional drilling of restrained PVC and ductile iron is allowed in City of Ocoee right-of-way. Ductile iron shall only be utilized for water and reclaimed water mains.

C. Directional drilling of HDPE pipe shall be limited to wetlands, canal crossings and road crossings as approved by the City Engineer. The City will consider allowing directional drilling for other circumstances with specific approval, such as limited R/W or easement areas that conventional open cut cannot be performed due to other utilities or conflicts. A written request must be submitted to the City that outlines the need for directional drilling.

Section 33.03 DETAILS OF DESIGN AND CONSTRUCTION

33.03.01 General

A. Horizontal alignment shall be as shown on the PLANS. The pipe shall have a minimum 36 inches of cover.

B. The maximum depth shall be determined based on the size of the drill and the necessary clearance from the existing or proposed utilities or feature being crossed.

C. For subaqueous crossings, a minimum cover of five feet shall be maintained over the pipe measured from the lowest part of the stream bed at the point of crossing.

D. Compound curvatures may be used, but shall not exceed the maximum deflections, as set forth by the pipe manufacturer or AWWA Standards, whichever is more stringent.

E. Entry angle shall not exceed 15 degrees. Exit angle shall be 6 to 12 degrees to facilitate pullback. Entry angle and exit angle shall not exceed manufacturer recommendations on deflection, angle or radius of curvature.

F. A cross section drawn to scale shall be provided on the PLANS showing the proposed bore path and all existing utilities within the directional drill corridor.

33.03.02 Scope of Work

The WORK specified in this section consists of furnishing and installing underground utilities using the horizontal directional drilling (HDD) method of installation, also commonly referred to as directional boring or guided horizontal boring for pressure pipe. This WORK shall include all piping services, equipment, materials and labor for the complete and proper installation testing, restoration of underground utilities and environmental protection and restoration.

33.03.03 Quality Assurance

A. Qualifications:

1. Directional drilling CONTRACTOR (or SUBCONTRACTOR) shall have a minimum of four years experience constructing water, wastewater, or reclaimed water experience to include pipelines of the same or larger diameter and the same or greater lengths. All pipe and appurtenances of similar type and material shall be furnished by a single manufacturer.

2. The CONTRACTOR's operations shall be in conformance with the Directional Crossing Contractors Association (DCCA) published guidelines (latest edition) and pipe manufacturer's guidelines and recommendations.

Section 33.04 PRODUCTS

33.04.01 General

A. The directional drilling equipment shall consist of the following:

1. A directional drilling rig of sufficient capacity to perform the bore and pull-back of the pipe;

2. A drilling fluid mixing, delivery and recovery system of sufficient capacity to complete the crossing;

3. A drilling fluid recycling system to remove solids from the drilling fluid so that the fluid can be reused;

4. A magnetic guidance system to accurately guide boring operations,

5. A vacuum truck of sufficient capacity to handle the drilling fluid volume; and

6. Trained and competent personnel to operate the system.

B. All equipment shall be in good, safe operating condition with sufficient supplies, materials and spare parts on hand to maintain the system in proper working order.

33.04.02 Drilling System

The directional drilling machine shall consist of a hydraulically powered system to rotate, push and pull hollow drill pipe into the ground at a variable angle while delivering a pressurized fluid mixture to a guidable drill (bore) head. The machine shall be anchored to the ground to withstand the pulling, pushing and rotating pressure required to complete the crossing. The hydraulic power system shall be self contained with sufficient pressure and volume to power drilling operations. Hydraulic system shall be free of leaks. Rig shall have a system to monitor and record maximum pullback pressure during pullback operations. The rig shall be grounded during drilling and pullback operations. There shall be a system to detect electrical current from the drilling string and an audible alarm that automatically sounds when an electrical current is detected.

33.04.03 Pipe

A. Pipe shall be HDPE pipe with ductile iron pipe outside diameters in accordance with AWWA C900 (C905) or C906 respectively. The dimension ratio shall be verified by the CONTRACTOR based on the pipe, joint and material pull strength required for the directional drilling. Alternate material such as PVC or DIP may be allowed in special cercumstances and must be approved by the City Engineer. Alternate material shall comply with specification as outlined by this manual and other conditions as required by approval by the City Engineer.

B. HDPE Pipe

1. HDPE pipe and related fittings shall be made with prime virgin resins exhibiting a minimum cell classification as defined in ASTM D3350 and meeting the PE 3408 code designation with maximum dimension ratios equal to the following.

Table 33-1. Maximum Dimension Ratios for HDPE Pipe.

Type of Pipe System	Maximum Dimension Ratio
Wastewater	11
Reclaimed Water	11
Water	11

2. HDPE pipe 4-inch and larger nominal diameter shall be joined by means of zero leak-rate butt (thermal heat) fusion welds and/or approved flanged joints. Joints shall provide axial pullout resistance. Compression style fittings shall not be allowed. Pipe shall meet the requirements of ANSI/AWWA C906, and have an outside diameter dimension of ductile iron pipe. Flanged joints shall not be used below finished grade for horizontal directional drilling applications.

3. HDPE pipe shall have been continuously marked by the manufacturer with permanent printing indicating at a minimum the following.

   a. Nominal size (inches);
   b. Dimension ratio (DR);
   c. Pressure rating (psi);
   d. Trade name;
   e. Material classification (PE 3408);
   f. Plant, extruder and operator codes;
   g. Resin supplier code;
   h. Date produced; and
   i. HDPE pipe used for portable water mains shall bear the NSF Seal of Approval.

4. HDPE pipe shall be black in color with permanent colored stripes extruded into the pipe length or shall be one solid color, per the applicable service.

Table 33-2. Pipe Color.

Pipe Use	Color Coding
Potable Water	Blue
Wastewater	Green
Reclaimed Water	Purple

5. Installation Curvature:

   The pipeline curvature shall not have a radius less than as shown in Table 33-3, or exceed the manufacturers suggested minimum bending radius.

Table 33-3. HDPE Pipe Deflection Information.

Pipe Diameter (inches)	Minimum Radius of Curvature (feet)	Offset per 20-ft Length (inches)
4	23	9.3
6	34	6.1
8	44	4.6
10	56	3.5
12	67	3.0
16	88	2.3

33.04.04 Drilling Fluids

Drilling fluids shall consist of a mixture of potable water and gel-forming colloidal material, such as bentonite or a polymer surfactant mixture producing slurry of a consistency sufficient to expedite the pull-back installation within the standards of practice detailed in the DCCA guidelines, (latest edition).

Section 33.05 EXECUTION

33.05.01 Personnel Requirements

A. Responsible representatives of the CONTRACTOR and SUBCONTRACTOR(s) shall be present at all times during directional drilling operations. A responsible representative as specified herein is defined as a person experienced in the type of WORK being performed and who has the authority to represent the CONTRACTOR in a routine decision making capacity concerning the manner and method of carrying out the WORK.

B. The CONTRACTOR and SUBCONTRACTOR(s) shall have sufficient number of competent workers on the project at all times to ensure the utility placement is made in a timely, satisfactory manner. Adequate personnel for carrying out all phases of the directional drilling operation (where applicable: tunneling system operators, operator for removing spoil material, and laborers as necessary for various related tasks) must be on the job site at the beginning of WORK. A competent and experienced supervisor representing the CONTRACTOR or SUBCONTRACTOR that is thoroughly familiar with the equipment and type of WORK to be performed, must be in direct charge and control of the operation at all times. In all cases, the supervisor must be continually present at the project site during the directional drilling operation.

33.05.02 Work Plan

A. Work Plan: Prior to beginning WORK, the CONTRACTOR must submit a Work Plan to The City Engineer detailing the procedure and schedule to be used to execute the project. The WORK plan should include the following.

1. A description of all equipment to be used;
2. Down-hole tools;
3. A list of personnel and their qualifications and experience;
4. List of SUBCONTRACTORs;
5. A schedule WORK activity;
6. A safety plan, traffic control plan (if applicable);
7. An environmental protection plan and;
8. Contingency PLANS for possible problems.

WORK plan should be comprehensive, realistic and based on actual working conditions for this particular project. Plan should document the requirements to complete the project.

B. Equipment:

1. The CONTRACTOR will submit specifications on directional drilling equipment to be used to ensure that the equipment will be adequate to complete the project. Equipment shall include but not be limited to the following.

   a. Drilling rig;
   b. Mud system;
   c. Mud motors (if applicable);
   d. Down-hole tools;
   e. Guidance system and;
   f. Rig safety systems.

2. Calibration records for guidance equipment shall be included. Specifications for any drilling fluid additives that the CONTRACTOR intends to use or might use shall be submitted.

33.05.03 Coordination of the Work

A. The CONTRACTOR shall notify the City Engineer at least three days in advance of starting WORK. In addition, the actual crossing operation shall not begin until An engineering representative is present at the project site and agrees that proper preparations for the crossing have been made. City Engineer's approval for beginning the crossing shall in no way relieve the CONTRACTOR from the ultimate responsibility for the completion of the WORK.

B. The CONTRACTOR and the City Engineer shall select a mutually convenient time for the crossing operation to begin in order to avoid schedule conflicts.

33.05.04 Procedure

The installation of appropriate safety and warning devices in accordance with the "FDOT Manual on Traffic Control and Safe Practices" shall be completed prior to beginning WORK.

33.05.05 Installation

A. Erosion and sedimentation control measures and on-site containers shall be installed to prevent drilling mud from spilling out of entry and/or exit pits. Drilling mud will be disposed of off-site in accordance with local, state and federal requirements and/or permit conditions.

1. No other chemicals or polymer surfactant shall be used in the drilling fluid without written consent of the City Engineer and after a determination is made that the chemicals to be added are not harmful or corrosive to the facility and are environmentally safe.

B. Pilot Hole:

Pilot hole shall be drilled on bore path with no deviations greater than two percent of depth over a length of 100 feet. In the event that pilot does deviate from bore path more than two percent of depth in 100 feet, the CONTRACTOR will notify ENGINEER. The ENGINEER may require the CONTRACTOR to pull-back and re-drill from the location along bore path before the deviation.

C. Reaming:

Upon successful completion of pilot hole, the CONTRACTOR will ream borehole to a minimum of 25 percent greater than outside diameter of pipe using the appropriate tools. CONTRACTOR will not attempt to ream at one time more than the drilling equipment and mud system are designed to safely handle.

D. Pullback:

After successfully reaming borehole to the required diameter, CONTRACTOR will put the pipe through the borehole. In front of the pipe will be a swivel and barrel reamer to compact bore hole walls. Once pullback operations have commenced, operations must continue without interruption until pipe is completely pulled into borehole. During pullback operations, the CONTRACTOR shall not apply more than the maximum safe pipe pull pressure at any time. A break away head rated at the maximum safe pull pressure shall be utilized.

E. As-built variance from the designed bore path shall not exceed plus or minus one foot in the vertical plane and plus or minus two feet in the horizontal plane. The CONTRACTOR shall submit any proposed deviations from the design bore path by submittal to the City Engineer for approval.

F. The pipe entry area shall be graded to provide support for the pipe to allow free movement into the borehole. The pipe shall be guided in the borehole to avoid deformation of, or damage to, the pipe by the use of support rollers, etc.

G. If unexpected subsurface conditions are encountered during the bore, the procedure shall be stopped. The installation shall not continue until the OWNER and ENGINEER have been consulted.

H. The pipe shall be pulled back through the borehole using the wet insertion construction technique. The pipe shall be installed full of water.

I. The pipe shall be installed in a manner that does not cause upheaval, settlement, cracking, movement or distortion of surface features.

J. A boring log shall be kept with horizontal and vertical location every 10 feet. In addition, horizontal location of the bore shall be marked in the field during the bore. The SURVEYOR shall locate these marks and include this information with the bore depths in the Record Drawings. The Surveyor may make a note on the drawing page containing the directional drill and provide an exception for the directional drill only, as the directional drill route cannot be uncovered and physically located.
Log should also contain drilling fluid pressure and drilling advancement and pull back rates.

K. Locating wire shall be attached to the pipe. A minimum of three (3) locating wires shall be attached at different radial locations around the pipe to ensure continuity in at least one wire subsequent to installation. Failure of continuous continuity in the locating wire, at the discretion of the engineering representative, shall result in abandonment and reinstallation of the directional drill.

33.05.06 Field Testing

A. PVC Pipe:
Perform hydrostatic testing for leakage following installation in accordance with the applicable test sections.

B. HDPE Pipe:

1. After installation the pipe shall be tested in accordance with the MANUAL with the following modifications:

a. Test Duration: The total test time including initial pressurization, initial expansion and time at test pressure, must not exceed eight hours. If the test is not completed due to leakage, equipment failure, etc., the test section shall be depressurized and allowed to “relax” for a minimum of eight hours before it is brought back up to test pressure. The test procedure consists of initial expansion phase and leakage test phase.

b. Initial Expansion Phase: During the initial expansion phase, the test section is pressured to the test pressure and enough make-up liquid is added each hour for three hours to return to test pressure.

c. Leakage Test Phase: The leakage test phase follows immediately and shall be either two or three hours in duration. At the end of the time test, the test section shall be returned to test pressure by adding a measured amount of liquid. The amount of make-up liquid added shall not exceed the values provided in Table 33-4 plus allowable leakage.

Contractor shall be required to pressure test the HDPE main prior to installation of the main.

Table 33-4. Allowance for Make-up Water Under Test Pressure*								
Test Duration (hours)	Pipe Diameter (inches)							
	2	4	6	8	12	16	20	24
	Allowance/100 feet of Pipeline (gallons)							
2	0.11	0.25	0.60	1.00	2.30	3.30	5.50	8.90
3	0.19	0.40	0.90	1.50	3.40	5.50	8.00	13.30

**Applies to test period and not to initial expansion phase*

C. Pressure Testing:

The test pressure for the pipe shall be 150 psi for water and reclaimed water and 150 psi for wastewater.

D. Mandrel Testing:

Perform mandrel testing through the entire length of the installed pipe. The mandrel size shall be 90 percent of the inside diameter of the pipe.

ARTICLE 34

STORMWATER MANAGEMENT

Index

34.01	**GENERAL**
34.02	**DESIGN STANDARDS**
34.03	**DESIGN STORM (minimum)**
34.04	**DRAINAGE AREA GEOMETRY**
34.05	**MATERIAL AND DESIGN SPECIFICATIONS**
34.06	**FLOOD PRONE AREAS**

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Section 34.01 GENERAL

The purpose of this ARTICLE is to provide design criteria for proposed stormwater management systems within the City of Ocoee. The proposed stormwater management system shall comply with this ARTICLE, the City of Ocoee Comprehensive Plan and City of Ocoee Land Development Code. In addition, while this ARTICLE is intended to be the minimum standard, guidelines and criteria for the design of stormwater management systems in the City of Ocoee, other regulatory agencies and/or government entities by the State statutes or by political boundaries also have jurisdiction. Most of these agencies or government entities have established design criteria for stormwater management. In some cases, established design parameters of those agencies contain conflicting standards or criteria. In the case of conflicting criteria, it is the intent of this ARTICLE to have the most stringent regulations govern. The following agencies and government entities may have jurisdiction within the City of Ocoee:

- St. Johns River Water Management District
- Florida Department of Transportation
- Florida Department of Environmental Protection
- Orange County Environmental Protection Department
- U.S. Army Corps of Engineers
- Federal Emergency Management Agency

Section 34.02 DESIGN STANDARDS

To comply with the foregoing performance Standards, the proposed stormwater management system shall conform to the following design Standards:

A) Side slopes and bottoms of all retention areas shall have grass or other landscape material cover. The maximum side slopes of retention areas are given within this ARTICLE. Landscaping of maintenance berms is prohibited unless approved by City Engineer.

B) Spillways or other entrance channels to retention areas shall be designed to prevent scouring and flushing of these retention areas by heavy rains.

C) Dry retention systems shall be designed and function such that the Stormwater Quality volume shall be recovered within 3 days (72 hours) in accordance with the SJRWMD criteria. If this is not accomplished by percolation and/or evaporation, the retention area must be improved and approved by the City Engineer to meet the performance requirements. Dry Detention systems are not permitted.

D) Wet Detention/Retention systems shall be designed to meet the SJRWMD design and performance criteria. If the design CRITERIA is not accomplished following construction, the system must be improved and approved by the City Engineer to meet the performance requirements.

E) Stormwater Quantity Criteria: Design storms shall consider open or closed basin criteria as provided in Table 34-1.

Table 34-1 Design Storms and Discharge Conditions

Basin	**Frequency Duration**	**Discharge Rates**	**Discharge Volumes**
Open Basin	25-year, 24-hour event	$Post_{25}$ less than or equal to Pre_{25}	$Post_{25}$ less than or equal to Pre_{25}
Closed Basin*	25-year, 24-hour event and 100-year, 24-hour event	$Post_{25}$ less than or equal to Pre_{25} and $Post_{100}$ less than or equal to Pre_{100}	$Post_{100}$ less than or equal to Pre_{100}
Closed Basin with Downstream Flooding**	25-year, 24-hour event and 100-year, 24-hour event	0 cfs	0 cf

* Discharges into land locked lake systems shall not cause a net increase in the Base Flood Elevation estimated by FEMA.

** Downstream flooding is flooding observed and validated by the City Engineer and/or Public Works Director.

F) Discharge Conditions:

(1) All stormwater facilities shall be designed to limit discharges considering open and closed basins per Table 34-1.

(2) Discharges shall resemble the pre-predevelopment conditions, matching the pre-development location and does not exceed the pre-development rate and volume.

(3) Offsite bypass or discharges from offsite runoff shall be allowed when resembling the pre-development conditions, matching the pre-development location and does not exceed the pre-development rate.

(4) In closed basins with downstream flooding, existing site conditions/improvements shall be included in the pre-development calculations when following apply:

(a) The existing improvements were constructed as part of a land development with a permitted stormwater system or constructed prior to stormwater permitting requirements; and

(b) Discharges from the existing improvements are included in the private system designed to receive such discharges or a public system

(5) In closed basins with downstream flooding, no adverse impacts are allowed downstream or net increase of the Base Flood Elevation per FEMA.

(6) A stormwater outfall structure shall be required for all stormwater management systems not designed to retain the entire 100-year, 24-hour post-development design storm. An emergency overflow structure shall be required for stormwater management systems within all closed basin types.

G) Stormwater System Recovery:

(1) All stormwater facilities shall recover the total volume required to meet the discharge volume limitation within 14 days following the design rainfall event.

(2) For retention/detention facilities not able to recover the total required volume within 14 days, the stormwater facility volume shall be increased to retain an additional volume of post minus pre difference in runoff for the 25-year, 24-hour design storm in open basins or for the post minus pre difference in runoff for the 100-year, 24-hour design storm in closed basins. The control elevation for retaining this volume shall be no greater than the top of the constructed stormwater facility. If the infiltration credit is included in the recovery analysis, seepage and infiltration rates will have to be certified by a geotechnical engineer licensed to practice in the State of Florida.

H) Hydraulic design criteria: The design engineer must submit drainage computations for the hydraulic design of the proposed secondary drainage systems. Specifically, storm sewer systems shall be designed and analyzed to provide sufficient conveyance capacity for the ten-year storm event (Rational method) to prevent upstream surcharging even when the downstream outlet is experiencing tailwater submergence. Roadway spread of water should also be analyzed with inlet spacing based upon both allowable spread width and inlet capacity for the ten-year storm event (Rational method).

I) Proposed stormwater management system shall be designed to function properly for a minimum 20 year life.

J) The design and construction of the stormwater management system shall be certified as meeting the requirements of this ARTICLE by a Professional Engineer registered in the State of Florida.

K) No surface water may be channeled or directed into a sanitary sewer.

L) Dredging, clearing of vegetation, deepening, widening, straightening, stabilizing or otherwise altering natural surface waters shall be minimized.

M) Natural surface water shall not be used as sediment traps during or after development.

N) For aesthetic reasons and to increase shoreline habitat, the shorelines of detention and retention areas shall be sinuous rather than straight.

O) Water reuse and conservation shall, to the maximum extent practicable, be achieved by incorporating the stormwater management system into irrigation systems serving the development. (If Water Management District allows.)

P) Vegetated buffers of sufficient width to prevent erosion shall be retained or created along the shores, banks or edges of all natural or man-made surface waters.

Q) Littoral zones for wet detention ponds shall meet the Saint Johns River Water Management District requirements.

R) In phased developments the stormwater management system for each integrated stage of completion shall be capable of functioning independently as required by this ARTICLE.

S) All detention and retention basins shall be adequately accessible for maintenance from streets or public rights-of-way.

T) Inlets shall be spaced in such a manner as to accept 100% of the design runoff. The maximum allowable gutter run shall be 600 feet. The actual required inlet spacing shall depend on the characteristics of each particular site. Manholes, in accordance with ARTICLE 17, shall be required at the end of each line, and at all changes in grade, size and alignment.

U) Specifications shall include a section outlining the proposed method of controlling soil erosion during construction. Prior to approval of the Development Plan a Stormwater Pollution Prevention Plan must be submitted to the City Engineer for review and approval in accordance with the City's LDC.

V) All drainage plans shall be subject to approval by the City Engineer or his Designee. Plan submission shall include clear engineering calculations showing the method of design, including soil information as required by the City Engineer, and existing, as well as proposed, topography.

W) The required amount of treatment volume for each development shall be based on the Saint Johns River Water Management District regulations.

X) Discharge from new development shall remain the same as pre-developed flow patterns.

Y) The City Engineer, at his discretion, may require additional requirements when a project discharges into areas currently under drainage distress.

Z) All non-conventional retention/detention systems, such as but not limited to exfiltration systems, are not acceptable unless reviewed and approved by City Engineer. Exfiltration type systems must meet the SJRWMD design criteria. Design parameters must be accompanied with signed and sealed Geotechnical Subsurface Investigation with design parameters demonstrating successful recovery of required water quality and quantity volumes.

Section 34.03 DESIGN STORM (minimum)

A)	Retention/Detention basins with positive outfall flows (to Lake Apopka)	25 year, 24 hour (8.5")
B)	Retention/Detention basins (within Closed Basins and/or Land Locked Lakes)	100 year, 24 hours (10.6")
C)	Stormwater Management Systems within FEMA Flood Prone Areas	100 year, 96 hours (14.4")
D)	Collection and conveyance systems (residential streets)	10 year, 1 hour
E)	Collection and conveyance systems (collection and arterial roads)	25 year, 1 hour
F)	Canals	25 year, 24 hour

Section 34.04 DRAINAGE AREA GEOMETRY

A) Ponds

Maximum side slope: 5:1 - Dry pond
5:1 to 2-ft below normal water level, then 2:1 to pond bottom - Wet pond

B) Fenced Ponds Not allowed

C) Maintenance Berms Minimum width: 10'

D) Easement Widths Minimum width: 20'

All pond and swale side slopes shall be sodded, and bottoms shall be seeded and mulched, except areas designed and approved as littoral zones. Shorelines shall be sinuous rather than straight, so that the length of the shoreline is maximized for growth of littoral vegetation and pollution attenuation.

Section 34.05 MATERIAL AND DESIGN SPECIFICATIONS

A) Conveyance Pipe

1) Minimum diameter for conveyance pipe shall be 15 inches.

2) Conveyance pipe shall be of reinforced concrete, unless otherwise approved by City Engineer or his Designee.

3) Minimum slope shall be that which produces a minimum flow of 2 ft/sec at low flow.

4) Maximum run between structures or terminating ends shall be 500 feet.

B) Underdrain Pipe

1) Minimum diameter for underdrain pipe shall be 8 inches.

2) Material

a) Polyethylene tubing, satisfying AASHTO M-252 (ADS with drain guard or approved equal.

b) PVC, satisfying ASTM D-3033.

c) Aluminum, satisfying AASHTO M-196.

3) Filter aggregate: FDOT 902-4.

4) Filter fabric: Mirafi 140 or approved equal.

C) Design pipe velocity shall normally be less than 10 fps.

D) Maximum hydraulic grade line shall be one (1) foot below finished edge of pavement elevation for 10 year storm, 0.5 feet below finished edge of pavement elevation for 25 year storm in sump locations.

E) See ARTICLE 17 of this Manual for Inlet and Structure Specifications.

F) Fencing of stormwater management areas shall not be allowed.

Section 34.06 FLOOD PRONE AREAS

The floodplain is that area subject to inundation during the 100 year; 24 hour storm event (rainfall depth in accordance with jurisdictional agency). The floodway is that portion of the floodplain that must remain clear of encroachment and shall not exceed the 100 year base flood elevation established on the effective floodplain maps and/or as determined by the City Engineer.

Encroachment may be allowed within the one hundred (100 year floodplain, with compensating storage.

All development within the areas of the 100 year floodplain as delineated on the official Flood Insurance Rate Maps (FIRM) or as determined by the City Engineer, shall comply with the following requirements:

1) The lowest floor elevation shall be at least 2 feet above the elevation of the 100 year, 24 hour storm, or at the maximum stage for the 100 year, 4 day storm event (rainfall depth in accordance with jurisdictional agency), whichever is higher.

2) For commercial or industrial developments, flood proofing may be substituted in lieu of elevating the lowest floor.

3) Compensating storage must be provided for all floodwater displaced by the proposed development below the 100 year 24 hour base flood elevation established by FEMA. Generally, compensating storage must be calculated between the existing 100 year base flood elevation and wet season groundwater/water table elevation. The latter elevation must be determined by a qualified geotechnical engineer, and his report shall identify the historical wet season groundwater/water table; recommend bottom elevations for compensating storage areas; and address the ability of said areas to remain dry and available for floodwater storage.

4) Special attention must be given to the project area relationship with the floodplain. An “active” site contributes a pre-development runoff volume in excess of that which is stored on the site during the 100 year storm. A “passive” site contributes a runoff volume less than that which is stored on the site during the 100 year storm. Passive sites must provide special assurances that encroachment is not occurring due to the construction of the development or its ponds. Compensating storage may be claimed in the retention/detention pond system provided it is above the maintained water elevations, and berm elevations are such that the pond system can be inundated during the 100 year storm and still provide the required flood protection, as determined by the City Engineer.

5) No development will be permitted in any Area of Special Flood Hazard designation as unnumbered A Zone (no base flood elevation established) until a Conditional Letter of Map Revision is approved by FEMA.

6) No development will be permitted in the designated floodway

APPENDIX “C”

SECTION 00840
INSTRUCTION FOR CONTRACT FORMS

PART 1 – GENERAL

1.01 INSTRUCTIONS FOR NOTICE OF AWARD

A. The Notice of Award notifies the Contractor that the City Commission has awarded the bid to your company. The Notice of Award contains specific instructions on the requirements for the contract documents and pre-construction meeting.

B. The contract will accompany the Notice of Award. The Contractor will sign the contract documents and return along with the required insurance certificate, and performance and payment bonds, if required, and any other documents required to finalize the contract documents.

1.02 INSTRUCTIONS FOR NOTICE TO PROCEED

A. Upon receipt and acceptance of all signed contract documents, including certificate of insurance, and a Certified Copy of the recorded performance and payment bonds, the City will issue a Notice to Proceed.

B. The Notice to Proceed will contain the start date, substantial completion, and final completion dates for the project.

C. Contractor is to sign, date, and return the Notice to Proceed to the city. The Notice to Proceed will become a part of the contract documents.

1.03 INSTRUCTIONS FOR CHANGE ORDER

A. In the event a change, modification, deletion and/or increase in material, labor, and/or equipment is needed or requested by the City, the City may seek pricing and/or credit from the Contractor.

B. If pricing is acceptable by the Engineer, City shall prepare either Form 00842a or Form 00842b "CHANGE ORDER" located in Appendix "A" Contract Forms, and obtain necessary authorization from either the City Manager or City Commission, whichever is applicable, based on approving authority.

C. Change Order will be executed by Contractor and amended into the contract documents.

1.04 INSTRUCTIONS FOR CERTIFICATE OF SUBSTANTIAL COMPLETION

A. Upon final inspection and correction of deviations, the City shall prepare Form 00843 "CERTIFICATE OF SUBSTANTIAL COMPLETION", located in Appendix "A" Contract Forms; where upon execution, the Contractor of the project shall be considered "Substantially Completed."

1.05 INSTRUCTIONS FOR NON-COMPLIANCE NOTICE

A. If the Engineer determines the work and/or operations of the Contractor are not in compliance with the Contract document, and/or are being completed in an unsafe or dangerous manner, the Engineer shall provide written notification using Form 00844 "NON-COMPLIANCE NOTICE", located in Appendix "A" Contract Forms

B. Contractor shall respond to the "Non-Compliance Notice" within 24 hours with the assertion that the unsafe or dangerous circumstance will be corrected immediately.

1.06 INSTRUCTIONS FOR FIELD ORDER - DIRECTIVE

A. Contractor may request and/or City may provide field directives as needed, by the City providing the Contractor with a written directive, utilizing Form 00845 "FIELD ORDER/DIRECTIVE", as located in Appendix "A" Contract Forms.

B. Written directive shall not be a change that affects the Contract amount, unless an approved Change Order is authorized.

1.07 INSTRUCTIONS FOR REQUEST FOR PROPOSED CHANGE

A. The City, requesting a change to the Contract, including but not limited to, material, labor, and/or equipment, shall prepare Section A of Form 00847 "REQUEST FOR PROPOSED CHANGE" located in Appendix "A" Contract Forms and provide to Contractor.

B. Contractor shall submit proposal within seven (7) days of receipt of completed Section A of Form 00847 "REQUEST FOR PROPOSED CHANGE", including all supporting information needed by the Contractor in developing a complete proposal.

C. Upon obtaining acceptable proposal from Contractor, the Engineer shall complete Section B of Form 00847 "REQUEST FOR PROPOSED CHANGE" and seek the applicable approval based on City Authorization Authority.

1.08 INSTRUCTIONS FOR TECHNICIAN'S DAILY REPORT

A. The Engineer or his representative shall on a daily basis review progress of the project, this includes work completed, and shall measure/confirm daily items for payment.

B. The Engineer or his representative shall record the Contractor's daily efforts, important issues, weather affecting the Contractor's efforts, Contractor personnel and equipment needed for daily operations, and measure/confirm daily items for payment in Form 00848 "TECHNICIAN'S DAILY REPORT" (TDR), located in Appendix "A" Contract Forms.

C. The Engineer or his representative shall maintain an ongoing summary of work to date based on the confirmed TDRs that shall be used for completion of the payment application per Section 00861.

1.09 INSTRUCTIONS FOR APPLICATION AND CERTIFICATION FOR PAYMENTS

A. To initiate a partial payment, the Contractor shall request completed Form 00861A "APPLICATION FOR PAYMENT" and Form 00861C "SUMMARY OF VALUES TO DATE" located in Appendix "A" Contract Forms from the City. The Contractor's request shall include the end date for the partial payment period.

B. City shall provide completed "Application for Payment" and "Summary of Values to Date" forms for Contractor's use.

C. Contractor shall cover "Application for Payment" and "Summary of Values to Date" forms with fully executed Form 00861D "CONTRACTOR'S CERTIFICATION OF PAYMENT" located in Appendix "A" Contract Forms for every pay request.

1.10 INSTRUCTIONS FOR CONTRACTOR'S FINAL RELEASE OF LIEN

A. Contractor shall complete and submit Form 00863 "FINAL RELEASE OF LIEN" located in Appendix "A" Contract Forms including any required supporting information and/or release(s).

1.11 INSTRUCTIONS FOR SHOP DRAWING SUBMITTAL FORM

A. Contractor shall provide cover on all shop submittals using Form 00864 "SHOP DRAWING SUBMITTAL FORM" located in Appendix "A" Contract Forms for City approval, denial or corrections.

B. City shall provide copy of cover back with submittals for Contractor use, and if applicable, corrections.

1.12 INSTRUCTIONS FOR CERTIFICATE OF FINAL INSPECTION

A. City will acknowledge the occurrence of a final inspection by City staff and the Contractor by completing and providing Form 00865 "CERTIFICATE OF FINAL INSPECTION" located in Appendix "A" Contract Forms. Attached to the form shall be a list of outstanding items to be completed.

1.13 INSTRUCTIONS FOR CONTRACTOR REQUEST FOR INFORMATION

A. During the project, Contractor may want more information or detail from the project designer and/or Engineer. Contractor shall request the information by

completing Form 00865 "CONTRACTOR REQUEST FOR INFORMATION" located in Appendix "A" Contract Forms

B. City shall complete second half of form and provide copy back to Contractor with any supporting information needed to complete the request.

1.14 INSTRUCTIONS FOR WAIVER AND RELEASE OF LIEN UPON FINAL PAYMENT

A. The Contractor shall obtain and provide originals of the completed Form 00879 "WAIVER AND RELEASE OF LIEN UPON FINAL PAYMENT", located in Appendix "A" Contract Forms, from each vendor, sub-consultant and/or material supplier that provided notice to the City and/or the Contractor.

1.15 INSTRUCTIONS FOR WAIVER AND RELEASE OF LIEN UPON PROGRESS PAYMENT

A. The Contractor shall obtain and provide originals of completed Form 00881 "WAIVER AND RELEASE OF LIEN UPON PROGRESS PAYMENT", located in Appendix "A" Contract Forms, from each vendor, sub-consultant and/or material supplier that provided notice to the City and/or the contractor.

1.16 INSTRUCTIONS FOR CONTRACTOR'S FINAL AFFIDAVIT

A. Contractor shall execute and submit to the Engineer Form 00883 "CONTRACTOR'S FINAL AFFIDAVIT" located in Appendix "A" Contract Forms.

1.17 INSTRUCTIONS FOR CONTRACTOR'S INTERMIN AFFIDAVIT

A. Contractor shall execute and submit to the Engineer Form 00885 "CONTRACTOR'S INTERIM AFFIDAVIT" located in Appendix "A" Contract Forms.

END OF SECTION

Mayor
Rusty Johnson

Commissioners
Scott R. Kennedy
District 1

Rosemary Wilsen
District 2

Richard Firstner
District 3

Ages Hart
District 4

City Manager
Robert D. Frank

DATE

_____
_____
_____
_____

Re.: ITB #24-001

NOTICE OF AWARD

Notice is hereby given that your company was awarded the contract to provide construction services related to the Project _____ at the _____, 20___ City Commission meeting.

In accordance with the terms of the Invitation to Bid, you must now execute the contract for the work (two copies enclosed). You must also provide the required performance and payment bond on the forms provided in the Bid Documents, insurance certificate *naming the City as additional insured*, and endorsements. Return all contract documents to my attention within ten (10) business days. The City will date and return a fully executed copy of the contract to you, along with your original copy of the dated bonds. Under the terms of the Invitation to Bid, this Notice of Award shall be rescinded if you do not timely provide the required Contract Documents.

Effective October 1, 2012, revisions to State of Florida Statute 255.05 will apply to this contract. Once you receive the fully executed contract and dated bonds from the City, you will need to record the performance and payment bonds with Orange County. You are required to provide the City with a <u>certified copy of the recorded bonds</u> before the City can issue the Notice to Proceed or make any payment for the project.

Additionally, please contact _____, at (407) 905-31__ to schedule the pre-construction meeting for this project. The certified copy of the recorded bonds to be provided to the City prior to or at the pre-construction meeting. Completion dates will be established at the pre-construction meeting. Work shall begin pursuant to the effective date established by the Notice to Proceed.

The City of Ocoee looks forward to working with your company on this project.

Sincerely,

Shannon Hopper
Purchasing Technician

cc. _____, Utilities Director

NOTICE TO PROCEED

1 N. Bluford Avenue
Ocoee, Florida 34761

DATE: _____

Name, Title
Company's Name
Address
Address

RE: **Notice to Proceed on Project**
Project: _____

You are notified that the Contract Time under the above contract will commence to run on _____, 20__. On that date you are to start performing the Work and your other obligations under the Contract Documents. Based on the Contract Time stated in the Agreement, we calculate that the dates of Substantial Completion and Final Completion are _____, 20__ and _____ 20__, respectively.

OWNER: CITY OF OCOEE _____ (Authorized Signature) _____, Utilities Director	Acknowledge Receipt of Notice CONTRACTOR: By: _____ (Signature) _____ (print or type name) _____ (Title) _____ (Date)

CITY OF OCOEE
1 N. Bluford Avenue
Ocoee, Florida 34761

This Change Order requires action by the City Commission

Ocoee WWTF Electrical Upgrade and Expansion
ITB #24-001

CHANGE ORDER NO. __

DATE: _____ PURCHASE ORDER:_____

The following changes are hereby made to the CONTRACT DOCUMENTS.

Original CONTRACT PRICE	$0.00
Current CONTRACT PRICE ADJUSTED by previous CHANGE ORDERS	$0.00
Net Increase (Decrease) Resulting from this CHANGE ORDER	**$0.00**
The current CONTRACT PRICE including this CHANGE ORDER	**$0.00**
Original CONTRACT COMPLETION DATE:	[original contract date]
Current CONTRACT COMPLETION DATE adjusted by previous CHANGE ORDERS	[current contract date]
Net Increase Resulting from this CHANGE ORDER	**[number] days**
Current CONTRACT COMPLETION DATE including this CHANGE ORDER	**[new contract date]**

CHANGES ORDERED:

I. REQUIRED CHANGES

II. JUSTIFICATION

III. NARRATIVE OF NEGOTIATIONS

IV. PAYMENT

V. APPROVAL AND CHANGE AUTHORIZATION

The original project and funding allocation were established by issuance of a CITY purchase order, subject to the terms and conditions contained in the CITY's solicitation, Project Manual, Drawings, Specifications, and/or the CONTRACTOR's service and price proposal, which collectively form the terms of an agreement between the CITY and the CONTRACTOR for the performance of the Work. This proposed change to the agreement requires approval by the City Commission under the CITY's Purchasing Rules and Regulations and is consistent with any prior action by the City Commission to award the Work to the CONTRACTOR. It is expressly understood and agreed that the approval of the Change Order shall have no effect on the original agreement other than matters expressly provided herein.

CONTRACTOR acknowledges, by its execution and acceptance of this Change Order, that the adjustments in contract price and time shown hereon constitute full and complete compensation and satisfaction for all costs and modifications of performance time incurred by the CONTRACTOR as a result of this Change Order. No other claim for increased costs of performance or modifications of time will be granted by the CITY for the Work covered by this Change Order. The CONTRACTOR hereby waives and releases any further claims for cost or time against the CITY arising from or relating to the matters or Work set forth or contemplated by this Change Order.

[Balance of this page was left blank intentionally]

RECOMMENDED BY:

CITY OF OCOEE, FLORIDA

By: _____
Signature

Date: _____

Title: _____

ACCEPTED BY:

CONTRACTOR

By: _____
Signature

Date: _____

Title: _____

APPROVED BY:

CITY OF OCOEE, FLORIDA

By: _____
Rusty Johnson, Mayor

Date: _____

Attest: _____
Melanie Sibbitt, Acting City Clerk

FOR USE AND RELIANCE ONLY BY THE CITY OF OCOEE, APPROVED AS TO FORM AND LEGALITY THIS _____ DAY OF _____ , 20___

By: _____
City Attorney

APPROVED BY THE CITY OF OCOEE COMMISSION IN A MEETING HELD ON _____, 20___ UNDER AGENDA ITEM NO. _____.

CITY OF OCOEE
1 N. Bluford Avenue
Ocoee, Florida 34761

This Change Order can be authorized by the City Manager

Ocoee WWTF Electrical Upgrade and Expansion
ITB #24-001
CHANGE ORDER NO. __

DATE: _____ PURCHASE ORDER:_____

The following changes are hereby made to the CONTRACT DOCUMENTS.

Original CONTRACT PRICE	$0.00
Current CONTRACT PRICE ADJUSTED by previous CHANGE ORDERS	$0.00
Net Increase (Decrease) Resulting from this CHANGE ORDER	**$0.00**
The current CONTRACT PRICE including this CHANGE ORDER	**$0.00**
Original CONTRACT COMPLETION DATE:	[original contract date]
Current CONTRACT COMPLETION DATE adjusted by previous CHANGE ORDERS	[current contract date]
Net Increase Resulting from this CHANGE ORDER	**[number] days**
Current CONTRACT COMPLETION DATE including this CHANGE ORDER	**[new contract date]**

CHANGES ORDERED:

I. REQUIRED CHANGES

II. JUSTIFICATION

III. NARRATIVE OF NEGOTIATIONS

IV. PAYMENT

V. APPROVAL AND CHANGE AUTHORIZATION

The original project and funding allocation was established by issuance of a CITY purchase order, subject to the terms and conditions contained in the CITY's solicitation, Project Manual, Drawings, Specifications, and/or the CONTRACTOR's service and price proposal, which collectively form the terms of an agreement between the CITY and the CONTRACTOR for the performance of the Work. This proposed change to the agreement requires approval by the City Manager under the CITY's Purchasing Rules and Regulations and is consistent with any action by the City Commission to award the Work to the CONTRACTOR. It is expressly understood and agreed that the approval of the Change Order shall have no effect on the original agreement other than matters expressly provided herein.

CONTRACTOR acknowledges, by its execution and acceptance of this Change Order, that the adjustments in contract price and time shown hereon constitute full and complete compensation and satisfaction for all costs and modifications of performance time incurred by the CONTRACTOR as a result of this Change Order. No other claim for increased costs of performance or modifications of time will be granted by the CITY for the Work covered by this Change Order. The CONTRACTOR hereby waives and releases any further claims for cost or time against the CITY arising from or relating to the matters or Work set forth or contemplated by this Change Order.

[Balance of this page was left blank intentionally]

RECOMMENDED BY:

CITY OF OCOEE, FLORIDA

By: _____
Signature

Date: _____

Title: _____

ACCEPTED BY:

[contractor name]

By: _____
Signature

Date: _____

Title: _____

APPROVED BY:

CITY OF OCOEE, FLORIDA

By: _____
Charles K. Smith, Department Director

Date: _____

By: _____
Wanda Horton, Director of Finance

Date: _____

By: _____
Robert D. Frank, City Manager

Date: _____

By: _____
Rusty Johnson, Mayor

Date: _____

Attest: _____
Melanie Sibbitt, Acting City Clerk

FOR USE AND RELIANCE ONLY BY THE CITY OF OCOEE, APPROVED AS TO FORM AND LEGALITY THIS _____ DAY OF _____ , 20___

By: _____
City Attorney

APPROVED BY THE CITY OF OCOEE COMMISSION IN A MEETING HELD ON _____, 20___ UNDER AGENDA ITEM NO. _____.

SECTION 00843
CERTIFICATE OF SUBSTANTIAL COMPLETION

OWNER's Project No. _____
ENGINEER's Project No. _____

CONTRACTOR _____
Contract For _____
Contract Date _____

This Certificate of Substantial Completion applies to all Work under the Contract Documents or to the following specified parts thereof:

To _____
Owner

And To _____
Contractor

The Work to which this Certificate applies has been inspected by authorized representatives of OWNER, CONTRACTOR and ENGINEER, and that Work is hereby declared to be substantially complete in accordance with the Contract Documents on _____, (Date of Substantial Completion).

A tentative list of items to be completed or corrected is attached hereto; Contractor shall provide the cost to complete each item. This list may not be all-inclusive, and the failure to include an item in it does not alter the responsibility of CONTRACTOR to complete all the Work in accordance with the Contract Documents. When this Certificate applies to a specified part of the Work the items in the tentative list shall be completed or corrected by CONTRACTOR within ____ days of the above date of Substantial Completion.

The date of Substantial Completion is the date upon which all guarantees and warranties begin, except as follows:

_____

The responsibilities between OWNER and CONTRACTOR for security, operation, safety, maintenance, heat, utilities and insurance shall be as follows:

RESPONSIBILITIES:

OWNER

_____

_____

_____

_____

_____

CONTRACTOR

_____

_____

_____

_____

_____

The following documents are attached to and made a part of this Certificate:

_____

_____

Executed by ENGINEER on _____, 20

_____

(Engineer)

By _____

The CONTRACTOR accepts this Certificate of Substantial Completion on:

_____, 20____.

_____

(Contractor)

By _____

END OF SECTION

CITY OF OCOEE
150 North Lakeshore Drive
Ocoee, Florida 34761

NON-COMPLIANCE NOTICE

NO.: _____

PROJECT DATA:

NAME: Ocoee WWTF Electrical Upgrade and Expansion
Bid ITB #24-001

LOCATION: _____

OTHER: _____

PROJECT NO.: _____

DATE: _____

REFERENCE.: _____

TO (CONTRACTOR):

_____

_____

_____

Non-compliance Notice was received by Contractor on (date): _____

By: _____

Title: _____

You are hereby notified that the following work or materials does not conform to the requirements of the Contract Documents noted above.

Non-complying work may be required to be removed and replaced at no cost to the Owner.

It shall be your responsibility to determine the corrective action necessary, and to determine whether you wish to discontinue operations until additional investigation by the Owner or Engineer confirm or refute the initial findings.

If you should not correct non-complying work in a timely manner, or continue to perform non-comply work, the Owner may stop the Work. (GC-13.10, SC-13.11).

DESCRIPTION (of non-conforming work or materials): _____

_____

_____

_____

_____

_____

ISSUED BY: _____ TITLE: _____

ATTACHMENTS (Listing of attached documents that support description):

1. Contractor Request for Information No._____
2. _____
3. _____
4. _____
5. _____
6. _____

☐ OWNER: _____ ☐ CONTRACTOR: _____
☐ ENGINEER: _____ ☐ FIELD: _____
☐ SUBCONSULTANT: _____ ☐ OTHER: _____

CITY OF OCOEE

1 N. Bluford Avenue
Ocoee, Florida 34761

FIELD ORDER & DIRECTIVE

NO.: _____

PROJECT DATA:

NAME: Ocoee WWTF Electrical Upgrade and Expansion
Bid: ITB 24-001
LOCATION: _____

OTHER: _____

PROJECT NO.: _____

DATE: _____

REFERENCE: _____

TO (CONTRACTOR):

_____

_____

_____

Field Order was received on (date): _____

By: _____

Title: _____

You are hereby directed to execute promptly this Field Order which interprets the Contract Documents or orders minor changes in the Work without change in Contract Sum or Contract Time.

If you consider that a change in Contract Sum or Contract Time is required, please submit your itemized proposal to the Engineer immediately and before proceeding with this Work. If your proposal is found to be satisfactory and in proper order, this Field Order will in that event be superseded by a Change Order.

DESCRIPTION (of interpretation or change): _____

_____

_____

_____

_____

_____

ISSUED BY: _____ TITLE: _____

ATTACHMENTS (Listing of attached documents that support description):

1. Contractor Request for Information No._____
2. _____
3. _____
4. _____
5. _____
6. _____

☐ OWNER: _____
☐ ENGINEER: _____
☐ SUBCONSULTANT: _____
☐ CONTRACTOR: _____
☐ FIELD: _____
☐ OTHER: _____

CITY OF OCOEE
1 N. Bluford Avenue
Ocoee, Florida 34761

REQUEST FOR PROPOSED CHANGE

NO. _____

SECTION A: City shall complete to request proposal from Contractor

PROJECT DATA:

NAME: Ocoee WWTF Electrical Upgrade and Expansion

PROJECT NO:_____

LOCATION: _____

OTHER: _____

DATE: _____

REFERENCE:_____

TO (CONTRACTOR): _____

Please provide the undersigned a proposal for the following change in the work within seven (7) calendar days after receipt of this request. The written proposal must clearly delineate the scope of the proposed change in the work providing an itemized estimate of the time and all material and labor (by trade), subcontract and overhead costs and fees. Any amount claimed for subcontracts must be similarly supported.

DESCRIPTION of change in work: _____

Change Order Type: ☐ Deletion ☐ Addition ☐ Revision ☐ Other: ( )

Constraints of Change: _____

Initiated by: ☐ Changes in Owner Requirements ☐ Unforeseen Conditions ☐ Others: ( )

Proposal must be received by: _____

ATTACHMENTS (Listing of attached documents that support description):

1. Contractor Request for Information No. _____
2. Plan Revisions: _____
3. _____
4. _____
5. _____
6. _____

☐ OWNER: _____
☐ ENGINEER: _____
☐ CONSTRUCTION ADMINISTRATOR:_____
☐ SUBCONSULTANT: _____
☐ CONTRACTOR: _____
☐ FIELD: _____
☐ OTHER: _____

Date Received From Contractor: _____

Date Returned to Contractor With Comments: _____

Date Returned to City: _____

Section B: To be completed by City after receipt of Proposal from Contractor

PRICING INFORMATION:

Method of Pricing:

A. ☐ Established Contract Unit Price(s)

B. ☐ Negotiated Unit Price(s) (including Overhead and Profit)

C. ☐ Negotiated Lump Sum (including Overhead and Profit)

D. ☐ Actual Cost of Work plus Fixed Percent for Overhead and Profit

E. ☐ A combination of A, B, C, D

DESCRIPTION OF WORK:

☐ By General Contractor ☐ By Subcontractor

ITEM OF WORK	QUANTITY	PRICE	TOTAL

Attach additional pages if necessary.

NET TOTAL COST OF THIS CHANGE PROPOSAL **$**_____

EXTENSION OF CONTRACT TIME:

As part of this Change Proposal the Contractor requests an extension of the contract time in the amount of _____ additional days.

Provide thorough documentation in support of the request for additional time: _____

A requirement of this Change Proposal will be to provide record drawing information for all of the affected items of work

RECOMMENDATION BY ENGINEER/CONSTRUCTION ADMINISTRATOR:

Comments: _____

Signature of Engineer/Construction Administrator: _____ Date: _____

ACCEPTANCE BY OWNER:

Comments: _____

Signature: _____ Date: _____

I, _____ (Name), of _____ (Company) agree to the costs and terms of RFP _____ (No.)

this _____ (day) day of _____ (month), 2018_____ (year)

Technician's Daily Report

Utilities Department
1800 A D Mims Road
Ocoee, FL 34761

Date: _____

Project Name: _____

Pay Items

Item #	Description	Daily Qty	Units	Location

Conditions & Resources

Element	Adequate	Inadequate	Notes
Weather	☐	☐	
Equipment	☐	☐	
Manpower	☐	☐	

Sample

Description of Work

More ☐

Contractor _____ Inspector _____

SECTION 00861
APPLICATION AND CERTIFICATE FOR PAYMENT FORM

Application No.____ _____Progress Payment _____Final Payment P.O. No.: _____

Contractor: _____ Contract Date: _____

Application Date:_____ For Period Ending_____

City Project Nos.: _____

Project Name: _ITB 24-001 Ocoee WWTF Electrical Upgrade and Expansion_____

Construction Start Date: _____ End Date: _____

Construction Days – Total: _____ Elapsed: _____ Remaining: _____

1. Original Contract Amount $_____
2. Sum of Approved Change Orders to Date (from Table) $_____
3. Current Contract Amount (Sum of Lines 1 and 2) $_____
4. Total of Prior Pay Applications (including retainage) $_____
5. Amount of this Pay Application (including retainage; from Bid Item Quantity Spreadsheet) $_____
6. Total Earned to Date (Sum of Lines 4 and 5) $_____
7. Total of Payments Made by City to Date $_____
8. Retainage Held from Prior Pay Applications $_____
9. Retainage to Be Held in this Pay Application $_____
10. Total Retainage Held to Date (Sum of Lines 8 and 9) $_____
11. Total Earned to Date less Retainage (Line 6 minus Line 10) $_____
12. Total Earned less Retainage for this Pay Application (Line 5 minus Line 9) $_____
13. Total Amount to Be Paid by City for this Application (Line 11 minus Line 7) $_____

Approved Change Orders

Change Order No.	Date Approved by City	Date Accepted by Contractor	Total Change in Contract Price
		Total (Write in Line 2, above)	

Contractor's Certification

The undersigned Contractor hereby swears under penalty of perjury that (1) all previous progress payments received from the Owner on account of Work performed under the contract referred to above have been applied by the undersigned to discharge in full all obligations of the undersigned incurred in connection with Work covered by prior Applications for Payment numbered 1 through _____ inclusive (not applicable for first application.); and (2) all materials and equipment incorporated in said Project or otherwise listed in or covered by this Application for Payment are free and clear of all liens, claims, security interest and encumbrances; (3) all Work covered by this Application for Payment is in accordance with the Contract Documents and not defective as that term is defined in the Contract Documents.

Dated _____, 20__

_____
(Contractor)

By:_____
(Name)

_____
(Title)

COUNTY OF_____

STATE OF_____

Before me on this _____ day of _____, 20__, by means of ☐ physical presence or ☐ online notarization, personally appeared _____, known to me, who being duly sworn, deposes and says that he/she is the _____ of the Contractor above mentioned; that he/she executed the above Application for Payment and statement on behalf of said Contractor; and that all of the statements contained therein are true, correct and complete.

_____
Notary Public
My Commission Expires_____

Payment shown on Line 13 is recommended by City's Resident Project Representative and authorized by the Owner:

By:_____ Date: _____
Representative's Authorized Signature

By:_____ Date: _____
Owner's Authorized Signature

_____
Title

Project Earnings, Retainage and Payment Summary

Project:

Contractor: 0

Payment No:	Beginning Date	Closing Date	Application Date	Total Earned to Date (incl. Ret.)	Total Retainage to Date	Retainage per Pay Application	Payment Amounts	Total Previous Payments
								$0.00

Sample

Partial Payment
Summary of Values

Partial Payment No: 0

Payment Period: Start: End:

Project Name:
Contractor:

Pay Item No:	Description	Units	Quantity To Date	Unit Price	Total Price

Contractor's Certification of Payment

The undersigned Contractor hereby swears under penalty of perjury that (1) all previous progress payments received from the Owner on account of Work performed under the contract referred to above have been applied by the undersigned to discharge in full all obligations of the undersigned incurred in connection with Work covered by prior Applications for Payment numbered 1 through _____ inclusive (not applicable for first application.); and (2) all materials and equipment incorporated in said Project or otherwise listed in or covered by this Application for Payment are free and clear of all liens, claims, security interest and encumbrances; (3) all Work covered by this Application for Payment is in accordance with the Contract Documents and not defective as that term is defined in the Contract Documents.

Dated _____, 20__

_____
(Contractor)

By:_____
(Name)

_____
(Title)

COUNTY OF_____

STATE OF_____

Before me on this _____ day of _____, 20__, personally appeared _____, known to me, who being duly sworn, deposes and says that (s)he is the _____ of the Contractor above mentioned; that(s) he executed the above Application for Payment and statement on behalf of said Contractor; and that all of the statements contained therein are true, correct and complete.

_____
Notary Public
My Commission Expires_____

Payment shown on Line 13 is recommended by City's Resident Project Representative and authorized by the Owner:

By:_____ Date: _____
Representative's Authorized Signature

By:_____ Date: _____
Owner's Authorized Signature

_____
Title

CONTRACTOR'S FINAL RELEASE OF LIEN

Before me the undersigned authority in said County and State, appeared _____ who, being first duly sworn, deposes and says that he is _____ of _____, a company and/or corporation authorized to do business under the laws of Florida, which is the Contractor on the Contract described as: _____ dated the _____ day of _____, 20_____, that the said deponent is duly authorized to make this affidavit by resolution of the Board of Directors of said company and/or corporation; that deponent knows of his own knowledge that said Contract has been complied with in every particular by said Contractor and that all parts of the work have been approved by the Owner's Engineers; that there are no bills remaining unpaid for labor, material, or otherwise, in connection with said Contract and work, and that there are no suits pending against the undersigned as Contractor or anyone in connection with the work done and materials furnished or otherwise under said Contract. Deponent further says that the final estimate which has been submitted to the owner simultaneously with the making of the affidavit constitutes all claims and demands against the Owner on account of said Contract or otherwise, and the acceptance of the sum specified in said final estimate will operate as a full and final release and discharge of the Owner from any further claims, demands or compensation by Contractor under the above Contract. Deponent further agrees that all guarantees under this Contract shall be in full force from the date of this release as spelled out in the Contract Documents.

Sworn to and subscribed to before me this _____ day of _____, 20_____.

_____
Notary Public

My Commission Expires_____

We, the _____ having heretofore executed a Performance Bond for the above-mentioned Contractor covered Project and Section as described above in the sum of_____dollars ($_____), hereby agree that the Owner may make full payment of the final estimate, including the retained percentage, to said Contractor.

It is fully understood that the granting of the right to the Owner to make payment of the final estimate to said Contractor and/or his assigns, shall in no way relieve the surety company of its obligations under its bond, as set forth in the Specifications, Contract and Bond pertaining to the above Project.

IN WITNESS WHEREOF, the _____ has caused this instrument to be executed on its behalf by its _____ and/or its duly authorized attorney in fact, and its corporate seal to be hereunto affixed, all of this _____ day of _____, A.D., 20_____.

_____
Surety Company

_____
Attorney in Fact

(Power of Attorney must be attached if executed by Attorney in Fact)

STATE OF FLORIDA

COUNTY OF _____

Before me the undersigned authority, personally appeared to me well known as the person described in and who executed the foregoing instrument in the name of _____ and/or _____ purpose therein expressed and that he had due and legal authority to execute the same on behalf of said _____, a corporation.

IN WITNESS WHEREOF, I have hereunto set my hand and official seal at _____ this _____ day of _____, 20_____.

_____
Notary Public

END OF SECTION

SHOP DRAWING SUBMITTAL

Owner: City of Ocoee
1800 A. D. Mims
Ocoee, Fl. 34761

Specification No.: _____
Project: _____

Contractor: _____

FOR CITY USE ONLY
DATE RECEIVED _____
DATE RETURNED _____

Owner's Project No.: _____

Contractor's Submittal No.: _____

Contractor's Project No.: _____

Resubmittal Yes _____ No _____

ITEM NO	RESUBMITTAL NO.	NO. COPIES	VENDOR	DESCRIPTION	ENGINEER'S ACTION

ACTION CODE (As defined in the General Conditions)

A	APPROVED
AN	APPROVED AS NOTED
AN/R	APPROVED AS NOTED NOTED, RESUBMIT SPECIFIED ITEMS
NA/R	NOT APPROVED/REVISE AND RESUBMIT (DO NOT ORDER OR FABRICATE UNTIL APPROVED)

SUBMITTED BY: _____
Contractor

DATE: _____

ENGINEERS COMMENTS:

_____

_____

_____

Distribution

- Contractor ___ Copies
- Owner ___ Copies
- ML Office ___ Copies
- ML Subconsultant ___ Copies
- ML Field ___ Copies

Discipline Review:

_____
Reviewed By Date

Discipline Review:

_____
Reviewed By Date

_____
Project Manager Date

END OF SECTION

CERTIFICATE OF FINAL INSPECTION

Agreement Title: _____

City Contract No.: _____

TO: CONTRACTOR: _____

Project Manager: _____

A joint inspection of the Work described in the Contract Documents has been made by the Owner, the Owner's Engineer and the Contractor on _____ (date) in accordance with Section 1.14.A of the General Requirements, and is accepted by the Owner, subject to the provisions of subsection 1.14.B.4 of the General Requirements for a Corrective Period subject to the provisions of Article 13.07 of the General Conditions or as otherwise agreed upon and attached.

Accepted by:

CONTRACTOR

By: _____ Date: _____

ENGINEER

By: _____ Date: _____

Approved:

OWNER: _____ Date: _____

_____ Date: _____

CITY OF OCOEE
1 N. Bluford Avenue
Ocoee, Florida 34761

CONTRACTOR'S REQUEST FOR INFORMATION

No.: _____

PROJECT DATA:

NAME: Ocoee WWTF Electrical Upgrade and Expansion

Bid: ITB # 24-001

LOCATION: _____

OTHER: _____

PROJECT NO.: _____

DATE: _____

REFERENCE: _____

QUESTION:

_____

_____

_____

_____

_____

_____

_____

_____

BY: _____ DATE: _____

REPLY:

_____

_____

_____

_____

_____

_____

_____

_____

_____

BY: _____ DATE: _____

☐ OWNER: _____

☐ ENGINEER: _____

☐ SUBCONSULTANTT: _____

☐ CONTRACTOR: _____

☐ FIELD: _____

☐ OTHER: _____

This Instrument Prepared By:
Name _____
Address _____

WAIVER AND RELEASE OF LIEN
UPON FINAL PAYMENT

The undersigned lienor, in consideration of the final payment in the amount of $_____ _____, hereby waives and releases its lien and right to claim a lien for labor, services or materials furnished through _____, 20 ____, to _____ (customer) on the job of _____ (owner of property) to the following described property:

WITNESS my hand and seal this _____ day of _____, 20 ____.

Lienor's Name _____
Address _____

By _____
Printed Name _____

Sworn to and subscribed before me by _____ who is personally known to me or produced _____ as identification, and who did ___ take an oath, this _____ day of _____, 20 ____.

Signature of Notary _____ SEAL:
Printed Name of Notary _____
Commission No./Expiration _____

This Instrument Prepared By:
Name _____
Address _____

WAIVER AND RELEASE OF LIEN
UPON PROGRESS PAYMENT

The undersigned lienor, in consideration of the sum of $ _____, hereby waives and releases its lien and right to claim a lien for labor, services or materials furnished through _____, 20 ____, to _____ (customer) on the job of _____ (owner of property) to the following described property:

This waiver and release does not cover any retention or labor, services, or materials furnished after the date specified.

WITNESS my hand and seal this _____ day of _____, 20 ____.

Lienor's Name _____
Address _____

By _____
Printed Name _____

Sworn to and subscribed before me by _____ who is personally known to me or produced _____ as identification, and who did ___ take an oath, this _____ day of _____, 20 ____.

Signature of Notary _____ SEAL:
Printed Name of Notary _____
Commission No./Expiration _____

CONTRACTOR'S FINAL AFFIDAVIT

STATE OF FLORIDA,
COUNTY OF_____.

BEFORE ME, the undersigned authority, duly authorized to administer oaths and take acknowledgments, personally appeared _____ who being duly sworn, deposes and says:

1. He is the _____(title) of _____(name of business) hereinafter referred to as "Contractor."

2. At all times material hereto, Contractor has been doing business in _____ County, Florida.

3. This Affidavit is made pursuant to Section 713.06(3)(d)(1), Florida Statutes, for the purpose of acknowledging full and final payment to the Contractor for work done and materials supplied on real property described as: (property description)

4. That all lienors engaged by the Contractor to perform or provide labor, services and/or materials under the contract between Contractor and the owner of the above-described property have been paid in full, except as follows:

Name/Address _____
Amount Due _____

Name/Address _____
Amount Due _____

FURTHER AFFIANT SAYETH NOT.

_____
(Signature of Contractor)

Sworn to and subscribed before me by _____ who is personally known to me or produced _____ as identification, and who did _____ take an oath, this _____ day of _____, 20 ____.

Signature of Notary _____
Printed Name of Notary _____
Commission No./Expiration _____
SEAL:

CONTRACTOR'S INTERIM AFFIDAVIT

STATE OF FLORIDA,
COUNTY OF_____.

BEFORE ME, the undersigned authority, duly authorized to administer oaths and take acknowledgments, personally appeared _____ who being duly sworn, deposes and says:

1. He is the _____(title) of _____(name of business) hereinafter referred to as "Contractor."

2. At all times material hereto, Contractor has been doing business in _____ County, Florida.

3. This Affidavit is made pursuant to Section 713.06(3)(c)(1), Florida Statutes, for the purpose of acknowledging full payment to the Contractor for work done and materials supplied through _____, 20 ____, on real property described as: (property description)

4. That all lienors engaged by the Contractor to perform or provide labor, services and/or materials under the contract between Contractor and the owner of the above-described property have been paid in full for all work done or materials supplied through _____, 20 ____, except as follows:

Name/Address _____
Amount Due _____

Name/Address _____
Amount Due _____

FURTHER AFFIANT SAYETH NOT.

_____
(Signature of Contractor)

Sworn to and subscribed before me by _____ who is personally known to me or produced _____ as identification, and who did ___ take an oath, this _____ day of _____, 20 ____.

Signature of Notary _____ SEAL:
Printed Name of Notary _____
Commission No./Expiration _____

Mayor
Rusty Johnson

City Manager
Robert Frank

Commissioners
Scott R. Kennedy, District 1
Rosemary Wilsen, District 2
Richard Firstner, District 3
Ages Hart, District 4

November 16, 2023

ADDENDUM NO. ONE (1)
CITY OF OCOEE
ITB #24-001
OCOEE WWTF ELECTRICAL UPGRADE & EXPANSION

This addendum shall modify and become a part of the original ITB Documents for ITB #24-001. This addendum consists of five (5) pages, including attachments. Bidders should acknowledge receipt of this addendum in the space provided in the Bid Form. Failure to do so may subject the Bidder to disqualification.

Amendments to the ITB Documents are as follows:

Questionnaire:
The revised Questionnaire attached to this Addendum 01 shall be used by Bidders and submitted with his or her Bid.

Instructions to Bidders – 11.3:
11.3 of the Instructions to Bidders is updated to read as follows: No more than NA of the dollar value of the total bid amount for the work shall be performed by subcontractors, excluding supplying of material. The balance of the work must be accomplished by the Bidder's own forces. Each Bidder must complete the Bid forms titled, "Questionnaire" (Section 301) AND "Subcontractor/Supplier List" (Section 00301A) listing each item of work to be subcontracted and the estimated not-to-exceed cost of these items. (Work in this respect does not include cost paid to suppliers for materials and equipment furnished for this project.)

Shannon Hopper

Shannon Hopper
Purchasing Technician

cc: Jamie Croteau, Utilities Director

SECTION 00301
QUESTIONNAIRE - REVISED

Bidder shall fill out questionnaire form with all information pertinent to his/her company and the OCOEE WWTF Electrical Upgrade and Expansion.

DATE:_____

PROJECT IDENTIFICATION: City of Ocoee
ITB #24-001 OCOEE WWTF ELECTRICAL UPGRADE AND EXPANSION

NAME OF BIDDER:_____

BUSINESS ADDRESS:_____

TELEPHONE NO.:_____EMAIL:_____

GENERAL CONTRACTOR'S LICENSE NO. (PROVIDE COPY):_____

_____

SUNBIZ REGISTRATION NUMBER:_____

This questionnaire is intended to provide descriptive information about Bidder and to offer the opportunity for Bidder to demonstrate its compliance with the minimum requirements of this Invitation to Bid. **Minimum Requirements**: **Bidders must have the following experience in order to meet the minimum requirements of this Invitation to Bid: Prime Contractor on five (5) wastewater projects similar to the proposed Project and completed within the last ten (10) years, with at least three (3) of those projects being constructed in the last 5 years. Similar wastewater/water projects being either complete builds or electrical upgrades or a variation thereof.** The City reserves the right to disqualify a Bidder that does not provide this information within its Bid submission. The relevance and quality of prior experience necessary to identify a responsive Bidder shall solely be judged by the City of Ocoee at its discretion and is not reviewable through the bid protest process. Resumes of key project team members and their expected role in the project should be attached to this section and included in the Bid package submitted by the Bidder.

The undersigned warrants the truth and accuracy of all statements and answers herein contained. Include additional sheets if necessary.

1. How many years has your organization been in business?
   _____

2. REFERENCES/EXPERIENCE: List and provide information regarding the last five (5) projects you have completed in the last ten (10) years of similar in type, size, and nature as the one proposed, preferably with a governmental agency. Three of these projects must

have been completed in the past 5 years. Bidder must demonstrate the ability to perform services of similar complexity, nature, and size. For each project list the name of the project, contract performance dates, estimated total value of the contract, name and address of government agency or commercial agency, description of work performed, Bidder's role in the project, and special conditions present that had to be overcome, Bidder's project manager, the client's project manager, a reference person familiar with your work on the project, and contact information for that person. The relevant project may be removed from the list of references if the listed contact person refuses to provide information regarding your performance. Letters of Reference may also be provided. Only contracts for which Bidder was the prime contractor will be considered to be relevant. Attach additional sheets if necessary

Minimum Requirements: **Bidders must have the following experience in order to meet the minimum requirements of this Invitation to Bid: Prime Contractor on five (5) wastewater projects similar to the proposed Project and completed within the last ten (10) years, with at least three (3) of those projects being constructed in the last 5 years. Similar wastewater/water projects being either complete builds or electrical upgrades or a variation thereof.**

Name of Project: _____
Project Details: _____
_____
_____

Start date: _____ Completion date: _____
Contract amount: _____
Owner: _____
Owner's POC: Name and Title: _____
Phone number: _____
Email address: _____

Name of Project: _____
Project Details: _____
_____
_____

Start date: _____ Completion date: _____
Contract amount: _____
Owner: _____
Owner's POC: Name and Title: _____
Phone number: _____
Email address: _____

Name of Project: _____
Project Details: _____
_____
_____

Start date: _____ Completion date: _____
Contract amount: _____
Owner: _____
Owner's POC: Name and Title: _____
Phone number: _____
Email address: _____

Name of Project: _____
Project Details: _____
_____
_____

Start date: _____ Completion date: _____
Contract amount: _____
Owner: _____
Owner's POC: Name and Title: _____
Phone number: _____
Email address: _____

Name of Project: _____
Project Details: _____
_____
_____

Start date: _____ Completion date: _____
Contract amount: _____
Owner: _____
Owner's POC: Name and Title: _____
Phone number: _____
Email address: _____

3. Do you have any similar work in progress at this time? Yes___ No ___.

4. Have you ever failed to complete work awarded to you? If so, where and why?
_____
_____
_____

5. Name the proposed members of your project leadership team. For each person provide the name, title and years with the company. Attach the resume for all key personnel for this project.:

_____
_____
_____
_____
_____
_____

6. Name three (3) municipalities for which you have performed similar work and contact information:

_____
_____
_____

7. Have you personally inspected the site of the proposed Work? _____
Describe any anticipated problems with the site and your proposed solutions.

_____
_____
_____

8. What percentage of the Work to you intend to self-perform? _____

9. Will you Subcontract any part of the Work? If so, describe which portions by listing the name of the subcontractor, the part of the project they are to perform, and the percentage proportion of the Work represented by that activity. Confirm that no day labor shall be used unless approved by the City. If approved by the City, day labor may only be used for tidying the site.

_____
_____
_____
_____
_____

10. What equipment do you plan on using to complete the Work?

_____
_____
_____
_____
_____
_____

11. State the true and exact, correct, and complete name under which you do business and give the company officer and the address of the office that will be responsible for the Work:

_____
_____

Mayor
Rusty Johnson

City Manager
Robert Frank

Commissioners
Scott R. Kennedy, District 1
Rosemary Wilsen, District 2
Richard Firstner, District 3
Ages Hart, District 4

November 16, 2023

ADDENDUM NO. TWO (2)
CITY OF OCOEE
ITB #24-001 OCOEE WWTF ELECTRICAL UPGRADE & EXPANSION

This addendum shall modify and become a part of the original ITB Documents for ITB #24-001. This addendum consists of one (1) page. Bidders should acknowledge receipt of this addendum in the space provided in the Bid Form. Failure to do so may subject the Bidder to disqualification.

Answers to questions received and/or Amendments to the ITB Documents are as follows:

Q1. Is there an anticipated start and completion date for when this should begin and end?

A1. The anticipated start and completion dates for this project are March 2024 and May 2025. Please be aware these dates are estimates.

Q2. I wanted to reach out to you and talk about becoming an approved equal for your VFD requirements. ICON Technologies has served the Water/Waste Water Community for over 20 Years with Yaskawa VFD Solutions and have numerous installations throughout FL in various Municipalities like Hillsborough, Manatee, Tampa, Sarasota, Clearwater, and Tarpon Springs just to name a few. We would love the opportunity to offer the same level of service to the City of Ocoee, can we talk a little bit more on the process of getting ICON and Yaskawa an approved manufacturer for this project?

A2. The City's standard VFD is manufactured by Danfoss. Refer to Section 16370, 1.02 E – Approved Manufacturer.

Q3. Who installs the VFDs? Section 1.03A and 2.01A4 state differences on who installs the VFDs.

A3. Contractor is responsible for installation of VFDs.

Q4. Typo of VFD Quantity: Not MCC1 and MCC2, SB-1 and SB-2? What is the correct quantity of VFDs?

A4. There are eight (8) VFDs, two (2) for the blowers and six (6) for the rotors.

Shannon Hopper

Shannon Hopper
Purchasing Technician

cc: Jamie Croteau, Utilities Director

Mayor
Rusty Johnson

City Manager
Robert Frank

Commissioners
Scott R. Kennedy, District 1
Rosemary Wilsen, District 2
Richard Firstner, District 3
Ages Hart, District 4

November 21, 2023

ADDENDUM NO. THREE (3)
CITY OF OCOEE
ITB #24-001 OCOEE WWTF ELECTRICAL UPGRADE & EXPANSION

This addendum shall modify and become a part of the original ITB Documents for ITB #24-001. This addendum consists of 14 pages, including attachments. Bidders should acknowledge receipt of this addendum in the space provided in the Bid Form. Failure to do so may subject the Bidder to disqualification.

Answers to questions received and/or Amendments to the ITB Documents are as follows:

1. **REVISED DATES FOR ITB #24-001:**

   Deadline for Receipt of Questions: Thursday, December 14, 2023 at 12:00 p.m. local time.

   Bid Submission Deadline: Wednesday, January 3, 2024 at 2:00 p.m. local time.

2. **REVISED BID FORM.** The Bid Form has been revised to include an allowance in Item 4.2. All Bidders must submit the revised Bid Form attached to this addendum.

3. The PICS Supplier referenced in Section 13600 1.03A(1)(i) is amended to Telemetry Process Controls, Oakdale, MN, (651) 430-0435.

4. Prospective Bidders are encouraged to visit the site. To coordinate a site visit, contact Shannon Hopper through the project file on Bonfire or at shopper@ocoee.org.

5. **AMENDMENTS TO ADDENDUM NO. 1:**

   Instructions to Bidders – 11.3 is replaced in its entirety with the following:
   Delete any and all references to the Contractor performing a required percentage of the work (Contract Price), e.g. as shown in Instructions to Bidders Paragraph 11.3, Draft Contract for Construction paragraph 6.9, and Addendum No. 1, Item 1. There are no percentage of work required to be performed by Contractor. Completion of Section 00301 Questionnaire – Revised as included in Addendum No. 1 is required.

6. **AMENDMENTS TO ADDENDUM NO. 2:**

   Q1. Is there an anticipated start and completion date for when this should begin and end?

A1. Contract Time is as shown in Article 3. Contract Time (Section 00500). Notice to Proceed is anticipated March 2024.

Q3. Who installs the VFDs? Section 1.03A and 2.01A4 state differences on who installs the VFDs.

A3. Contractor is responsible for the purchase and installation of VFDs.

Shannon Hopper

Shannon Hopper
Purchasing Technician

cc: Jamie Croteau, Utilities Director

Attachments: Bid Form – Revised 01

SECTION 00300

BID FORM – REVISED 01

SUBMITTED: _____
(Date)

PROJECT IDENTIFICATION: CITY OF OCOEE ITB #24-001
Ocoee WWTF Electrical Upgrade and Expansion

NAME OF BIDDER: _____

BUSINESS ADDRESS: _____PHONE NO.: _____
CITY, STATE, ZIP: _____

CONTRACTOR'S FEDERAL I.D. NUMBER _____

CONTRACTOR'S FLORIDA LICENSE NO.: _____

THIS BID IS SUBMITTED TO: City of Ocoee, Florida (hereinafter called Owner)

1. The undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into an Agreement with Owner in the form included in the Contract Documents to perform and furnish all Work, as specified or indicated in the Contract Documents for the Contract Price and within the Contract Times indicated in this Bid Form and in accordance with the other terms and conditions of the Contract Documents.

2. Bidder accepts all of the terms and conditions of the Bidding Documents, including, without limitation, those dealing with the disposition of Bid Bond. This Bid will remain open for ninety (90) calendar days after the day of Bid opening. Bidder will sign and deliver the required number of counterparts of the Amendment to the Agreement with the Bonds and other documents required by the Bidding Requirements within ten (10) days after the date of Owner's Notice of Intent to Award.

3. In submitting this Bid, Bidder makes all representations required by the Instructions to Bidders and the Agreement and further warrants and represents that:

   a. Bidder has examined copies of all the Bidding Documents and of the following Addenda:

      No. _____ Dated _____ No. _____ Dated: _____
      No. _____ Dated _____ No. _____ Dated: _____
      No. _____ Dated _____ No. _____ Dated: _____
      No. _____ Dated _____ No. _____ Dated: _____

      (Receipt of all which is hereby acknowledged) and also copies of the Invitation to Bid and the Instructions to Bidders.

b. Bidder has familiarized itself with the nature and extent of the Contract Documents, work, site, locality, and all local conditions and laws and regulations that in any manner may affect cost, progress, performance or furnishing the Work.

c. Bidder has carefully studied all reports of explorations and tests of subsurface conditions at or contiguous to the site and all drawings of physical conditions in or relating to existing surface of subsurface structures at or contiguous to the site (except Underground Facilities) which have been identified in the Supplementary Conditions, as provided in paragraph 4.02.1 of the General Conditions. Bidder accepts the determination set forth in paragraph SC-4.02 of the Supplementary Conditions of the extent of the "technical data" contained in such reports and drawings upon which Bidder is entitled to rely, as provided in paragraph 4.02 of the General Conditions. Bidder acknowledges that such reports and drawings are not Contract Documents and may not be complete for Bidder's purposes. Bidder acknowledges that Owner and Engineer do not assume responsibility for the accuracy or completeness of information and data shown or indicated in the Bidding Documents with respect to Underground Facilities at or contiguous to the site.

d. Bidder has obtained and carefully studied (or assumes responsibility for having done so) all such additional or supplementary examinations, investigations, explorations, tests, studies and data concerning conditions (surface, subsurface and Underground Facilities) at or contiguous to the site or otherwise which may affect cost progress, performance or furnishing of the Work, or which relate to any aspect of the means, methods, techniques, sequences and procedures of construction to be employed by Bidder and safety precautions and programs incident thereto. Bidder does not consider that any additional examinations, investigations, explorations, tests, studies or data are necessary for the determination of this Bid for performance and furnishing of the Work in accordance with the times, price and other terms and conditions of the Contract Documents.

e. Bidder understands the full extent and scope of Work to be performed by Owner and others at the site that relates to Work for which this Bid is submitted.

f. Bidder has correlated the information known to Bidder, information and observations obtained from visits to the site, reports and drawings identified in the Contract Documents and all additional examinations, investigations, explorations, tests, studies and date with the Contract Documents.

g. Bidder has given Engineer written notice of all conflicts, errors, ambiguities or discrepancies that Bidder has discovered in the Contract Documents and the written resolution thereof by Engineer is acceptable to Bidder, and the Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performing and furnishing the Work for which this Bid is submitted.

h. This Bid is genuine and not made in the interest of or on behalf of any undisclosed person, firm or corporation and is not submitted in conformity with any agreement or rules of any group, association, organization or corporation; Bidder has not directly or indirectly induced or solicited any other Bidder to submit a farce or sham Bid; Bidder has not solicited or induced any person, firm or corporation to refrain from bidding; and Bidder has not sought by collusion to obtain for itself any advantage over any other Bidder or over Owner.

i. Bidder hereby agrees to commence Work under this contract on or before a date to be specified in the Notice to Proceed and to fully complete all work of the project within the Contract Time specified in the Scope of Work Agreement (Section 00500). Bidder further accepts the provisions of the Scope of Work Agreement as to liquidated damages and agrees to pay as liquidated damages the amount stated in the Scope of Work Agreement (Section 00500), for each consecutive calendar day completion of the Work is delayed.

Completion Schedule:

1) The Work shall be Substantially Complete within the Contract Time specified in Article 3.1 of the Proposed Scope of Work Agreement (Section 00500).

2) The Work shall be finally complete within the Contract Time specified in Article 3.1 of the Proposed Scope of Work Agreement (Section 00500).

4. All bid items shall include all materials, equipment, labor, permit fees, taxes, tests, miscellaneous costs of all types, overhead, and profit for the item to be complete, in place, and ready for operation in the manner contemplated by the Contract Documents. Bidder submits the **TOTAL BID OR TOTAL BASE BID** to perform all the Work, as required by the Drawings and Specifications.

5. The following documents are made a condition of this Bid:

a. **Bidding Documents and shall include the following**:
1. Bid Forms (entire Section 00300, 00301, 00301A, 00302, 00303, 00310, 00311, and 00312)
2. Bid Bond (Surety Bond or Cashier's Check) (Section 00410)
3. Non-collusion Affidavit (Section 00480)
4. Conflict of Interest Disclosure Form (Section 00480A)
5. Certification of Non-segregated Facilities (Section 00481)
6. Sworn Statement on Public Entity Crimes (Section 00482)
7. Certification of Nondiscriminatory Labor Practices (Section 00483)
8. Certification Regarding Scrutinized Companies' Lists (Section 00484)

(Remainder of page intentionally left blank)

Bid Form - Revised 01: ITB #24-001 Ocoee WWTF Electrical Upgrade and Expansion

Item No:	Description	Units	Contract Quantity	Unit Price (in Numbers)	Total Price (in Numbers)
1	**Mobilization, Bonds, and General Conditions**				
1.1	Mobilization/ Demobilization	Lump Sum	1.00		
1.2	General Conditions	Lump Sum	1.00		
1.3	Utility Locates	Lump Sum	1.00		
1.4	Erosion Control	Lump Sum	1.00		
1.5	Construction Photographs and Audio - Visual Recording	Lump Sum	1.00		
1.6	Survey (Horizontal and Vertical Controls & As-Builts)	Lump Sum	1.00		
2	**Site Work**				
2.1	Demolition	Lump Sum	1.00		
2.2	Fill	Cubic Yards	250.00		
2.3	Grading	Lump Sum	1.00		
2.4	Concrete Sidewalk and Pads	Cubic Yards	75.00		
2.5	Sod	Square Yards	500.00		
2.6	Concrete Parking	Cubic Yards	35.00		
2.7	Bollards	Each	13.00		
2.8	Install (2) Blowers (Blowers Purchased by City of Ocoee)	Lump Sum	1.00		
3	**Building**				
3.1	Electrical Building	Lump Sum	1.00		
3.2	Electrical Building HVAC	Lump Sum	1.00		
4	**Electrical System and Instrumentation Control**				
4.1	Electrical Equipment	Lump Sum	1.00		
4.2	Furnish and Integrate SCADA	Lump Sum	1.00	486,502.00	486,502.00
4.3	Install 1000 kW Generator (Generator Purchased by City of Ocoee)	Lump Sum	1.00		
				Total Base Bid	

Written Total Base Bid:

COMPANY NAME: _____

BID PREPARED BY (PRINT): _____

SIGNATURE: _____

7. The Bidder acknowledges that the City specifically reserves the right to accept and make an award to a Bidder that has not submitted the lowest Bid when, in Owner's sole and absolute discretion, it determines that action to be in its best interest. The terms used in this Invitation to Bid, which are defined in the General Conditions and included as part of the Contract Documents, have the meanings assigned to them in the General Conditions.

8. The work shall be performed under a Florida General Contractor license. Contract shall not be awarded unless proof of valid license(s) is provided.

9. It is understood that where quantities for unit price work have been presented on the Bid Form, they are approximate only and are solely for the purpose of facilitating the comparison of bids, and that the Contractor's compensation will be computed upon the basis, described in the measurement and payment clauses in the specifications contained herein.

10. BASE BID - SCHEDULE OF MANUFACTURERS/SUPPLIERS

If the foregoing Schedule of Bid Items is presented in a Base Bid format, the undersigned as Bidder, agrees that the Contract, if awarded, will be on the basis of the materials and equipment named in the Contract Documents, in accordance with Article 10 of the Instructions to Bidders (Section 00100). The undersigned, as Bidder, also agrees that the Total Bid reflects the equipment and material supplied by one of the manufacturers/suppliers listed in the City's Approved Materials List. If the Bidder desires to propose an alternate manufacturer/supplier, he may write in the name of such alternate in the substitution list included within this Bid Form, but he must, nevertheless, also choose an approved manufacturer/supplier. If the proposed alternate manufacturer/supplier is determined "not equivalent" by the Engineer, the Bidder must furnish equipment and/or material items by the Bidder's chosen approved manufacturer/supplier. If the Bidder fails to indicate which listed manufacturer/supplier he intends to use if an alternate is rejected, he must use the manufacturer/supplier chosen by the City. Also, if the Bidder choses more than one approved manufacturer/supplier, he must use the first manufacturer/supplier written in the schedule of Base/Alternative Bid Manufactures/Suppliers table within this Bid Form (unless an alternate is approved).

11. SUBSTITUTIONS AND "OR EQUAL"

The undersigned as Bidder agrees that substitutions, or "equal," items will not be considered until after the effective date of the Agreement and will be evaluated in accordance with paragraphs 6.05.1 and 6.05.2 of the General Conditions. In addition to the reimbursement required under the General Conditions, the Contractor shall also reimburse the Owner for any engineering costs directly attributable to the change in manufacturers/suppliers caused by the acceptance of proposed alternates, such as, additional field trips for the Engineer, additional redesign costs, additional review costs, etc. Other costs directly attributable to the change in manufacturers/suppliers caused by the acceptance of proposed alternates, such as; increased electrical requirements, larger building, additional pumps or tankage, etc., shall be borne by others and not the Owner. If

Bidder intends to propose substitutions or "equal" items after the effective date of the Agreement, it is agreed that these items must be listed on the Substitution List included within this Bid Form, with a deductive amount representing 50 percent of the total savings between the named Base Bid/Alternative Bid item and the proposed item. "Base Bid/Alternative Bid" item substitutions providing to the Owner equipment or material cost savings of less than $1,000 will not be considered. The undersigned, as Bidder, also agrees that if a substitution or "equal" item is not listed on the Substitution List included with the Bid, all of the savings between the named item and the proposed item will go to the Owner, if the Owner accepts the proposed item in accordance with paragraphs 6.05.1 and 6.05.2 of the General Conditions. The Owner may request, and the undersigned Bidder shall supply, complete information on proposed substitutions. Such information shall be the manufacturer's current published or preprinted information for the specific substitution.

12. As Bidder, I hereby certify that I am aware and understand that the City of Ocoee in its sole discretion reserves the right to waive technicalities or irregularities, to reject any or all Bids, and/or to accept that Bid which is in the best interest of the City. The award of this Bid, if made, may be based on considerations other than total cost, and may be awarded based on various considerations, including but not limited to: Bidder experience and whether the Bid, in the judgment of the City, is the most responsive to the City's needs.

(Remainder of page intentionally left blank)

SUBSTITUTION LIST Bidder offers the following substitutions and "equal" items.			
Equipment Item or Material	**Spec Section**	**Alternative Manufacturer/Supplier (List One Only)**	**Deductible Amount* (Indicate Whether Lump Sum or Unit Price)**
Represents 50 percent of the difference in cost in accordance with the General Conditions (Minimum Deductible Amount per Substitution Item shall be $1,000) (Bidder may make additional copies of this page as required.)			

Strike out (X) non-applicable signature block and complete applicable block. (ALL SIGNATORIES MUST HAVE THEIR NAMES PRINTED OR TYPED BELOW THEIR SIGNATURES)

If Bidder is:

SOLE PROPRIETORSHIP

(SEAL)

(Individual's Signature)

(Individual's Name)

doing business as

Business Address:

Phone No.:

Florida License No.: _____

A PARTNERSHIP

(SEAL)

(Partnership Name)

(General Partner's Signature)

(General Partner's Name)

Business address:

Phone No.:

Florida License No.: _____

Strike out (X) non-applicable signature block and complete applicable block. (ALL SIGNATORIES MUST HAVE THEIR NAMES PRINTED OR TYPED BELOW THEIR SIGNATURES)

If Bidder is:

A CORPORATION

(Corporation Name)

(State of Incorporation)

By

(Name of person authorized to sign)

(Title)

(Authorized Signature)

(Corporate Seal)

Attest

(Secretary)

Business address:

Phone No.:

Corporation President:

Florida License No.:

Strike out (X) non-applicable signature block and complete applicable block. (ALL SIGNATORIES MUST HAVE THEIR NAMES PRINTED OR TYPED BELOW THEIR SIGNATURES)

If Bidder is:

A JOINT VENTURE

By

(Name)

(Address)

By

(Name)

(Address)

Business Address:

Phone No.:

Florida License No.:

(Each joint venturer must sign. The manner of signing for each individual, partnership, and corporation that is a party to the joint venture should be in the manner indicated above.)

Florida License No.:

13. List the following in connection with the Surety which is providing the Bid Bond:

Surety's Name: _____

Surety's Address: _____

14. Name and address of Surety's resident agent for service of process in Florida:

_____

_____

_____

(Remainder of page intentionally left blank.)

CORPORATE AUTHORITY TO EXECUTE DOCUMENTS

I HEREBY CERTIFY that a meeting of the Board of Directors of _____ _____, a corporation under
(Contractor's Corporate Name)
the laws of the State of _____, held on the _____ day of _____, 20__, the following resolution was duly passed and adopted:

"RESOLVED, that _____ _____
(signature of individual) (typed name of individual)
as _____ of the corporation, is hereby authorized to execute and all documents required to be signed by an officer of the Corporation in order to submit a valid bid, contract and bond for

CITY OF OCOEE
Ocoee WWTF Electrical Upgrade and Expansion
ITB #24-001

between the CITY OF OCOEE, a municipal corporation, and this corporation, and that his execution thereof, attested by the Secretary of the corporation and with corporate seal affixed shall be the official act and deed of this corporation."

I FURTHER CERTIFY that said resolution is now in full force and effect.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the official seal of the corporation this _____ day of _____, 2020.
(CORPORATE SEAL)

_____ (Corporate Secretary)

STATE OF _____
CITY OF _____

The foregoing instrument was acknowledged before me this _____ day of _____, 20__ by _____
(name of officer or agent, title of officer or agent), by means of ☐ physical presence or ☐ online notarization, of _____ (name of corporation acknowledging), a _____ (state or place of incorporation) corporation, on behalf of the corporation. He/She is personally known to me or has produced _____ (type of identification) as identification and did/did not take an oath.

_____
(Notary Public)
My Commission Expires: _____

END OF SECTION

Mayor
Rusty Johnson

City Manager
Robert Frank

Commissioners
Scott R. Kennedy, District 1
Rosemary Wilsen, District 2
Richard Firstner, District 3
Ages Hart, District 4

December 20, 2023

ADDENDUM NO. FOUR (4)
CITY OF OCOEE
ITB #24-001 OCOEE WWTF ELECTRICAL UPGRADE & EXPANSION

This addendum shall modify and become a part of the original ITB Documents for ITB #24-001. This addendum consists of three (3) pages, including attachments. Bidders should acknowledge receipt of this addendum in the space provided in the Bid Form. Failure to do so may subject the Bidder to disqualification.

Answers to questions received and/or Amendments to the ITB Documents are as follows:

SAM.gov Registration Information Form:
The revised SAM.gov Registration Information Form attached to this Addendum 04 shall be used by Bidders and submitted with his or her Bid.

Q1. This project states through ARPA/SLFRF funding that it has Davis Bacon Wage Requirements. Upon further review, it says in the Division 0 documents that the wages only apply to contracts exceeding $10 million. Can you clarify?

A1. Since the funding is from the ARPA grant, the Davis Bacon requirements would only apply if the contract amount is over $10 million as the Treasury waived the Davis Bacon requirements for contracts under that amount.

Q2. I work on bids at Hach. I came across Ocoee WWTF Electrical Upgrade and Expansion. It states for the digital indicator that the manufacturer is Newport Electronics, Precision Digital or approved equal. Would Hach be considered an approved equal?

A2. Bid per the specifications and the Bid Documents. If the contractor wants to substitute during construction, they send a request to the engineer who answers the question. See also Article 10 of the Instructions to Bidders - Substitute Material and Equipment.

Q3. I would like to propose Yaskawa as an acceptable manufacturer for the VFD portion of this job. Section 16370:1.02.E -Add Yaskawa America Inc.

A3. Bid per the specifications and the Bid Documents. If the contractor wants to substitute during construction, they send a request to the engineer who answers the question. See also Article 10 of the Instructions to Bidders - Substitute Material and Equipment.

Additionally, this question was answered in Addendum 02. The City's standard VFD is manufactured by Danfoss. Refer to Section 16370, 1.02 E – Approved Manufacturer.

Shannon Hopper

Shannon Hopper
Purchasing Technician

cc: Jamie Croteau, Utilities Director

Attachments: SAM.gov Registration Information – Revised Form

SECTION 00311

SAM.GOV REGISTRATION INFORMATION – REVISED FORM

In accordance with applicable federal requirements, the City of Ocoee will verify all bidders on SAM.gov (System for Award Management) for federal debarment or suspension exclusions as a responsibility determination. The City of Ocoee requires the successful Bidder to register with Sam.gov, if not already registered, prior to execution of this contract.

Contractor: _____

Unique Entity ID (UEI) number: _____

CAGE Code: _____

Physical Address: _____

_____

_____

Expiration date of Registration: _____

Mayor
Rusty Johnson

City Manager
Robert Frank

Commissioners
Scott R. Kennedy, District 1
Rosemary Wilsen, District 2
Richard Firstner, District 3
Ages Hart, District 4

January 2, 2024

ADDENDUM NO. FIVE (5)
CITY OF OCOEE
ITB #24-001 OCOEE WWTF ELECTRICAL UPGRADE & EXPANSION

This addendum shall modify and become a part of the original ITB Documents for ITB #24-001. This addendum consists of two (2) pages, including attachments. Bidders should acknowledge receipt of this addendum in the space provided in the Bid Form. Failure to do so may subject the Bidder to disqualification.

Answers to questions received and/or Amendments to the ITB Documents are as follows:

Q1. I am reaching out in regard to the **Ocoee Electrical Upgrade and Expansion** project, and concerns with the HVAC system required for said electrical building.

Looking through the plans/specs and can not find any information needed for pricing HVAC equipment. On sheet A151 it calls out in the notes to "*see mechanical plans for extent of HVAC equipment*" however it looks as if nothing has been provided on this throughout the plans or specifications. If you have any additional information regarding this issue that you could share, it would be greatly appreciated.

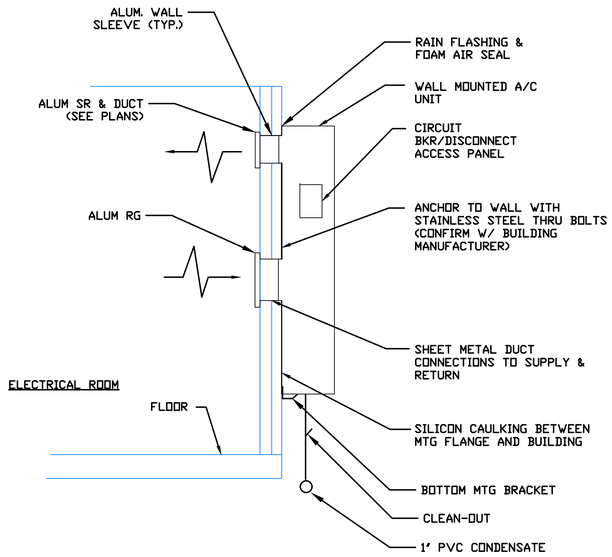
A1. See the attached Sheet No. H 1.

Shannon Hopper

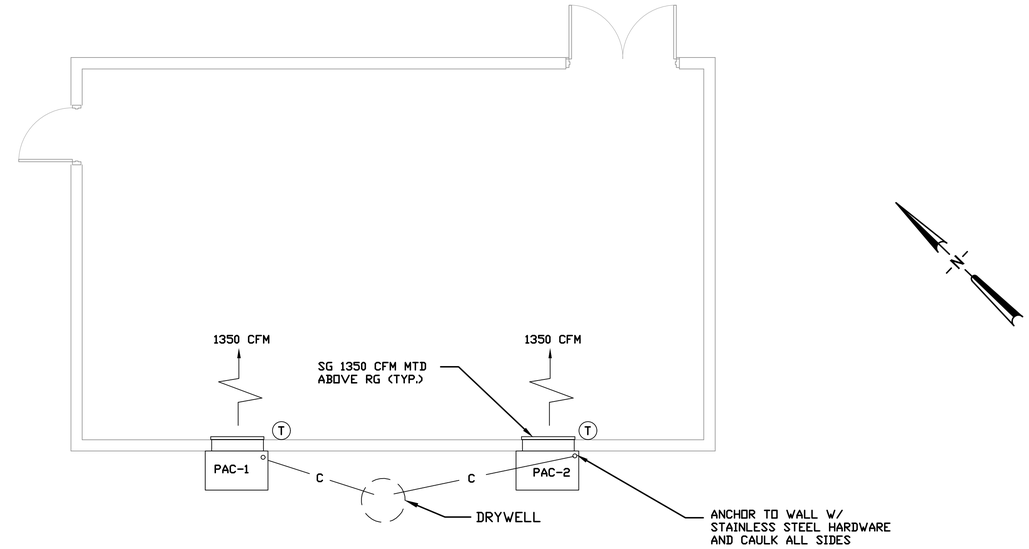
Shannon Hopper
Purchasing Technician

cc: Jamie Croteau, Utilities Director

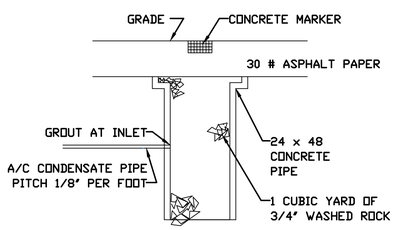
Attachments: Sheet No. H 1



TYPICAL MTG WALL MOUNTED A/C UNITS



ELECTRICAL BUILDING HVAC PLAN
1/4" = 1'



DRYWELL DETAL

PAC ACCESSORIES

1. LOW AMBIENT CONTROL
2. MC4000 CONTROLLER
3. ANTI-SHORT CYCLE
4. FRESH DAMPER
5. FACTORY T-STAT
6. CONDENSER COIL COATING
7. STAINLESS STEEL HOUSING
8. ALUM. AIR SUPPLY & RETURN GRILLES

AIR COOLED PACKAGED WALL MOUNTED A/C UNITS

ITEM NO.	NO. REQ'D	AREA SERVED	SYSTEM CAPACITY		INDOOR FAN			CONDENSER				COMPRESSOR		ELECTRICAL			FILTERS		HEAT	CABINET MATL	COATING COIL	ACCESSORIES	BARD MODEL NO.
			TONS	EER	CFM	WG	O/A	OSA F	CFM	REF.	WT.	NO.	TYPE	MOCP	VOLT	PHASE	QUA.	SIZE	KW				
PAC-E1	1	MAIN ELECTRICAL BLDG	3.5	11.0	1350	.2	0	95	3000	410A	490	1	SCROLL	14	208	1ø	2	20X20X1	0	STAINLESS STEEL	CONDENSER	1,3,5,6,7,8	W42AC-CA-00-B-X-S-E
PAC-E2	1	MAIN ELECTRICAL BLDG	3.5	11.0	1350	.2	0	95	3000	410A	490	1	SCROLL	14	208	1ø	2	20X20X1	0	STAINLESS STEEL	CONDENSER	1,3,5,6,7,8	W42AC-CA-00-B-X-S-E

THIS DOCUMENT HAS BEEN DIGITALLY SIGNED AND SEALED BY:

PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED. THE SIGNATURE MUST BE VERIFIED ON THE ELECTRONIC DOCUMENTS.

cph
www.cphcorp.com
A Full Service A & E Firm
1992 SW 1st. Street
Miami, FL 33135
Ph: 305.274.4805
Plans Prepared By:
CPH, Inc.
State of Florida Licenses:
Engineer No. 3215
Surveyor No. LB7143
Architect. No. AA26000926
Landscape No. LC000298

WILLARD C. HOANSHELT LICENSE No. 42593 STATE OF FLORIDA PROFESSIONAL ENGINEER

EMI COA 6160
5742 Riverbed Rd,
Groveland, FL 34736
P: 352.460.4035
WILLARD C. HOANSHELT, P.E.
FLORIDA P.E. NO. 42593

No.	Date	Revision

Designed: W.C.H.
Drawn: J.P.H.
Checked: W.C.H.
Job No.: E12345
Date: 6/6/22
© 2023

ELECTRICAL BUILDING LIGHTING PLAN

CITY OF OCOEE WTP
ELECTRICAL REHAB
ORANGE COUNTY, FL

THIS SHEET NOT VALID FOR CONSTRUCTION WITHOUT COMPLETE SET OF PLANS.

Sheet No.
H 1

Mayor
Rusty Johnson

City Manager
Robert Frank

Commissioners
Scott R. Kennedy, District 1
Rosemary Wilsen, District 2
Richard Firstner, District 3
Ages Hart, District 4

January 3, 2024

ADDENDUM NO. SIX (6)
CITY OF OCOEE
ITB #24-001 OCOEE WWTF ELECTRICAL UPGRADE & EXPANSION

This addendum shall modify and become a part of the original ITB Documents for ITB #24-001. This addendum consists of one (1) page. Bidders should acknowledge receipt of this addendum in the space provided in the Bid Form. Failure to do so may subject the Bidder to disqualification. **The Bid Submission Deadline has changed.**

Amendments to the ITB Documents are as follows:

In order to allow the City time to properly answer questions received from prospective bidders and allow prospective bidders more time to complete their Bid in response to addenda, the **Bid Submission Deadline has been rescheduled to Wednesday, January 10, 2024 at 2:00 p.m. local time, and the virtual public bid opening will follow at 2:01 p.m. local time or as soon thereafter as possible.** Updated instructions on how to join the virtual public bid opening will be posted on Bonfire.

Shannon Hopper

Shannon Hopper
Purchasing Technician

cc: Jamie Croteau, Utilities Director

Mayor
Rusty Johnson

City Manager
Robert Frank

Commissioners
Scott R. Kennedy, District 1
Rosemary Wilsen, District 2
Richard Firstner, District 3
Ages Hart, District 4

January 5, 2024

ADDENDUM NO. SEVEN (7)
CITY OF OCOEE
ITB #24-001 OCOEE WWTF ELECTRICAL UPGRADE & EXPANSION

This addendum shall modify and become a part of the original ITB Documents for ITB #24-001. This addendum consists of one (1) page. Bidders should acknowledge receipt of this addendum in the space provided in the Bid Form. Failure to do so may subject the Bidder to disqualification.

Answers to questions received and/or Amendments to the ITB Documents are as follows:

Q1. Can you confirm if the new blower piping is to be Ductile Iron like the existing? Any Lining requirements?

A1. Yes, the new blower piping will be ductile iron. Bare interior pipe, no liner.

Shannon Hopper

Shannon Hopper
Purchasing Technician

cc: Jamie Croteau, Utilities Director

STAFF REPORT

Meeting Date: February 6, 2024
Item #: 5

Contact Name: Milen Womack
Contact Number: Ext. 6013

Department Director: Stephen Krug
City Manager: Robert Frank

Subject: Approval of Clarke Road Widening Property Purchase Agreement. (Public Works Director Krug)

Background Summary:

The City is currently widening Clarke Road between A.D. Mims Road and Clarcona-Ocoee Road to a four-lane section. The widening of Clarke Road will eliminate the existing driveway for Public Lift Station 32. The widening of Clarke Road utilizing the entire right-of-way and additional land is required to re-establish the driveway for Lift Station 32. Lift Station 32 is surrounded by a retention pond tract of land, owned by the Reserve at Meadow Lake Homeowners Association, Inc. An agreement between the HOA and the City has been reached for the City to purchase approximately 2,000 square feet (0.044 acres) for the proposed Lift Station 32 driveway, for $11,407.00. The purchase price was 10% above the appraised value of the property, as established by BBG, Inc. Real Estate Services, which is consistent with past City property purchases policies. Public Works recommends approval of the Purchase Agreement.

Issue:

Should the Honorable Mayor and City Commissioners approve and sign the Purchase Agreement with the Reserve at Meadow Lake Homeowners Association, Inc for the total amount of $11,407.00?

Recommendations:

Staff recommends the Honorable Mayor and City Commissioners approve and sign the Purchase Agreement with the Reserve at Meadow Lake Homeowners Association, Inc. for the amount of $11,407.00.

Attachments:

1. Reserve at Meadow Lake Appraisal
2. Purchase Agreement

Financial Impacts:

The purchase of land from the Reserve at Meadow Lake Homeowners Association, Inc. in the amount of $11,407.00 (eleven thousand four hundred seven dollars and zero cents) is adequately funded within the Clarke Road Widening Project Budget (Job Number P000242).

Type of Item: Consent

BBG
REAL ESTATE SERVICES

The insight you need. The independence you trust.

Reserve at Meadow Lake Homeowners Association Inc. Property

Clarke Road
Ocoee, Florida 34761

BBG File #0123116878

Prepared For
Mary Doty Solik
Doty Solik Law
121 South Orange Avenue; Suite 1500
Orlando, Florida 32801

Report Date
October 2, 2023

Prepared By
BBG, Inc., Winter Park (Orlando) Office
1601 East Amelia Street
Orlando, Florida 32803
407-895-6650

Client Manager: Daniel DeRango, MAI, CCIM
danielderango@bbgres.com

BBG Website
bbgres.com

Valuation + Assessment

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October 2, 2023

Mary Doty Solik
Doty Solik Law
121 South Orange Avenue Suite 1500
Orlando, Florida 32801

Re: Appraisal of a proposed acquisition from the Reserve at Meadow Lake Homeowners Association property.

Dear Ms. Solik:

We have personally inspected and appraised the above referenced property and proposed acquisition area to be acquired by the City of Ocoee. The purpose of our appraisal is to estimate the market value of the property rights to be acquired within the acquisition area. The intended use of the appraisal is to provide assistance and guidance in the right of way acquisition by the City of Ocoee possibly through eminent domain actions.

The scope of our services included a site visit and research of property data and market data for comparison purposes. Our conclusions are presented in the attached appraisal report. Our appraisal has been prepared in conformance with the requirements and guidelines set forth in the Uniform Standards of Professional Appraisal Practice (USPAP) and the regulations of the Appraisal Institute.

Our value estimates effective September 10, 2023, are documented in the attached report, and summarized below:

Value of Acquisition - Meadow Lake Homeowners Association Inc.	
Use of Acquired Rights:	Fee Simple*
Land Area (acres)	0.0440
Land Value	$10,120
Improvements (grass, landscaping)	$250
Damages to Remainder	$0
Cost to Cure (Net)	$0
Total Value of Acquisition	**$10,370**

* Subject to Plat

The value reported is qualified by certain assumptions, definitions, limiting conditions and certification statements that are within the attached restricted use appraisal report.

Respectfully submitted,

Daniel R. Derango, MAI, CCIM
State Certified General Real Estate Appraiser
Managing Director
Cert Gen RZ 1054
danielderango@bbgres.com

Joe McKinney
State Registered Trainee Appraiser
RI25646
jmckinney@bbgres.com

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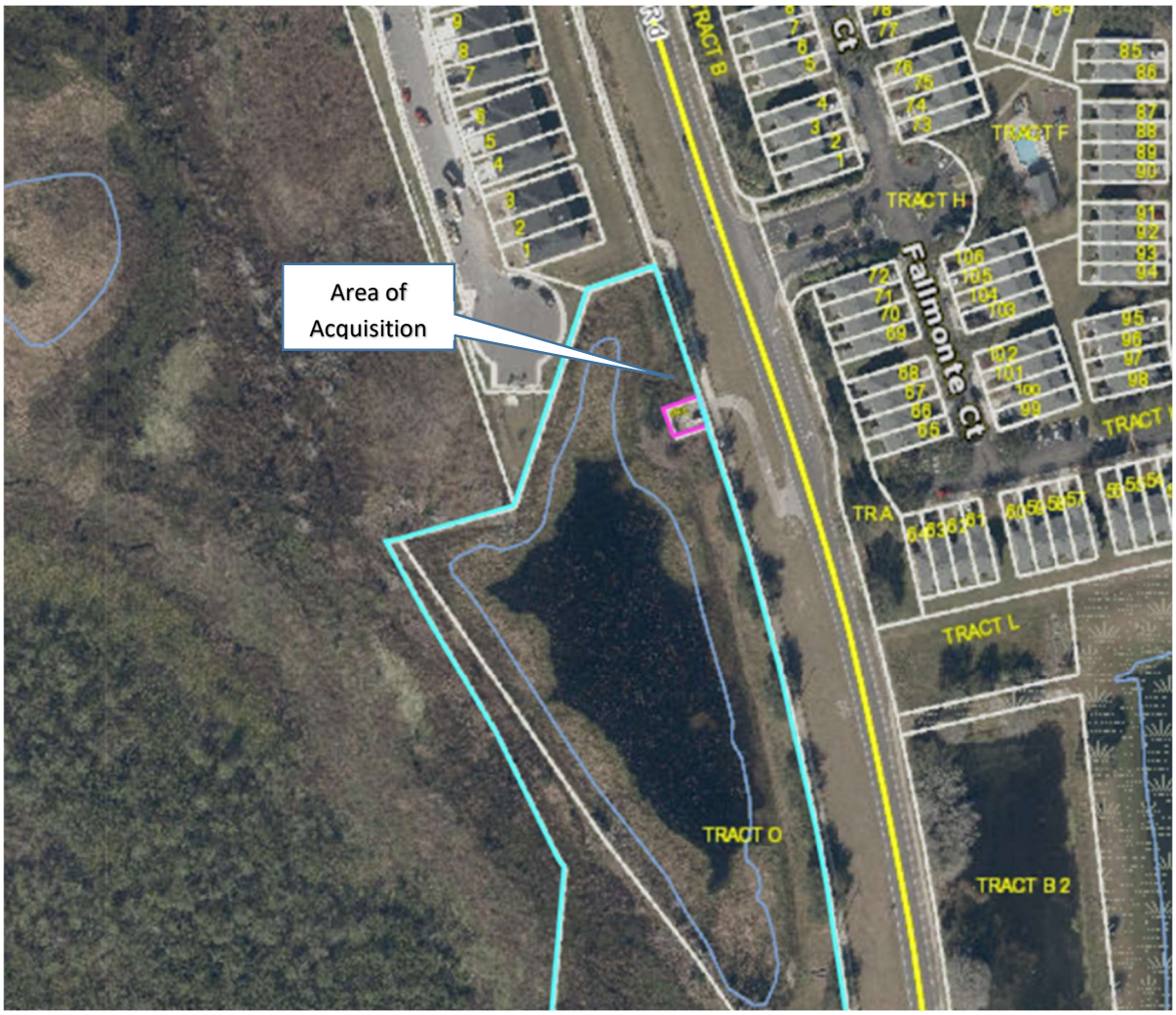
EXTRAORDINARY ASSUMPTIONS

1. We have relied upon a property sketch for the proposed acquisition provided by Allen & Company, Surveyors shown herein. We have assumed the sketch to be accurate for purposes of our appraisal. Our estimates are subject to parcel legal descriptions, surveys and final project plans once available for review.

2. We have estimated property sizes and dimensions based on public records information. We have assumed our estimates to be materially accurate for purposes of our appraisal.

EXECUTIVE SUMMARY



Property Location

The property is located within property platted as the Reserve at Meadow Lake (a single family subdivision) on the west side of Clarke Road in Ocoee, Orange County, Florida.

Parent Tract Overview

The parent tract is the entire Reserve at Meadow Lake subdivision which contains 44.19 acres. The acquisition is in Tract O which is a retention tract dedicated to and maintained by Reserve at Meadow Lake Homeowners Association, Inc.

Owner and Address

Reserve at Meadow Lake Homeowners Association, Inc.
323 Circle Drive
Maitland, Fl 32751

Acquisition Overview

The acquisition is the result of the planned widening of Clarke Road which necessitates a relocation of the access to the lift station to Clarke Road.

Existing Lift Station

The existing lift station tract (Tract L) City of Ocoee Lift Station 32 is rectangular in shape with dimensions of 30.00 feet by 36.50 feet which indicates the tract contains 1,095 square feet. Located along the Clarke Road right of Way is a 10 foot wide landscape easement depicted on the plat.

Proposed Lift station acquisition area

Access to the lift station is being relocated to the irregular shaped parcel containing 1,931 square feet: 0.044 acres. A portion of the acquisition is located within a 10 foot wide landscape easement.

Remainder Parcel Size (After Condition)

After the 0.044 acre acquisition the remainder parcel is reduced very slightly in size to 44.146 acres. The utility of the site is unchanged relative to the property before the acquisition.

Highest and Best Use (After Condition)

The highest and best use is unchanged by the acquisition: Low density single family development

Value Conclusions

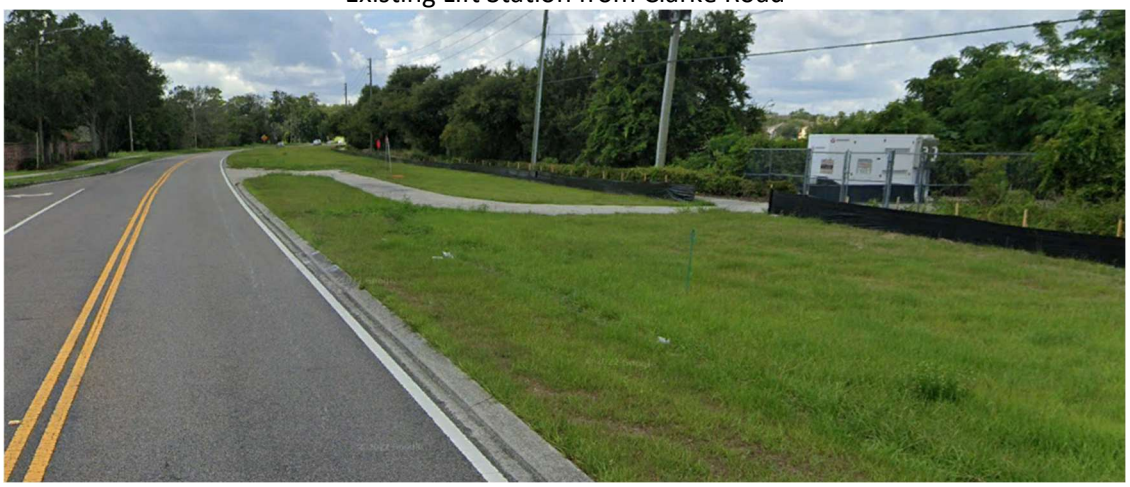
Value of Acquisition - Meadow Lake Homeowners Association Inc.	
Use of Acquired Rights:	Fee Simple*
Land Area (acres)	0.0440
Land Value	$10,120
Improvements (grass, landscaping)	$250
Damages to Remainder	$0
Cost to Cure (Net)	$0
Total Value of Acquisition	**$10,370**

* Subject to Plat

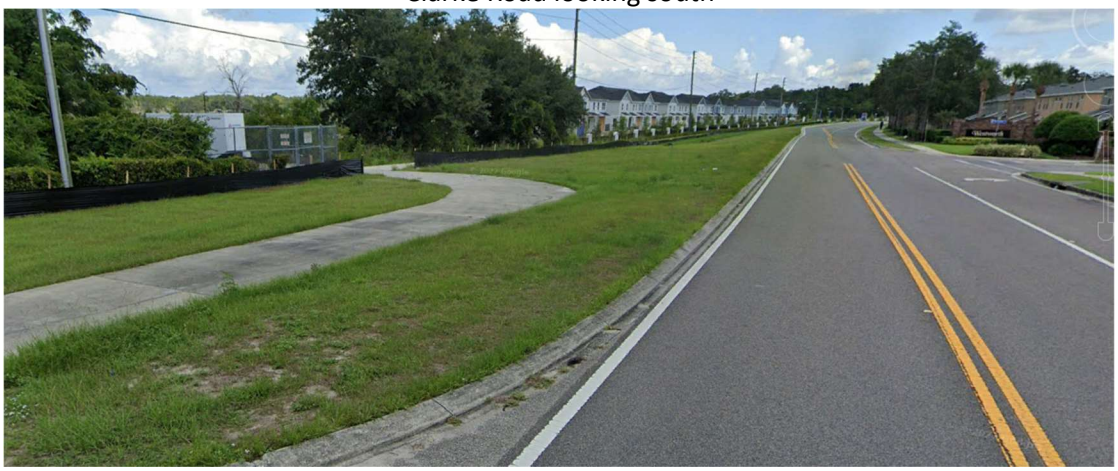
PROPERTY PHOTOGRAPHS

Aerial view of Meadow Lake subdivision

Existing Lift Station from Clarke Road

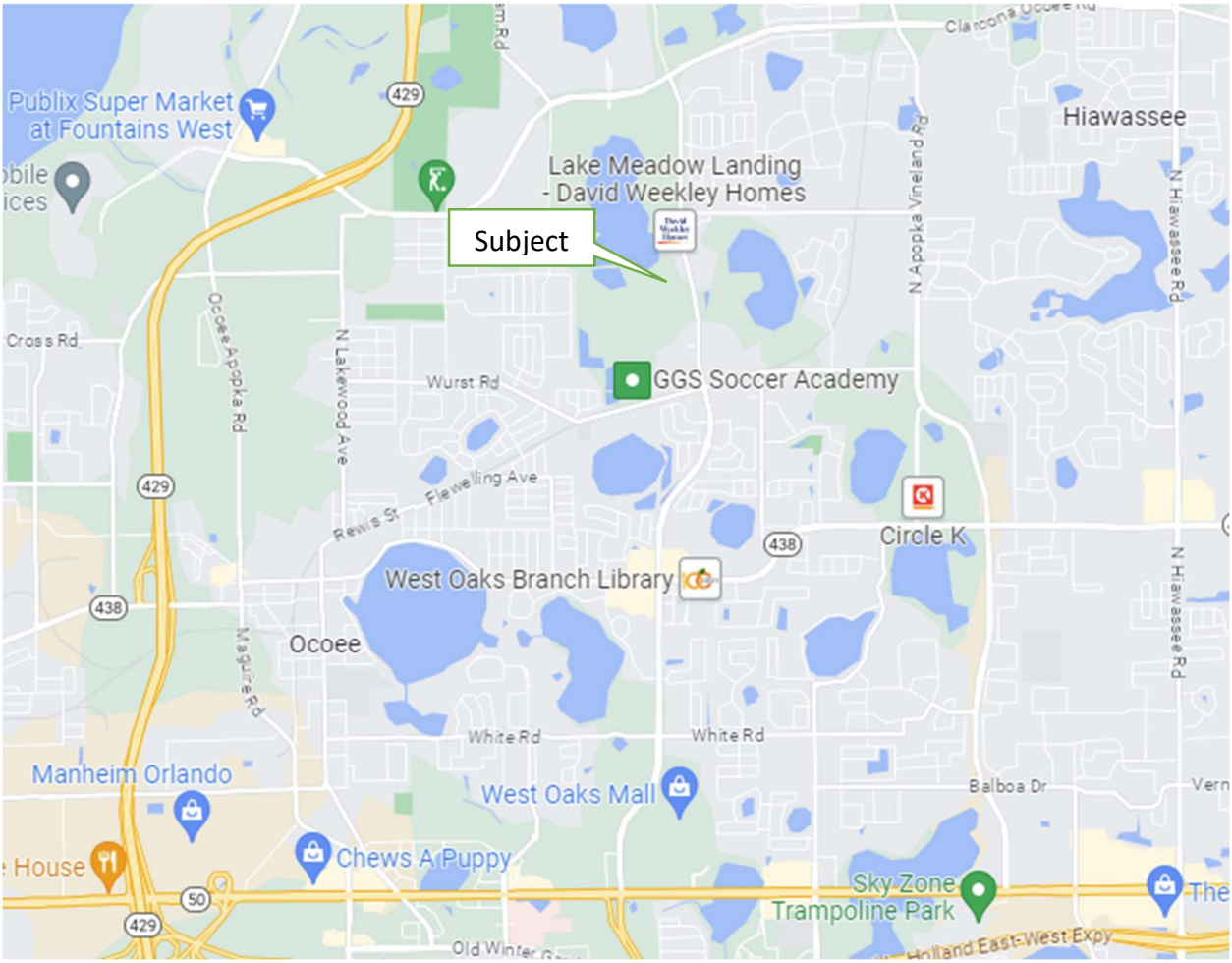


Clarke Road looking south



Clark Road looking north

INTRODUCTION



Purpose and Intended Use of Appraisal

The purpose of this appraisal is to estimate the market value of the land to be acquired by the City of Ocoee from the Reserve at Meadow Lake Homeowners Association Inc. site. We have estimated the market value of the land and the value of any site improvements to be acquired within the area of the acquisition. We have also considered the impacts on the remainder property, if any, that are the result of the acquisition. The appraisal refers to the value of the acquisitions, the effect on market value of the acquisitions, and the damages, if any, to the remainder.

The intended use of this appraisal is assistance and guidance for the City of Ocoee in the acquisition of the property described through eminent domain action. There are no other intended users or intended uses for our appraisal.

Scope of Appraisal and Valuation Methodology

Since the land to be acquired does not have a material impact on the remainder property, the taking will not impact the potential use of the property. We have therefore prepared an appraisal of the land value and incidental site improvements in the taking for the parcel to be acquired. The only approach deemed to apply was the Sales Comparison Approach, which is the most reliable valuation approach in estimating land value. A Sales Comparison Approach was used in establishing the value of the underlying land for the acquisition

Property Interest Appraised

- Parent Tract: Fee Simple Interest. (Subject to plat)
- Right of Way Acquisition: Fee Simple Interest. (Subject to plat)

Legal Description Parent Tract

LEGAL DESCRIPTION:

A PARCEL OF LAND LYING IN SECTION 9, TOWNSHIP 22 SOUTH, RANGE 28 EAST, CITY OF OCOEE, ORANGE COUNTY, FLORIDA, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

COMMENCING AT THE NORTH 1/4 CORNER OF SECTION 9, TOWNSHIP 22 SOUTH, RANGE 28 EAST, CITY OF OCOEE, ORANGE COUNTY, FLORIDA, RUN S01°19'46"E, ALONG THE NORTH-SOUTH CENTER SECTION LINE OF SAID SECTION 9, A DISTANCE OF 1586.09 FEET FOR A POINT OF BEGINNING; THENCE DEPARTING SAID NORTH-SOUTH CENTER SECTION LINE, RUN S69°41'20"E, A DISTANCE OF 126.39 FEET; THENCE S57°39'45"E, A DISTANCE OF 104.11 FEET; THENCE S62°37'35"E, A DISTANCE OF 126.95 FEET; THENCE N65°49'34"E, A DISTANCE OF 83.38 FEET; THENCE S28°49'45"E, A DISTANCE OF 80.21 FEET; THENCE S71°07'19"E, A DISTANCE OF 117.49 FEET; THENCE N57°56'59"E, A DISTANCE OF 47.19 FEET; THENCE N29°57'06"E, A DISTANCE OF 177.41 FEET; THENCE N05°00'05"E, A DISTANCE OF 743.83 FEET; THENCE N33°18'50"W, A DISTANCE OF 9.74 FEET; THENCE N26°23'53"W, A DISTANCE OF 138.11 FEET; THENCE N30°24'14"W, A DISTANCE OF 142.32 FEET; THENCE N28°39'21"W, A DISTANCE OF 78.09 FEET; THENCE N74°31'53"E, A DISTANCE OF 131.37 FEET; THENCE N18°59'51"E, A DISTANCE OF 227.07 FEET; THENCE N71°13'09"E, A DISTANCE OF 69.55 FEET TO A POINT ON THE WESTERLY RIGHT-OF-WAY LINE OF CLARKE ROAD, AS RECORDED IN OFFICIAL RECORDS BOOK 5076, PAGE 4514, PUBLIC RECORDS OF ORANGE COUNTY, FLORIDA; THENCE RUN THE FOLLOWING COURSES AND DISTANCES ALONG SAID WESTERLY RIGHT-OF-WAY LINE; THENCE S18°46'51"E, A DISTANCE OF 150.85 FEET TO THE POINT OF CURVATURE OF A CURVE CONCAVE WESTERLY, HAVING A CENTRAL ANGLE OF 21°09'36" AND A RADIUS OF 3224.05 FEET; THENCE RUN SOUTHERLY, ALONG THE ARC OF SAID CURVE, A DISTANCE OF 1190.68 FEET TO THE POINT OF TANGENCY; THENCE S02°22'45"W, A DISTANCE OF 239.98 FEET TO THE POINT OF CURVATURE OF A CURVE CONCAVE EASTERLY, HAVING A CENTRAL ANGLE OF 15°02'59" AND A RADIUS OF 3324.05 FEET; THENCE RUN SOUTHERLY, ALONG THE ARC OF SAID CURVE, A DISTANCE OF 873.11 FEET TO A POINT ON A CURVE CONCAVE EASTERLY, HAVING A CENTRAL ANGLE OF 00°44'08" AND A RADIUS OF 4108.85 FEET; THENCE FROM A TANGENT BEARING OF S11°18'13"E, RUN SOUTHERLY, ALONG THE ARC OF SAID CURVE, A DISTANCE OF 52.75 FEET; THENCE DEPARTING SAID WESTERLY RIGHT-OF-WAY LINE, RUN S75°23'15"W, A DISTANCE OF 204.22 FEET; THENCE S14°37'23"E, A DISTANCE OF 260.08 FEET TO A POINT ON THE NORTH RIGHT-OF-WAY LINE OF THE SEABOARD SYSTEM RAILROAD (A 60.00 FOOT RIGHT-OF-WAY); THENCE S75°23'15"W, ALONG SAID NORTH RIGHT-OF-WAY LINE, A DISTANCE OF 984.41 FEET TO A POINT ON THE AFOREMENTIONED NORTH-SOUTH CENTER SECTION LINE,; THENCE DEPARTING SAID NORTH RIGHT-OF-WAY LINE, RUN N01°19'46"W, ALONG SAID NORTH-SOUTH CENTER SECTION LINE, A DISTANCE OF 1742.22 FEET TO THE POINT OF BEGINNING

CONTAINING 44.19 ACRES MORE OR LESS.

Homeowners Association Tracts

Tracts A, B, C, D, E, F, G, H, I, K, M, O, Q and T according to the Plat of Reserve at Meadow Lake as recorded in Plat Book 71, Page 108, of the Public Records of Orange County, Florida (the "Property").

Parent Tract Tax (Orange County Property Appraiser ID #)

28-22-09-7366-15-000

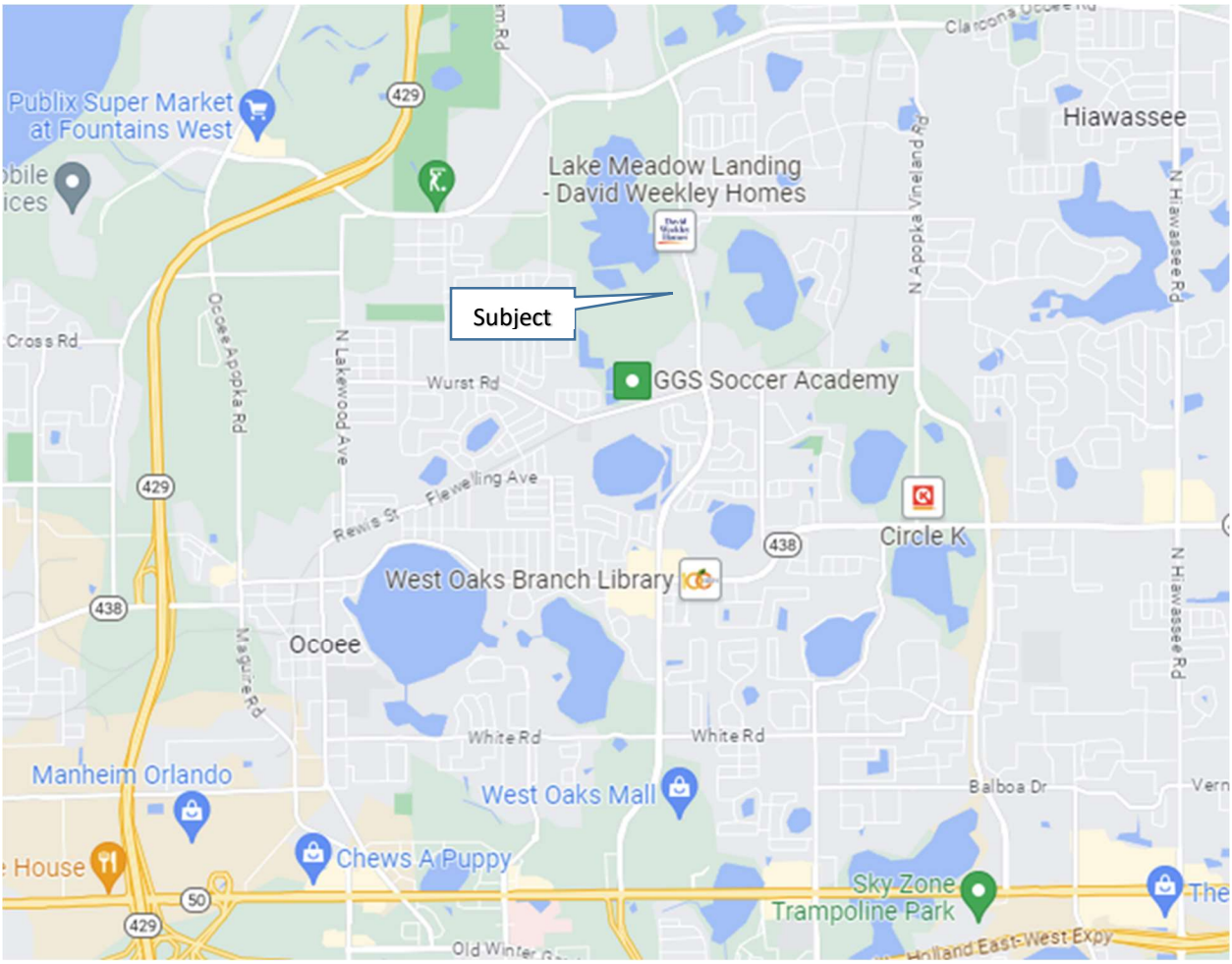
History of the Property

The tracts of land owned by the Reserve at Meadow Lake Homeowners Association Inc were transferred from the Ryland Group, Inc. (original developer) on March 6, 2008, as recorded in OR Book 09632 Page 2884 of the Orange County Official Records.

Property Inspection

Mr. Daniel R. DeRango, MAI inspected the property on September 5, 2023. No owner representative was present during the site visit which included a complete inspection of the land, including the area of the taking.

NEIGHBORHOOD OVERVIEW



The neighborhood is in the city of Ocoee in west Orange County. This neighborhood is largely developed with residential uses with supporting commercial uses along major commercial roadways.

The property is in a market that has good access to major roadways and is in the growth phase of its life cycle. Demand for properties of all types in the immediate area is high and is projected to continue for the foreseeable future. Given current market trends, we expect these patterns to continue for the foreseeable future and the outlook for the neighborhood is generally positive. The long-term outlook remains favorable.

Downtown Master Plan

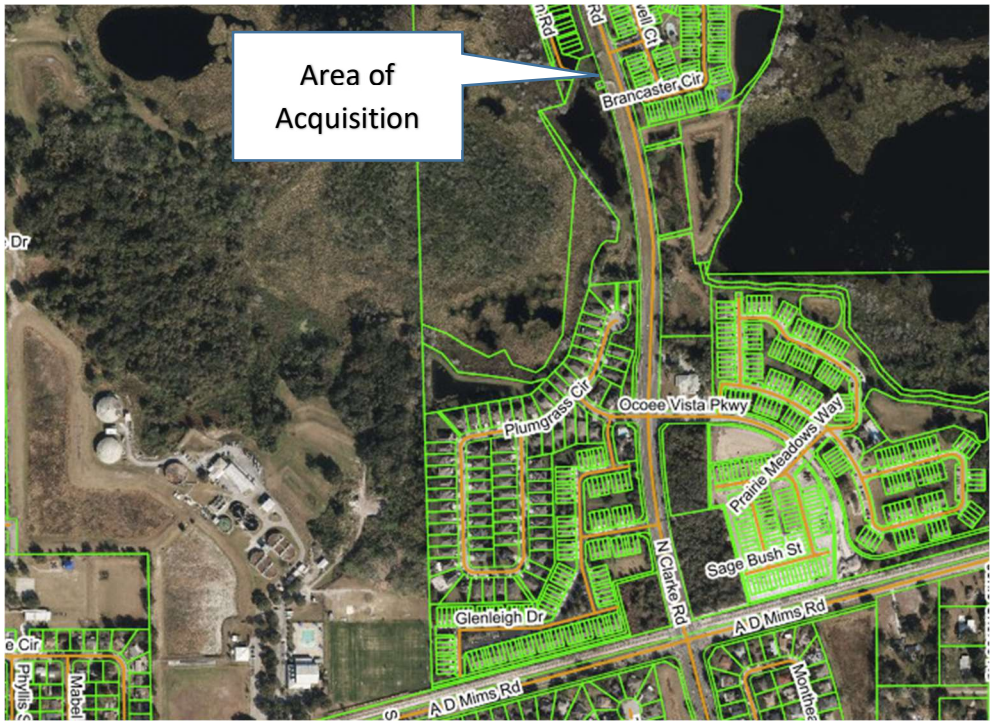
In 2016, the citizens of Ocoee participated in an intensive planning and design process that resulted in the Downtown Ocoee Master Plan. In the Spring of 2017, the Downtown Master Plan implementation program was approved by the City Commission.

The Master Plan included more than $44 million in capital projects program to enhance public spaces and key infrastructure in Downtown Ocoee. The City's capital projects will create or expand public spaces along the western shore of Starke Lake. The projects will provide infrastructure to the downtown area, including a stormwater facility which will serve several blocks, that is critical to the project.

Located at the City's Municipal Campus, the expansion of the Lakeshore Center, West Orange County's premier event destination offer the community a state-of-the-art Center that has space for a 400-seat event. Bill Breeze Park and the Withers-Maguire House grounds have been upgraded with new landscaping and outdoor event spaces.

Bluford Avenue utilities upgrade and streetscape is complete, offering expanded sewer and a downtown trail connecting Silver Star Road to just south of Ocoee Middle School. The Reserve at Meadow Lake is located northeast of downtown Ocoee.

PROPERTY DESCRIPTION BEFORE THE TAKING



Location

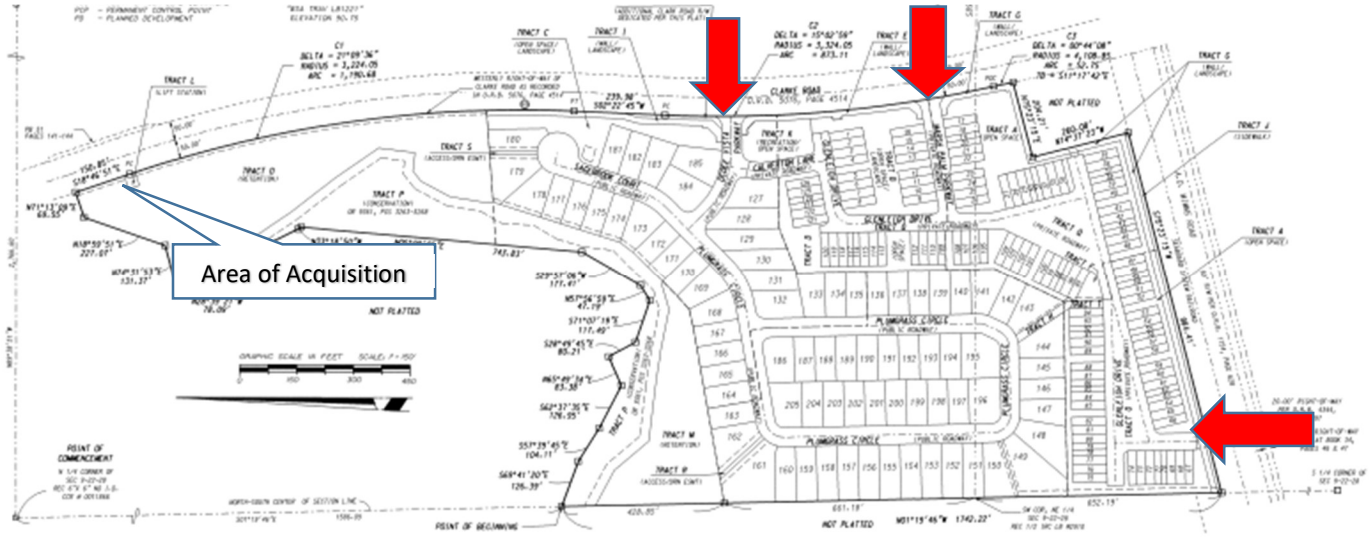
The parent tract is a site located on the northwest corner of Clarke Road and A.D. Mims Road, in Ocoee, Orange County, Florida. The site is in Ocoee/Winter Garden area of West Orange County.

Land Area

The parent tract is the 44.19 ± acre parcel that makes up the Reserve at Meadow Lake subdivision.

Shape

The larger parcel has an irregular shape and includes frontage along A.D. Mims and Clarke Road.



Access & Exposure

The site has access and exposure to A.D. Mims Road and Clarke Road. As developed, there is an access drive from A.D. Mims near the western property boundary and two access drives from Clarke Road. The parcel has good access and good exposure to the Ocoee community.

Topography and Soils

The site is generally level and at road grade. The soils series for the site is Candler and Tavares soils. Candler soils are formed in thick beds of eolian or sandy marine deposits. Tavares soils are very deep, moderately well drained soils that are also formed in of eolian or sandy marine deposits.

Utilities

All utilities are available. Utilities are provided by the City of Ocoee.

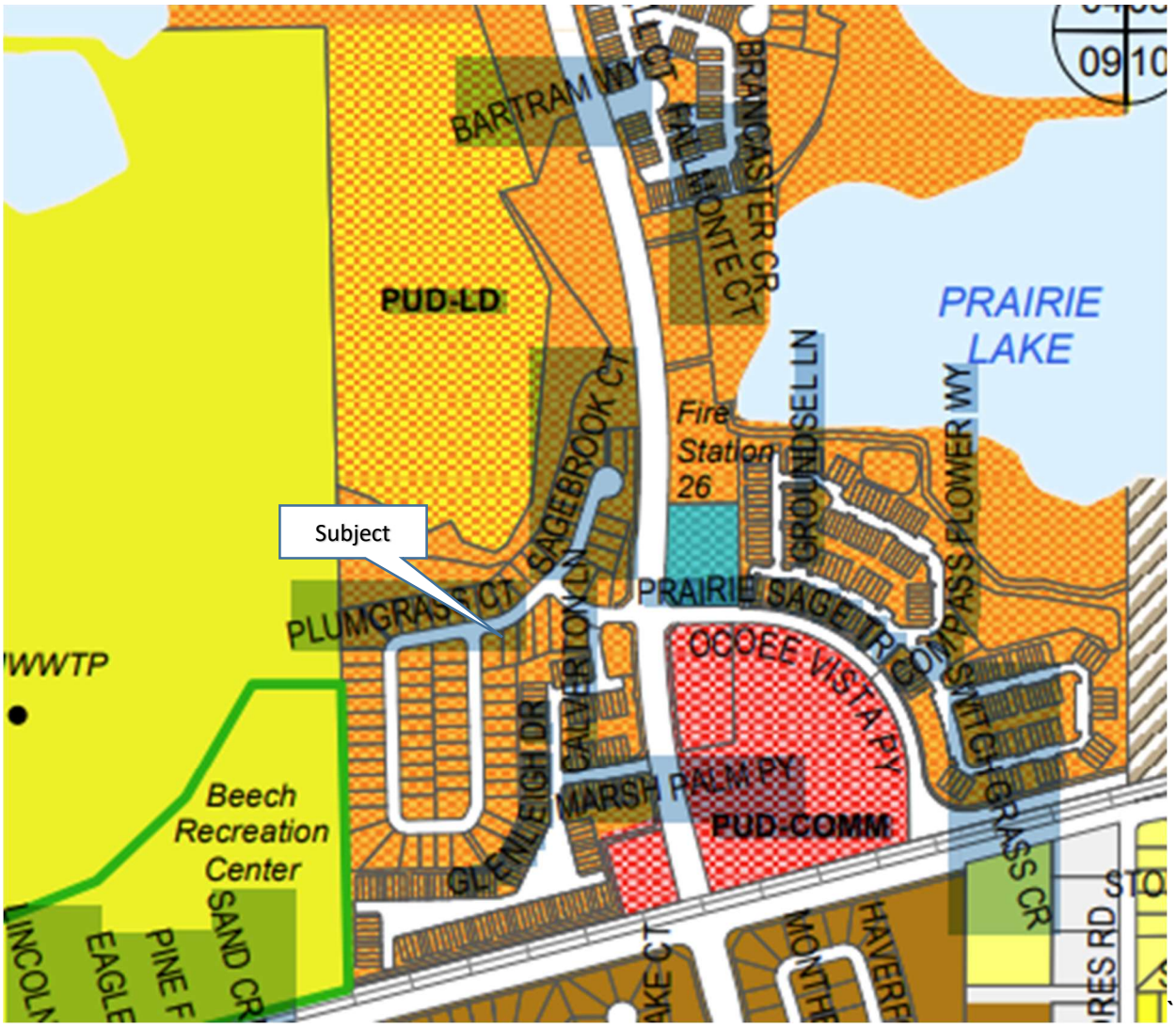
Real Estate Taxes and Assessments

The acquisition is part of OCPA Parcel Number 28-22-09-7366-15-000 Orange County. The assessment is for the common areas of the subdivision. Therefore, the Orange County Property Appraiser (OCPA) assessments for the property is $0.00. The taxes are also $0.00.

Zoning and Land Use Designation

The property is zoned PUD-MD: Planned Unit Development Medium Density. The zoning and future land use are consistent.

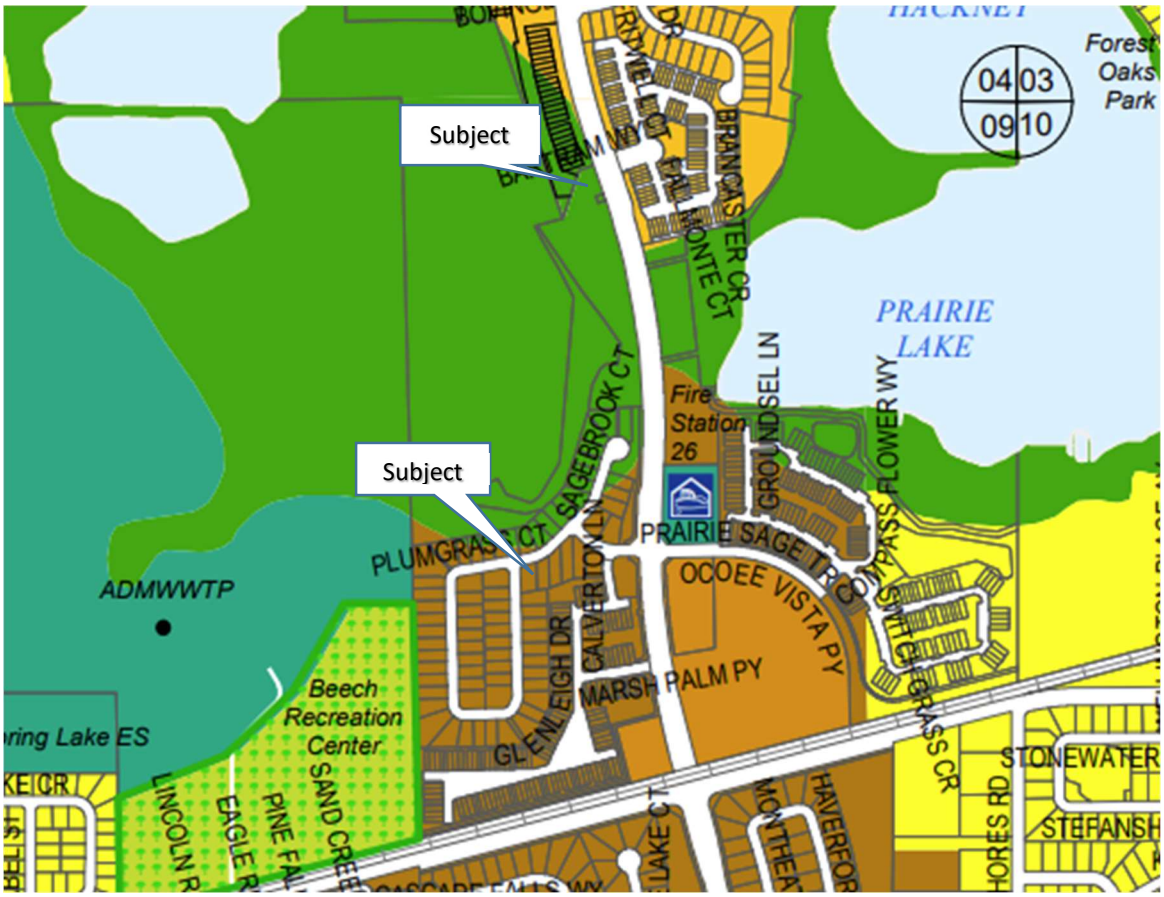
Zoning Map



Medium Density (PUD)

Future Land Use Map

The property has two future land uses HDR: High Density Residential and CONS: Conservation/Floodplains



Easements & Encumbrances

The property is located within a platted subdivision: Reserve at Meadow Lake PB 71/PG 108. The area being acquired lies within Tract O which is a retention tract dedicated to and maintained by Reserve at Meadow Lake Homeowners Association Inc. The existing lift station is in Tract L; a Lift Station Tract dedicated to the City of Ocoee and maintained by Reserve at Meadow Lake Homeowners Association, Inc. The site is also encumbered by a 10 foot landscape easement along the Clarke Road right of way.

HIGHEST AND BEST USE

In estimating the highest and best use of the property, we have evaluated those uses that are legally permissible, physically possible, economically supported, and which would result in the highest return to the land. In appraisal practice, the Highest and Best Use Analysis is the foundation upon which the valuation of a property is based.

Legal Considerations

The property is zoned PUD-MD with future land use designations of HDR and CONS. The zoning and land use designations are consistent and permit low to medium density residential development. The subject is encumbered by the Reserve at Meadow Lake and the restrictions noted on the Plat.

Physical Considerations

The total site size is 44.19 ± acres with good access and exposure to the Ocoee area. The site has an adequate configuration and topography for development. Utilities are available to the tract. The tract is physically well suited for development.

Economic Considerations

The site is in the Ocoee/Winter Garden communities. The area continues to be a major activity center for both residential and commercial uses. The long-term outlook for the neighborhood and property is positive.

Conclusion

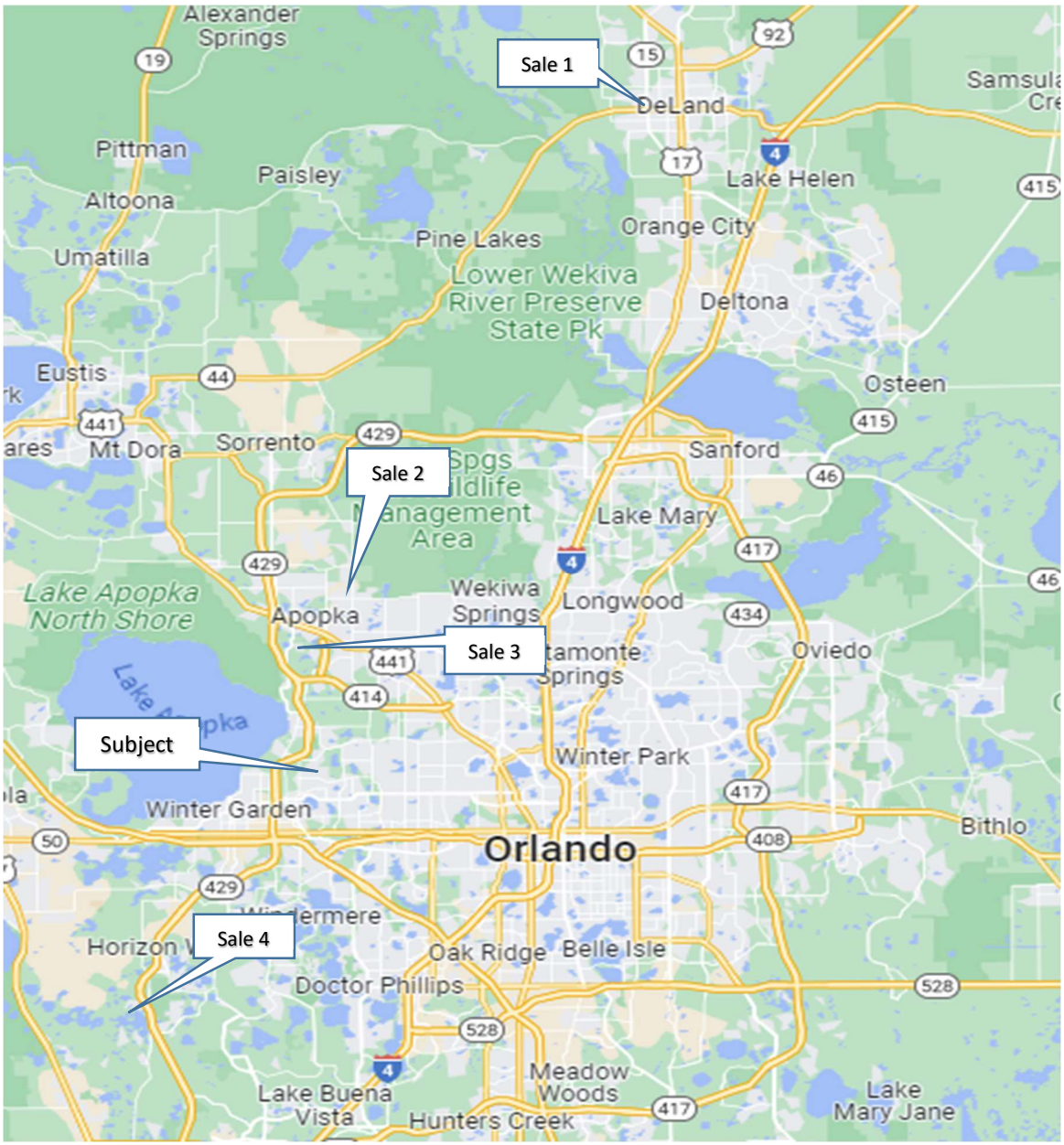
The property is suited to low to medium density single family development consistent with the uses permitted under the zoning and land use designation. Therefore, the highest and best use of the site as vacant is for low to medium density residential development, subject to the plat.

APPRAISAL PROCESS

The first step in our valuation is to estimate the value of the unencumbered underlying land before the acquisition. The land value is used to establish a value of the part of the parent tract that is within the proposed acquisition. The land has been valued by the Sales Comparison (Market) Approach.

Based on our highest and best use of the parent tract as vacant, we have researched and evaluated sales of similar sites in the Central Florida market area for comparison to the appraised tract. The sales in our analysis are discussed as follows:

COMPARABLE LAND SALES

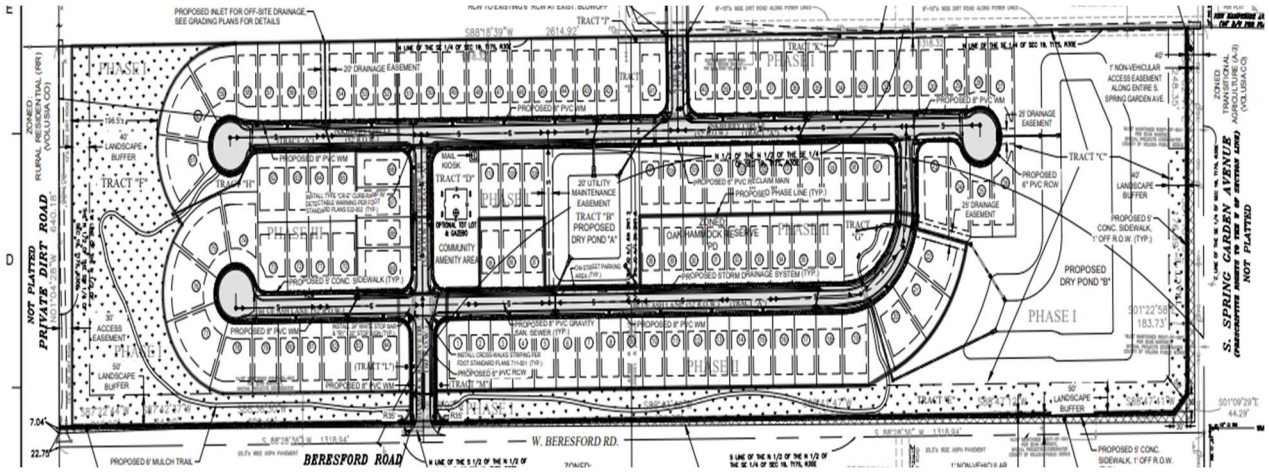


COMPARABLE LAND SALES

Sale Number:	Subject	1	2	3	4
Location	Northwest corner of Clarke Road and A.D. Mims Road	Northwest corner of Spring Garden Avenue South and West Beresford Road	Northwest corner of Jason Dwelley Parkway and Appy Lane	South side of Boy Scout Road just west of Ocoee Apopka Road	West side of Avalon Road at Lake Ingram Road
Address	Clarke Road	West Beresford Road	Jason Dwelley Parkway	Boy Scout Road	Avalon Road
City	Ocoee	Deland	Apopka	Apopka	Winter Garden
County	Orange	Volusia	Orange	Orange	Orange
Grantee (Buyer)		Oak Hammock Holdings, LLC	KLLB AIV LLC	AG EHC II (LEN) Multistate 1 LLC	Pulte Home Company LLC
Grantor (Seller)		AG EHC II LEN Multi State 3 LLC	Summergate Development, LLC	Lennar Homes LLC	Horizons Silverleaf Development LLC
Recording		2023144749	20230183765	20220131533	20230213043
Sale Date		Jul-23	Mar-23	Feb-22	Apr-23
Sale Price		$4,950,000	$4,680,000	$11,461,400	$20,410,500
Terms		Cash to Seller	Cash to Seller	Cash to Seller	Cash to Seller
Usable Land Size (AC)	44.19	38.64	41.32	59.44	78.82
Approved Lots	185	110	76	268	211
Dwelling Units per acre	4.19	2.85	1.84	4.51	2.68
Configuration	Irregular	Rectangle	Irregular	Irregular	Irregular
Corner Site	Yes	Yes	Yes	No	No
Traffic Signal	Yes	Yes	Yes	No	No
Utilities	All Available	All Available	All Available	All Available	All Available
Drainage	On Site	Master Retention	On Site	On Site	On Site
Access	Good to Clarke Road and A.D. Mims Road	Good from West Beresford	Good from Jason Dwelley Parkway	Good from Boy Scout Road	Good from Avalon Road
Exposure	Good to Clarke Road and A.D. Mims Road	Good East Crown Point Road	Good from Jason Dwelley Parkway	Good from Boy Scout Road	Good from Avalon Road
Zoning	PUD-MD	Oak Hammock Reserve PD	RSF-1B	PD	PD
Future Land Use Designation	HDR and CONS	Residential	RVLS	LDR	Village
Price/Land AC		**$128,106**	**$113,262**	**$192,823**	**$258,951**
Comments	Platted in 2008	SJWMD Approvals	SJWMD Approvals	Platted in 2023	Zoned but not platted

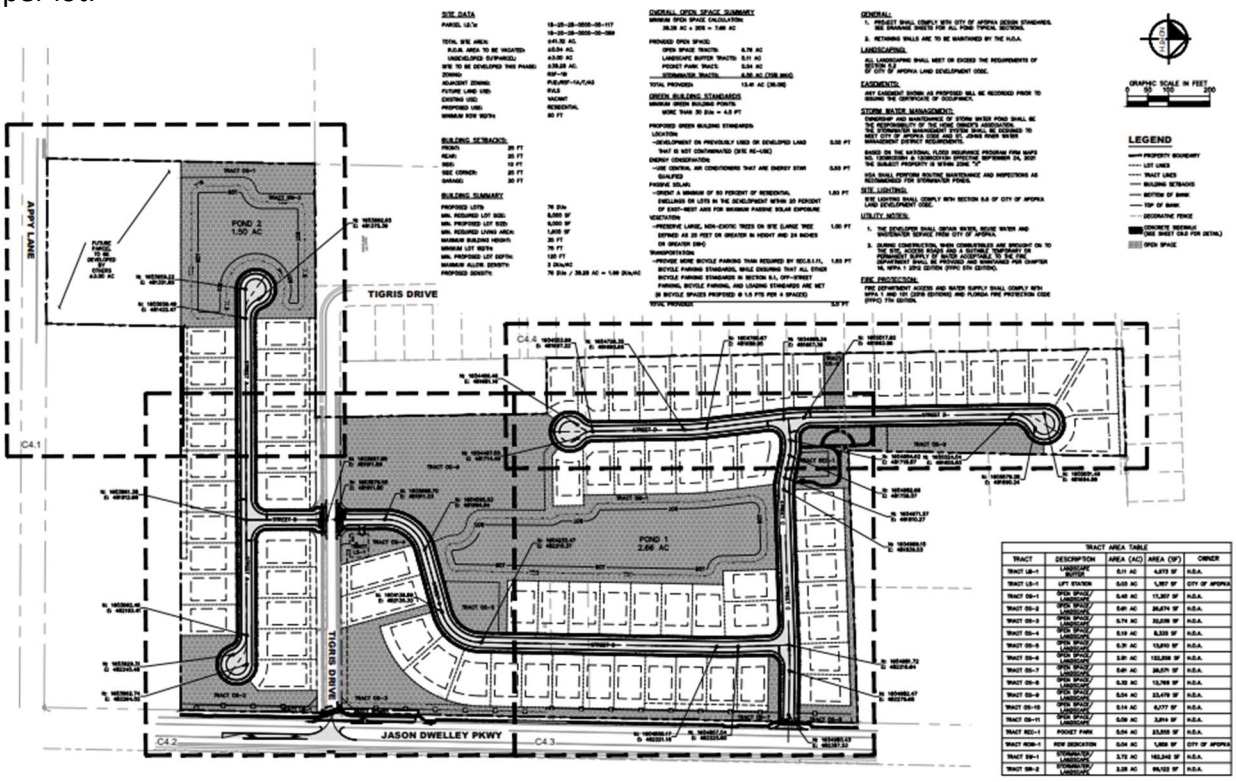
LAND SALE 1 –JULY 2023: $128,106 PER ACRE

Land Sale No. 1 is located on the northwest corner of Spring Garden Avenue South and West Beresford Road in Deland. The land contains 38.64 acres of land and is approved for 110 single family lots reflecting a developed density of 2.85 dwelling units per acre. The property was purchased by Oak Hammock Holdings LLC July 2023 for a purchase price of $4,950,000 which indicates unit values of $128,106 per acre and $45,000 per developed lot.

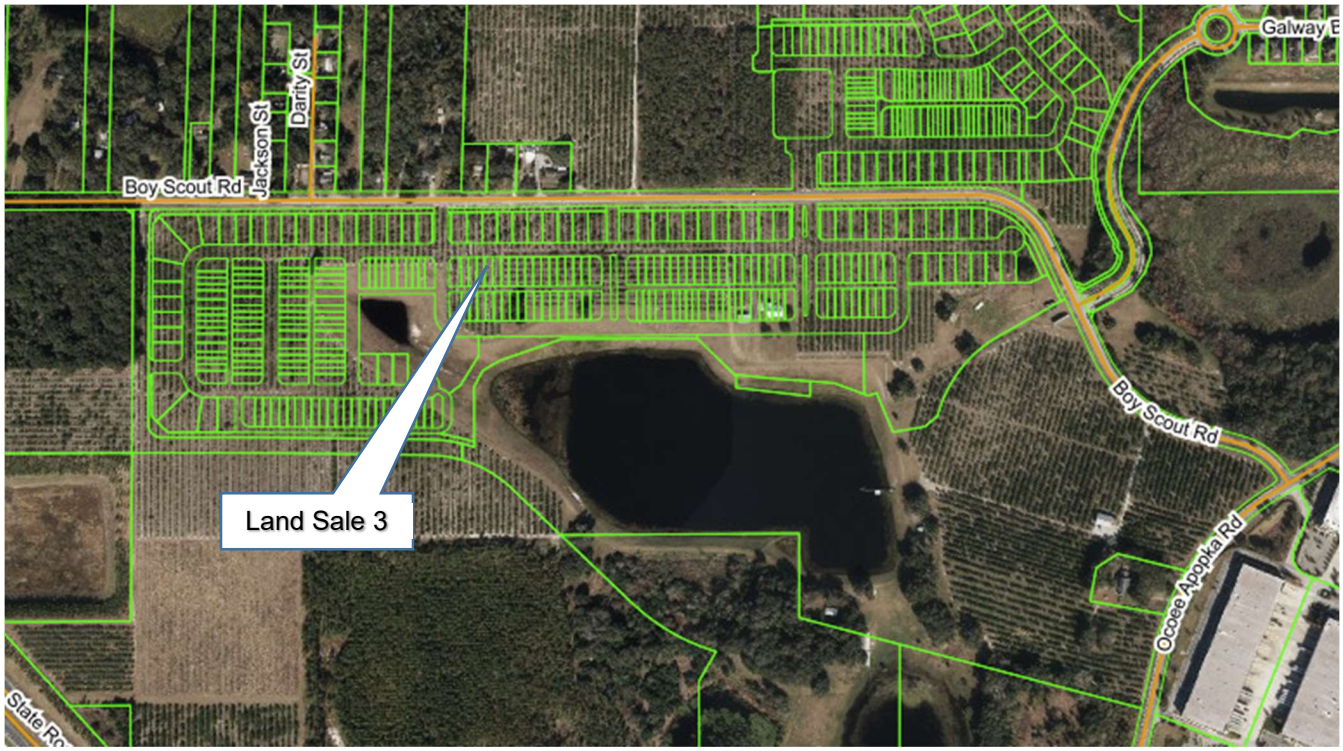


LAND SALE 2 –FEBRUARY 2023: $113,262 PER ACRE

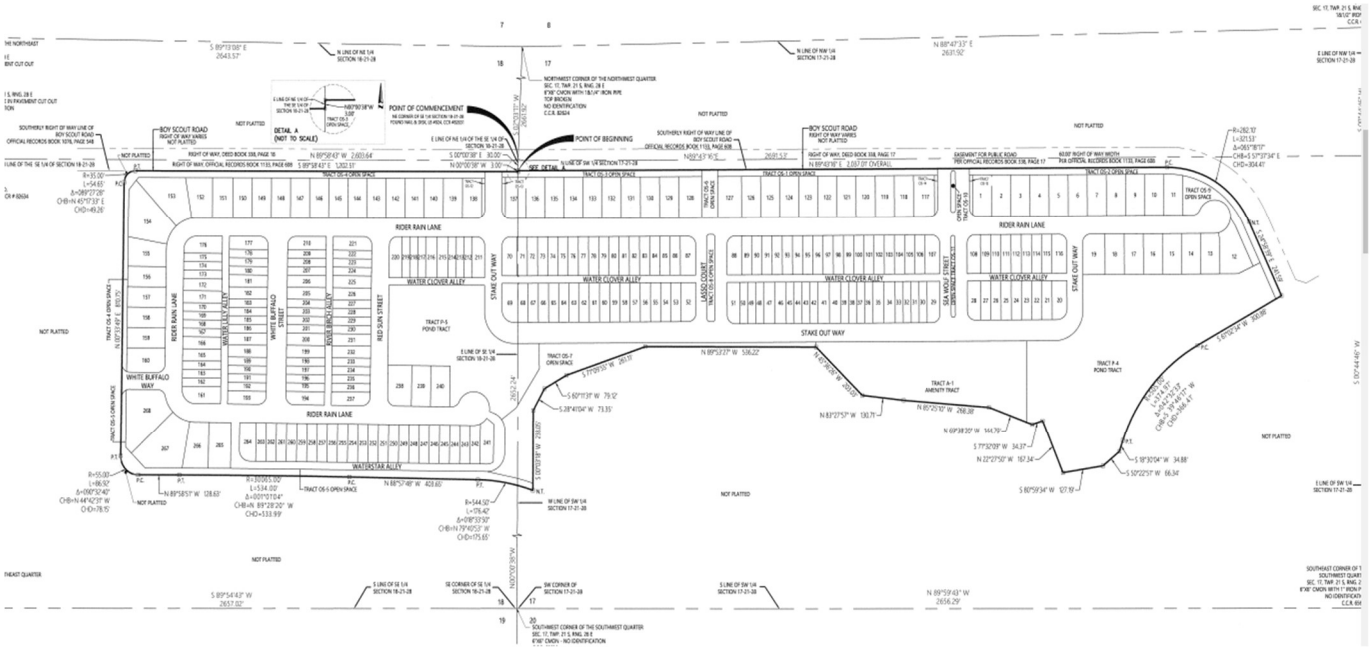
Land Sale No. 2 is located on the northwest corner of Jason Dwelley Parkway and Appy Lane in Apopka. The site contains 41.32 acres and is approved for 76 single family lots indicating a density of 1.84 dwelling units per acre. The property was purchased by KLLB AIV LLC in March of 2023 for a purchase price of $4,680,000 which indicates unit values of $113,262 per acre and $61,579 per lot.



LAND SALE 3- FEBRUARY 2022: $192,823 PER ACRE

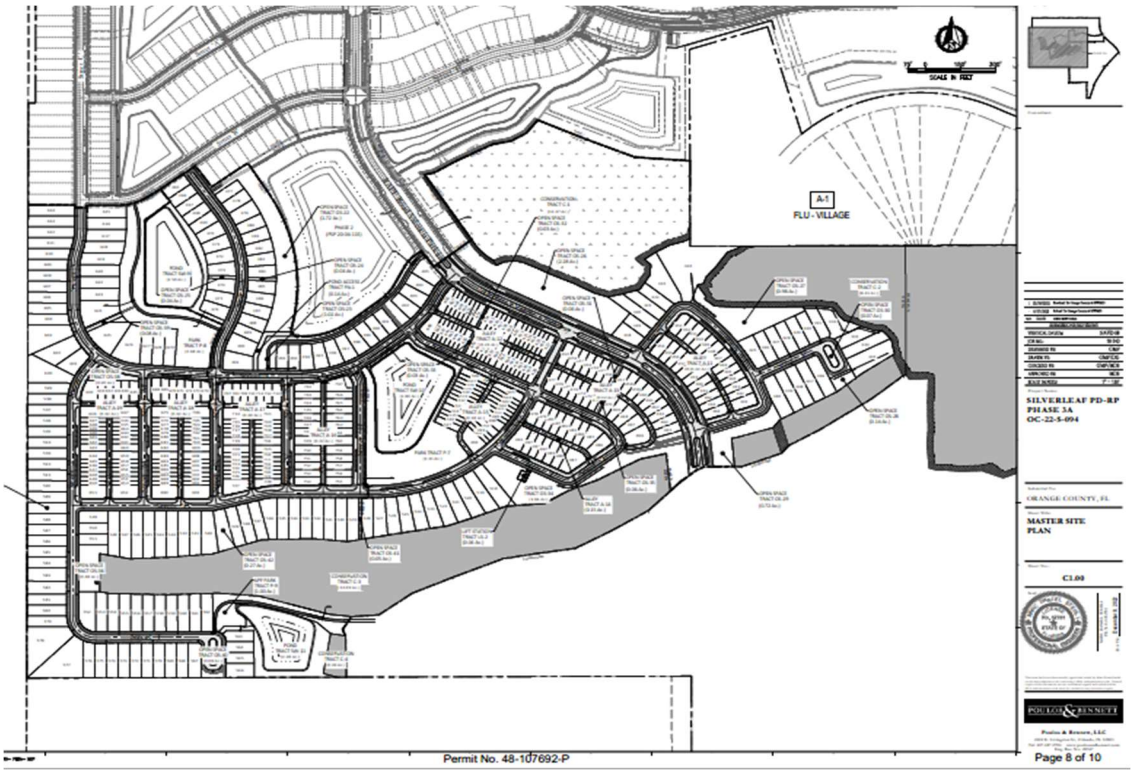


Land Sale No. 3 is located on the south side of Boy Scout Road just west of Ocoee Apopka Road in Apopka. The site contains 59.44 acres and is approved for 268 single family lots indicating a density of 4.51 dwelling units per acre. The property was purchased by AG EHC II (LEN) Multistate 1 LLC in March of 2023 for a purchase price of $11,461,400 which indicates unit values of $192,823 per acre and $42,766 per lot.



LAND SALE 4 –APRIL 2023: $258,951 PER ACRE

Land Sale No. 4 is located on the west side of Avalon Road at Lake Ingram Road in Horizons West, Winter Garden. The site contains 78.82 acres and is approved for 211 single family lots indicating a density of 2.68 dwelling units per acre. The property was purchased by Pulte Home Company LLC in April of 2023 for a purchase price of $20,410,500 which indicates unit values of $258,951 per acre and $96,732 per lot.



Analysis

The land sales indicate a range of unit values from $113,262 per acre to $258,951 per acre with an average of 173,285 per acre.

In evaluating the sales data to arrive at our value conclusion, we have weighed the following:

- The property is located along a north south corridor of Ocoee that is developed with a mixture of residential and uses.
- Three of the four sales are in west Orange County. All the sales will be developed with single family homes with developed densities ranging from 1.84 dwelling units per acre to 4.51 dwelling units per acre and brackets the density of the subject at 4.19 dwelling units per acre.
- The 44.09 acre subject is bracketed by the comparable sales which range from 38.64 acres to 78.82 acres.
- Developable single family residential land is scarce in the Ocoee/Winter Garden property values are increasing.

Comparison Summary

Provided below is a summary of the differences/adjustments between the Comparable Sales and the parent tract.

Comparison Summary					
Price/Land AC		$128,106	$113,262	$192,823	$258,950
Market Conditions	Sep-23	Similar	Similar	Similar	Similar
Conditions of Sale	Market	Similar	Similar	Similar	Similar
Location	Good	Inferior	Similar	Superior	Superior
Access	Good	Similar	Inferior	Inferior	Similar
Exposure	Good	Inferior	Inferior	Superior	Similar
Land Size (AC)	44.19	Similar	Similar	Similar	Similar
Dwelling Units per acre	4.19	Similar	Inferior	Similar	Similar
Adjusted Sales Price	Subject	Inferior	Inferior	Slightly Inferior	Superior

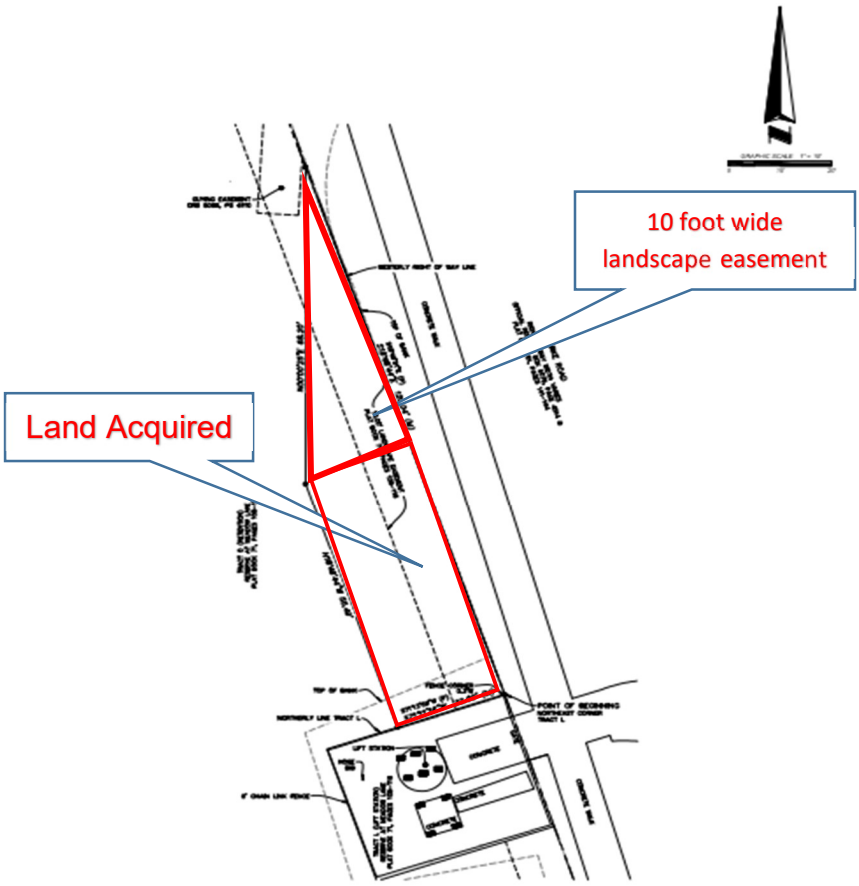
Land Value Conclusion:

The value of the parcel is above the average price per acre of the of the comparables. The scarcity of lands available for development in the built-up neighborhood and the levels of traffic exposure are favorable comparison factors. Based on the available data, our value is estimated as follows:

Land Value of Parent Tract Before the Acquisition		
Land Size (AC)	Price Per AC	Value Estimate
44.19	$230,000	$10,164,000

DESCRIPTION OF THE LAND ACQUIRED:

A sketch of description of the land being acquired is provided below:



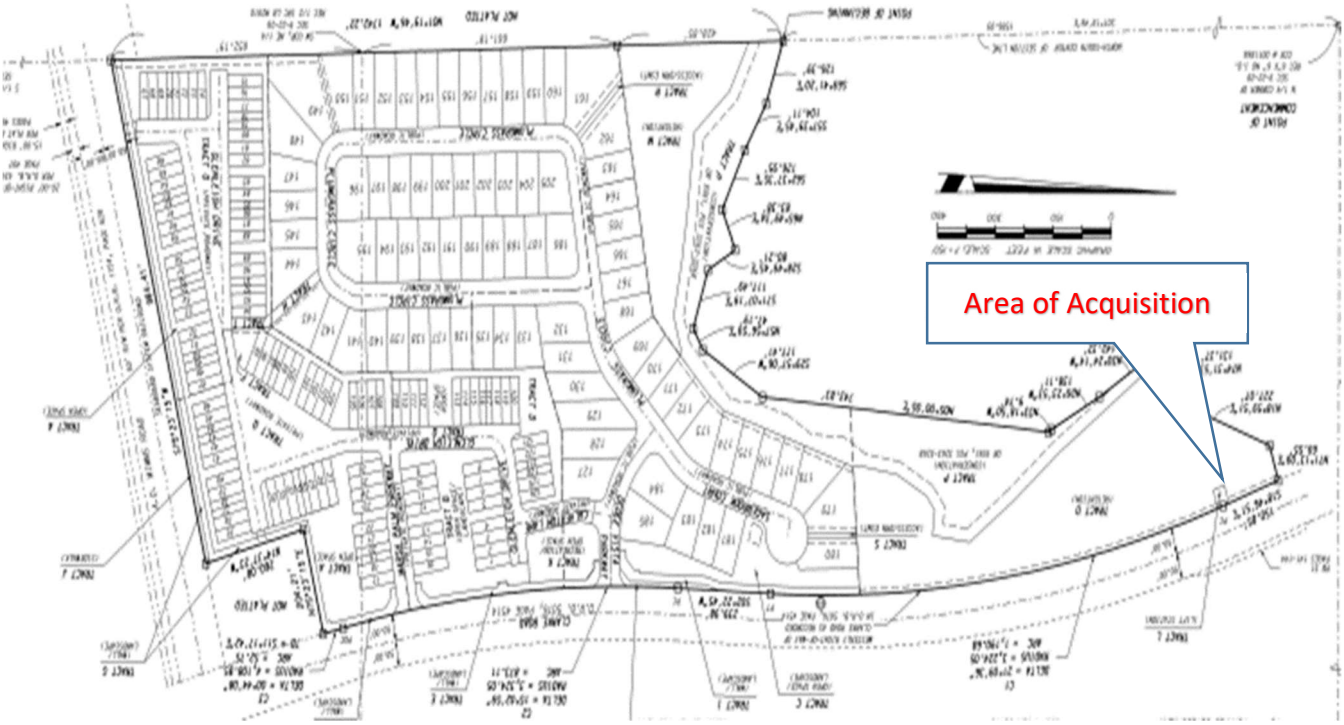
LEGAL DESCRIPTION:

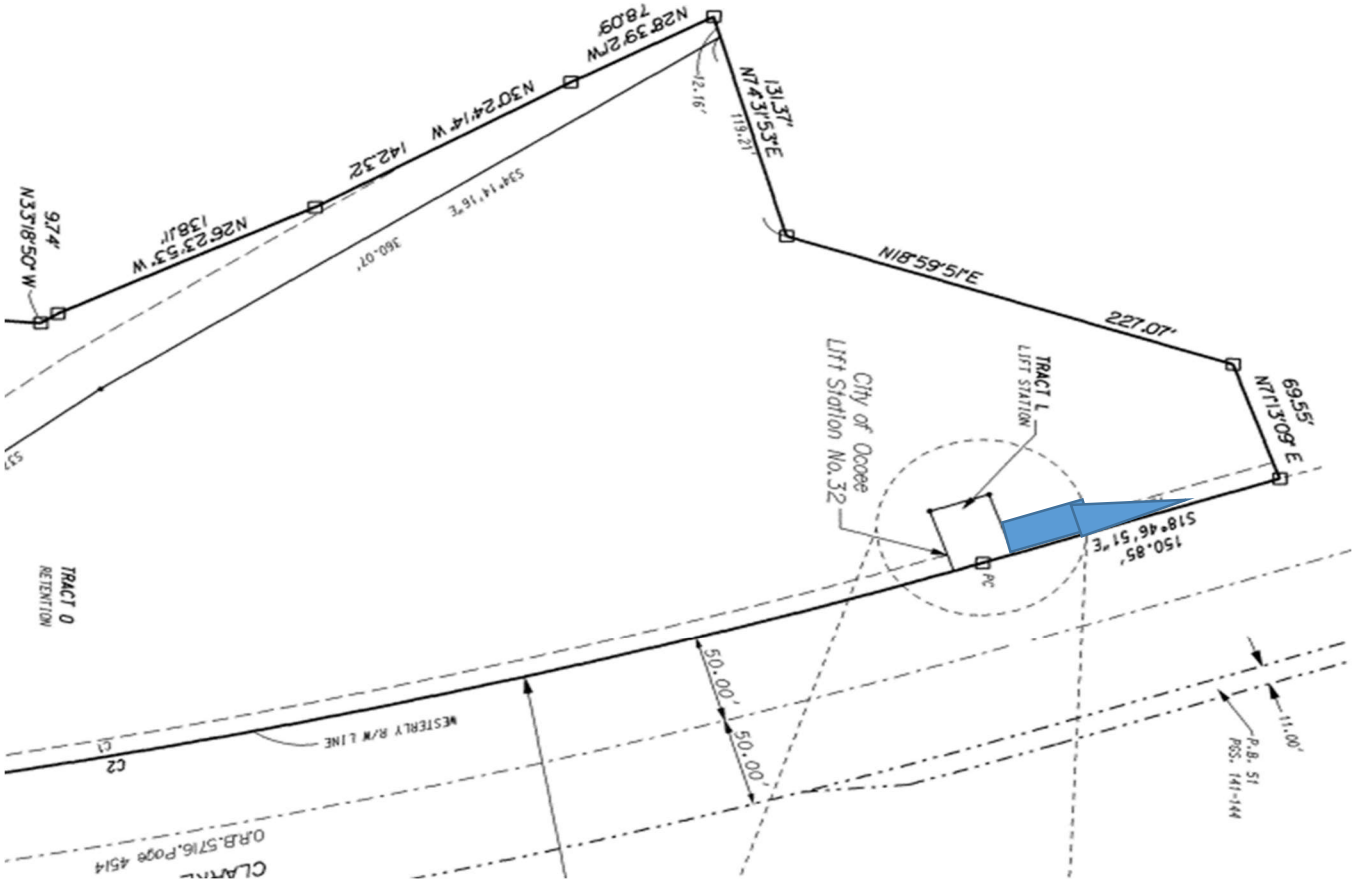
A PARCEL OF LAND, BEING A PORTION OF TRACT O, RESERVE AT MEADOW LAKE, ACCORDING TO THE PLAT THEREOF AS RECORDED IN PLAT BOOK 71, PAGES 108 THROUGH 116 OF THE PUBLIC RECORDS OF ORANGE COUNTY, FLORIDA AND LYING IN SECTION 9, TOWNSHIP 22 SOUTH, RANGE 28 EAST, ORANGE COUNTY, FLORIDA, MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGIN AT THE NORTHEAST CORNER OF TRACT L OF SAID RESERVE AT MEADOW LAKE; THENCE RUN SOUTH 71°11'16" WEST ALONG THE NORTHERLY LINE OF SAID TRACT L FOR A DISTANCE OF 22.00 FEET; THENCE DEPARTING SAID NORTHERLY LINE RUN NORTH 18°48'44" WEST FOR A DISTANCE OF 55.49 FEET; THENCE RUN NORTH 00°00'25" EAST FOR A DISTANCE OF 68.20 FEET TO THE WESTERLY RIGHT OF WAY LINE OF CLARKE ROAD, ACCORDING TO OFFICIAL RECORDS BOOK 5076, PAGE 4514 OF THE PUBLIC RECORDS OF ORANGE COUNTY, FLORIDA; THENCE RUN SOUTH 18°48'44" EAST ALONG SAID WESTERLY RIGHT OF WAY LINE FOR A DISTANCE OF 120.04 FEET TO THE POINT OF BEGINNING.

THE ABOVE DESCRIBED PARCEL OF LAND CONTAINS 1,931 SQUARE FEET, OR 0.044 ACRES, MORE OR LESS.

As depicted above the taking consists of an irregular parcel within Tract O (retention tract) on the north side of Tract L (lift station tract) containing 1,931 square feet or .044 square feet of land.





Market Value Estimate of the Land Acquired

To estimate the market value of the property being acquired we have applied the unit value of the parent tract before the taking. This results in a value as follows:

Fee Simple Value of Property to be Acquired*			
Interest Appraised	**Property Area (AC)**	**Land Value $/AC**	**Estimated Fee Simple Value (Rd.)**
Fee Simple *	0.0440	$230,000	$10,120

*Subject to Plat

Improvements within Acquisition

There are no structures or noted site improvements within the acquisition area. It is our assumption and understanding that any minor site improvements such as grasses, landscaping if any, can be replaced at a nominal cost. We have however included $250 to cover the cost of minor improvements that may be within the acquisition area.

Description of the Remainder Property:

As described above the remainder site is reduced in size by 0.0440 acres and has no impact on the remaining 44.15.

Highest and Best Use of the Remainder Property:

The highest and best use of the property is the same as before the acquisition.

Cost to cure

There are no issues resulting from the acquisition that will require a cure.

Damages to the remainder property

The site still meets all the minimum requirements under zoning for development for site area, setbacks, etc. As noted, the relative utility of the remainder is not diminished because of the acquisition. There are no issues that will cause severance damages to the remainder parcel.

Special benefits

Not Applicable for the subject acquisition.

Summary of Conclusions

Value of Acquisition - Meadow Lake Homeowners Association Inc.	
Use of Acquired Rights:	Fee Simple*
Land Area (acres)	0.0440
Land Value	$10,120
Improvements (grass, landscaping)	$250
Damages to Remainder	$0
Cost to Cure (Net)	$0
Total Value of Acquisition	**$10,370**

* Subject to Plat

ADDENDUM

Marketing and Exposure Time
General Assumptions & Limiting Conditions
Appraisal Certification
Appraiser Qualifications

MARKETING & EXPOSURE TIME

We estimate the marketing period for the property at the value estimate cited herein to be 12 months. This time frame recognizes that the conclusion of the market values will remain at the same level throughout the marketing period. This estimate is premised on active promotion of the property during this period.

Furthermore, we estimate the exposure time of the property to also be 12 months.

STANDARD ASSUMPTIONS AND LIMITING CONDITIONS

This appraisal report has been made with the following general assumptions:

1) Notwithstanding that Appraiser may comment on, analyze or assume certain conditions in the appraisal, BBG, Inc. shall have no monetary liability or responsibility for alleged claims or damages pertaining to: (a) title defects, liens or encumbrances affecting the property; (b) the property's compliance with local, state or federal zoning, planning, building, disability access and environmental laws, regulations and standards; (c) building permits and planning approvals for improvements on the property; (d) structural or mechanical soundness or safety; (e) contamination, mold, pollution, storage tanks, animal infestations or other hazardous conditions affecting the property; and (f) other conditions and matters for which licensed real estate appraisers are not customarily deemed to have professional expertise. Accordingly:
   a) The Appraiser has not conducted any engineering or architectural surveys in connection with this appraisal assignment. Information reported pertaining to dimensions, sizes, and areas is either based on measurements taken by the Appraiser or the Appraiser's staff or was obtained or taken from referenced sources and is considered reliable. The Appraiser and BBG, Inc. shall not be monetarily liable or responsible for or assume the costs of preparation or arrangement of geotechnical engineering, architectural, or other types of studies, surveys, or inspections that require the expertise of a qualified professional.
   b) Unless otherwise stated in the report, only the real property is considered, so no consideration is given to the value of personal property or equipment located on the premises or the costs of moving or relocating such personal property or equipment. Further, unless otherwise stated, it is assumed that there are no subsurface oil, gas or other mineral deposits or subsurface rights of value involved in this appraisal, whether they are gas, liquid, or solid. Further, unless otherwise stated, it is assumed that there are no rights associated with extraction or exploration of such elements considered. Unless otherwise stated it is also assumed that there are no air or development rights of value that may be transferred.
   c) Any legal description or plats reported in the appraisal are assumed to be accurate. Any sketches, surveys, plats, photographs, drawings or other exhibits are included only to assist the intended user to better understand and visualize the subject property, the environs, and the competitive data. BBG, Inc. has made no survey of the property and assumes no monetary liability or responsibility in connection with such matters.
   d) Title is assumed to be good and marketable, and in fee simple, unless otherwise stated in the report. The property is considered to be free and clear of existing liens, easements, restrictions, and encumbrances, except as stated. Further, BBG, Inc. assumes there are no private deed restrictions affecting the property which would limit the use of the subject property in any way.
   e) The appraisal report is based on the premise that there is full compliance with all applicable federal, state, and local environmental regulations and laws unless otherwise stated in the appraisal report; additionally, that all applicable zoning, building, and use regulations and restrictions of all types have been complied with unless otherwise stated in the appraisal report. Further, it is assumed that all required licenses, consents, permits, or other legislative or administrative authority, local, state,

   f) federal and/or private entity or organization have been or can be obtained or renewed for any use considered in the value opinion. Moreover, unless otherwise stated herein, it is assumed that there are no encroachments or violations of any zoning or other regulations affecting the subject property, that the utilization of the land and improvements is within the boundaries or property lines of the property described, and that there are no trespasses or encroachments.
   g) The American Disabilities Act (ADA) became effective January 26, 1992. The Appraiser has not made a specific compliance survey or analysis of the property to determine whether or not it is in conformity with the various detailed requirements of ADA. It is possible that a compliance survey of the property

and a detailed analysis of the requirements of the ADA would reveal that the property is not in compliance with one or more of the requirements of the Act. If so, this fact could have a negative impact upon the value of the property. Since the Appraiser has no direct evidence relating to this issue, possible noncompliance with the requirements of ADA was not considered in estimating the value of the property.

h) No monetary liability or responsibility is assumed for conformity to specific governmental requirements, such as fire, building, safety, earthquake, or occupancy codes, except where specific professional or governmental inspections have been completed and reported in the appraisal report.

i) It is assumed the subject property is not adversely affected by the potential of floods; unless otherwise stated herein. Further, it is assumed all water and sewer facilities (existing and proposed) are or will be in good working order and are or will be of sufficient size to adequately serve any proposed buildings.

j) Unless otherwise stated within the appraisal report, the depiction of the physical condition of the improvements described therein is based on visual inspection. No monetary liability or responsibility is assumed for (a) the soundness of structural members since no engineering tests were conducted; (b) the condition of mechanical equipment, plumbing, or electrical components, as complete tests were not made; and (c) hidden, unapparent or masked property conditions or characteristics that were not clearly apparent during the Appraiser's inspection.

k) If building improvements are present on the site, it is assumed that no significant evidence of termite damage or infestation was observed during physical inspection, unless so stated in the appraisal report. Further, unless so stated in the appraisal report, no termite inspection report was available. No monetary liability or responsibility is assumed for hidden damages or infestation.

l) Unless subsoil opinions based upon engineering core borings were furnished, it is assumed there are no subsoil defects present, which would impair development of the land to its maximum permitted use or would render it more or less valuable. No monetary liability or responsibility is assumed for such conditions or for engineering which may be required to discover them.

m) BBG, Inc. is not an expert in determining the presence or absence of hazardous substances, defined as all hazardous or toxic materials, wastes, pollutants or contaminants (including, but not limited to, asbestos, PCB, UFFI, or other raw materials or chemicals) used in construction or otherwise present on the property. BBG, Inc. assumes no monetary liability or responsibility for the studies or analyses which would be required to determine the presence or absence of such substances or for loss as a result of the presence of such substances. Appraiser is not qualified to

n) detect such substances. The Client is urged to retain an expert in this field; however, Client retains such expert at Client's own discretion, and any costs and/or expenses associated with such retention are the responsibility of Client.

o) BBG, Inc. is not an expert in determining the habitat for protected or endangered species, including, but not limited to, animal or plant life (such as bald eagles, gophers, tortoises, etc.) that may be present on the property. BBG, Inc. assumes no monetary liability or responsibility for the studies or analyses which would be required to determine the presence or absence of such species or for loss as a result of the presence of such species. The Appraiser hereby reserves the right to alter, amend, revise, or rescind any of the value opinions contained within the appraisal repot based upon any subsequent endangered species impact studies, research, and investigation that may be provided. However, it is assumed that no environmental impact studies were either requested or made in conjunction with this analysis, unless otherwise stated within the appraisal report.

2) If the Client instructions to the Appraiser were to inspect only the exterior of the improvements in the appraisal process, the physical attributes of the property were observed from the street(s) as of the inspection date of the appraisal. Physical characteristics of the property were obtained from tax assessment records, available plans, if any, descriptive information, and interviewing the client and other knowledgeable persons. It is assumed the interior of the subject property is consistent with the exterior conditions as observed and that other information relied upon is accurate.

3) If provided, the estimated insurable value is included at the request of the Client and has not been performed by a qualified insurance agent or risk management underwriter. This cost estimate should not be solely relied upon for insurable value purposes. The Appraiser is not familiar with the definition of insurable value from the insurance provider, the local governmental underwriting regulations, or the types of insurance coverage available. These factors can impact cost estimates and are beyond the scope of the intended use of this appraisal. The Appraiser is not a cost expert in cost estimating for insurance purposes.
4) The dollar amount of any value opinion herein rendered is based upon the purchasing power and price of the United States Dollar as of the effective date of value. This appraisal is based on market conditions existing as of the date of this appraisal.
5) The value opinions reported herein apply to the entire property. Any proration or division of the total into fractional interests will invalidate the value opinions, unless such proration or division of interests is set forth in the report. Any division of the land and improvement values stated herein is applicable only under the program of utilization shown. These separate valuations are invalidated by any other application.
6) Any projections of income and expenses, including the reversion at time of resale, are not predictions of the future. Rather, they are BBG, Inc.'s best estimate of current market thinking of what future trends will be. No warranty or representation is made that such projections will materialize. The real estate market is constantly fluctuating and changing. It is not the task of an appraiser to estimate the conditions of a future real estate market, but rather to reflect what the investment community envisions for the future in terms of expectations of growth in rental rates, expenses, and supply and demand. The forecasts, projections, or operating estimates contained herein are based on current market conditions, anticipated short-term supply and demand factors, and a continued stable economy. These forecasts are, therefore, subject to changes with future conditions.
7) The Appraiser assumes no monetary liability or responsibility for any changes in economic or physical conditions which occur following the effective date of value within this report that would influence or potentially affect the analyses, opinions, or conclusions in the report. Any subsequent changes are beyond the scope of the report.
8) Any proposed or incomplete improvements included in the appraisal report are assumed to be satisfactorily completed in a workmanlike manner or will be thus completed within a reasonable length of time according to plans and specifications submitted.
9) If the appraisal report has been prepared in a so-called "public non-disclosure" state, real estate sales prices and other data, such as rents, prices, and financing, are not a matter of public record. If this is such a "non-disclosure" state, although extensive effort has been expended to verify pertinent data with buyers, sellers, brokers, lenders, lessors, lessees, and other sources considered reliable, it has not always been possible to independently verify all significant facts. In these instances, the Appraiser may have relied on verification obtained and reported by appraisers outside of our office. Also, as necessary, assumptions and adjustments have been made based on comparisons and analyses using data in the report and on interviews with market participants. The information furnished by others is believed to be reliable, but no warranty is given for its accuracy.
10) Although the Appraiser has made, insofar as is practical, every effort to verify as factual and true all information and data set forth in this report, no responsibility is assumed for the accuracy of any information furnished the Appraiser either by the Client or others. If for any reason, future investigations should prove any data to be in substantial variance with that presented in this report, the Appraiser reserves the right to alter or change any or all analyses, opinions, or conclusions and/or opinions of value.
11) The right is reserved by the Appraiser to make adjustments to the analyses, opinions, and conclusions set forth in the appraisal report as may be required by consideration of additional or more reliable data that may become available. No change of this report shall be made by anyone other than the Appraiser. The Appraiser shall have no monetary liability or responsibility for any unauthorized change(s) to the report.
12) The submission of the appraisal report constitutes completion of the services authorized and agreed upon. Such appraisal report is submitted on the condition the Client will provide reasonable notice and customary compensation, including expert witness fees, relating to any subsequent required attendance at

conferences, depositions, or judicial or administrative proceedings. In the event the Appraiser is subpoenaed for either an appearance or a request to produce documents, a best effort will be made to notify the Client immediately. The Client has the sole responsibility for obtaining a protective order, providing legal instruction not to appear with the appraisal report and related work files, and will answer all questions pertaining to the assignment, the preparation of the report, and the reasoning used to formulate the opinion of value. Unless paid in whole or in part by the party issuing the subpoena or by another party of interest in the matter, the Client is responsible for all unpaid fees resulting from the appearance or production of documents regardless of who orders the work.

13) Client shall not disseminate, distribute, make available or otherwise provide any Appraisal Report prepared hereunder to any third party (including without limitation, incorporating or referencing the Appraisal Report , in whole or in part, in any offering or other material intended for review by other parties) except to (a) any third party expressly acknowledged in a signed writing by Appraiser as an "Intended User" of the Appraisal Report provided that either Appraiser has received an acceptable release from such third party with respect to such Appraisal Report or Client provides acceptable indemnity protections to Appraiser against any claims resulting from the distribution of the Appraisal Report to such third party, (b) any third party service provider (including rating agencies and auditors) using the Appraisal Report in the course of providing services for the sole benefit of an Intended User, or (c) as required by statute, government regulation, legal process, or judicial decree. In the event Appraiser consents, in writing, to Client incorporating or referencing the Appraisal Report in any offering or other materials intended for review by other parties, Client shall not distribute, file, or otherwise make such materials available to any such parties unless and until Client has provided Appraiser with complete copies of such materials and Appraiser has approved all such materials in writing. Client shall not modify any such materials once approved by Appraiser. In the absence of satisfying the conditions of this paragraph with respect to a party who is not designated as an Intended User, the receipt of an Appraisal Report by such party shall not confer any right upon such party to use or rely upon such report, and Appraiser shall have no liability for such unauthorized use or reliance upon such report. In the event Client breaches the provisions of this paragraph, Client shall indemnify, defend and hold Appraiser, and its affiliates and their officers, directors, employees, contractors, agents and other representatives (Appraiser and each of the foregoing an "Indemnified Party" and collectively the "Indemnified Parties"), fully harmless from and against all losses, liabilities, damages and expenses (collectively, "Damages") claimed against, sustained or incurred by any Indemnified Party arising out of or in connection with such breach, regardless of any negligence on the part of any Indemnified Party in preparing the Appraisal Report.

CERTIFICATION

We certify that, to the best of our knowledge and belief:

- The statements of fact contained in this report are true and correct.
- The reported analyses, opinions, and conclusions are limited only by the reported assumptions and limiting conditions and are our personal, impartial, and unbiased professional analyses, opinions, and conclusions.
- We have no present or prospective interest in the property that is the subject of this report and no personal interest with respect to the parties involved with this assignment.
- We have no bias with respect to the property that is the subject of this report or to the parties involved with this assignment.
- Our engagement in this assignment was not contingent upon developing or reporting predetermined results.
- Our compensation for completing this assignment is not contingent upon the development or reporting of a predetermined value or direction in value that favors the cause of the client, the amount of the value opinion, the attainment of a stipulated result, or the occurrence of a subsequent event directly related to the intended use of this appraisal.
- This appraisal assignment was not based upon a requested minimum valuation, a specific valuation, or the approval of a loan.
- Our analyses, opinions, and conclusions were developed, and this report has been prepared, in conformity with the Uniform Standards of Professional Appraisal Practice, as well as the requirements of the state of Florida.
- The reported analyses, opinions, and Value Indications were developed, and this report has been prepared, in conformity with the requirements of the Code of Professional Ethics, the Standards of Professional Practice of the Appraisal Institute.
- The use of this report is subject to the requirements of the Appraisal Institute relating to review by its duly authorized representatives.
- As of the date of this report, Daniel DeRango has completed the continuing education program for Designated Members of the Appraisal Institute.
- Daniel DeRango has and Joe McKinney has made a personal inspection of the property that is the subject of this report.
- No one provided significant real property appraisal assistance to the person signing this certification.
- Daniel DeRango and Joe McKinney have not provided any appraisal or other services concerning this property in the three years prior to accepting this assignment.

Daniel DeRango
State-Certified General Real Estate Appraiser
RZ1054
321-440-06614
danielderango@bbgres.com

E. Joseph McKinney
State-Registered Trainee Appraiser
RI25646
407-340-5514
jmckinney@bbgres.com

APPRAISERS QUALIFICATIONS

Daniel R. DeRango, MAI, CCIM
Managing Director
Work: 407-895-6650
dderango@bbgres.com

Profile

Daniel is a Managing Director at BBG in the Orlando office. Mr. DeRango's qualifications include a degree in Business Administration from Stetson University, he holds the MAI appraisal designation and he is a state certified general real estate appraiser in the State of Florida. Mr. DeRango also holds certification licensure in several other states. Mr. DeRango has provided expert testimony in State and Federal courts and has testified on a variety of valuation issues in Florida, Minnesota, Kentucky and New York. Mr. DeRango has been appraising real property in the Central Florida area for over 20 years and has experience with a broad variety of property types. Mr. DeRango has expertise in the valuation of income properties and, in particular, specializes in aviation properties at various airports around the country.

Professional Affiliations

Florida State-Certified General Real Estate Appraiser No. RZ1054
Georgia State-Certified General Real Estate Appraiser No. 370527
Pennsylvania State-Certified General Real Estate Appraiser No. GA004223
New York State-Certified General Real Estate Appraiser No. 46000052173
California State-Certified General Real Estate Appraiser No. 3011026
Member of the Appraisal Institute, MAI No. 7557
Member CCIM Institute
Registered Real Estate Broker/State of Florida, License No. 0355191
Former Director – Appraisal Institute, East Central Florida Chapter

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Education

Graduate of Stetson University, Deland, Florida
Bachelor of Business Administration - Major: Finance

Coursework

- Appraisal Principles
- Basic Valuation Procedures
- Direct Capitalization, Annuity Capitalization and Mortgage Equity Capitalization Theory and Techniques
- Case Studies in Real Estate Valuation
- Valuation Analysis and Report Writing
- Condemnation and Litigation Appraisal Practice
- Standards of Professional Practice
- Residential Valuation Procedures
- Appraisal of Small Hotels and Motels
- Sales Confirmation Methods
- Discounted Cash Flow Analysis
- Electronic Spreadsheets in Real Estate Appraising
- Urban Planning and Development – University of Florida

Ron DeSantis, Governor

Melanie S. Griffin, Secretary

STATE OF FLORIDA
DEPARTMENT OF BUSINESS AND PROFESSIONAL REGULATION

FLORIDA REAL ESTATE APPRAISAL BD

THE CERTIFIED GENERAL APPRAISER HEREIN IS CERTIFIED UNDER THE PROVISIONS OF CHAPTER 475, FLORIDA STATUTES

DERANGO, DANIEL ROBERT

1601 E AMELIA ST
ORLANDO FL 32803

LICENSE NUMBER: RZ1054

EXPIRATION DATE: NOVEMBER 30, 2024

Always verify licenses online at MyFloridaLicense.com

Do not alter this document in any form.

This is your license. It is unlawful for anyone other than the licensee to use this document.

E. Joseph McKinney
Analyst/Research II
Work: 407-895-6650
jmckinney@bbgres.com

Profile

Joe is an analyst/researcher at BBG in the Orlando office. He has over 40 years of business experience which includes banking, city government, real estate appraising, real estate development and brokerage. Joe spent several years appraising with emphasis in the eminent domain field preparing appraisals for both property owners and condemning authorities. At one time he was a Certified Real Estate Appraiser. As a partner in a real estate development company, he was an integral part in developing over 4000 multifamily units primarily with funding from Low Income Housing Tax Credits. His primary role was securing sites and taking the property through the development approval process. He also has extensive experience in the real estate brokerage field securing property for corporations and individual real estate investors. He has a B.A. (Finance) degree from the University of Central Florida. He is a licensed real estate broker and a registered trainee appraiser in Florida.

Professional Affiliations

State of Florida Real Estate Broker (License No. BK3217210)
State of Florida Registered Trainee Appraiser (License No. RI25646)

Education

Bachelor of Arts, Finance, University of Central Florida 1981

Coursework

- Basic Appraisal Principles
- Supervisor-Trainee
- USPAP
- Florida Law and Ethics

PURCHASE AGREEMENT

This Purchase Agreement (the "Agreement") is made and entered into this ____ day of _____ 2023 by and between Reserve at Meadow Lake Homeowners Association, Inc., whose address is 323 Circle Drive, Maitland, FL 32751 (hereinafter referred to as the "Seller"), and the **CITY OF OCOEE,** a Florida municipal corporation, whose address is 1 North Bluford Avenue, Ocoee, Florida 34761 (hereinafter referred to as the "City").

W I T N E S S E T H:

WHEREAS, the Seller is the owner of fee simple title to certain real property located in Orange County, Florida, as more particularly described in **Exhibit "A"** (the "Property"), and attached hereto and by this reference made a part hereof; and

WHEREAS, the City is a Florida municipal corporation which is authorized to exercise condemnation powers pursuant to Chapter 166, Florida Statutes; and

WHEREAS, the City is constructing the Clarke Road Widening Project (the "Project") and in connection therewith needs to acquire from the Seller title to the Property for the Project; and

WHEREAS, the City has advised Seller that if the City and the Seller do not enter into an agreement for the purchase and sale of the Property that the City intends to use its power of eminent domain to condemn its required interest in the Property; and

WHEREAS, Seller, under threat of condemnation, has agreed to sell the Property to the City, and the City has agreed to purchase the Property, together with any and all improvements, structures, fixtures and appurtenances thereto on the terms and conditions stated below.

NOW, THEREFORE, in consideration of the promises and other good and valuable considerations exchanged between the parties hereto, the receipt and sufficiency of which is hereby acknowledged, the parties hereto agree as follows:

1. **Recitals**. The above recitals are true and correct and are incorporated herein by reference.

2. **The Purchase – The Property**. Seller, under threat of condemnation, agrees to sell and the City agrees to purchase, for the purchase price and on the terms and conditions herein set forth, the Property, together with all tenements, hereditaments, improvements, structures, fixtures, trees, shrubbery, roads and easements, appertaining thereto and all of the Seller's right, title, and interest therein. The Seller shall convey to the City marketable, fee simple title to the Property by special warranty deed free and clear of all liens, mortgages and encumbrances, except for restrictions, reservations and easements of record, if any. The instrument of conveyance shall transfer all of Seller's interest in and to all improvements, fixtures, easements, trees, shrubbery, rights-of-way, tenements and appurtenances belonging or appertaining to the Property, including without limitation of the foregoing, all right, title and interest of Seller in and to any land lying in the bed of any street, alley, road or avenue (before or after vacation thereof, and whether previously abandoned or vacated or hereafter abandoned or vacated.

3. **Purchase Price**. The Purchase Price for the Property shall be **ELEVEN THOUSAND FOUR HUNDRED SEVEN DOLLARS ($11,407.00)** (the "Purchase Price"). The parties hereto acknowledge and agree that the Purchase Price: (a) constitutes full compensation to the Seller for the value of the Property and the resultant damage, if any, to the remainder of the lands adjacent thereto owned by the Seller; (b)

includes full compensation to the Seller for all trees, shrubbery and other improvements on the Property, all of which may be removed by the City in connection with the Project; and (c) includes compensation and reimbursement to the Seller for all costs and expenses incurred or to be incurred incident to this Agreement and the closing hereof, including but not limited to attorneys' fees and appraisal fees.

4. **Closing Costs; Tax Proration**. The City shall pay all closing costs associated with this Agreement, including all recording fees and documentary stamp taxes relating to or resulting from the transfer of title to the City of the Property. Real property taxes in connection with the conveyance of the Property shall be prorated as of the day of the acceptance of the conveyance by the City and the prorated amount shall be paid by the Seller and shall be escrowed in accordance with the provisions of Section 196.295, Florida Statutes.

5. **Not Used**.

6. **Closing**. Closing of title for the Property shall take place at the offices of Richard S. Geller, City Attorney, Fishback Dominick Law Firm, 1947 Lee Road, Winter Park, Florida on or before January 31, 2024. The City's legal counsel shall be responsible for the preparation of all closing documents, at the City's expense.

7. **Additional Documentation**. In connection with the conveyance of the Property the Seller shall execute such closing documents as may reasonably be required by the City, including but not limited to a standard form no-lien affidavit, a non-foreign certification, and a closing statement.

8. **Use of Property Prior to Closing**. From the date hereof through the date of acquisition of the Property, the City through its consultants, contractors and

employees, will be and are hereby authorized to enter upon the Property for the purposes of having scientific investigation, surveying and the taking of soil borings in connection with the Project. Any boring holes made by the City shall be promptly filled and packed to the surrounding earth level by the City.

9. **Further Documentation**. The parties agree that at anytime following a request therefor by the other party, each shall execute and deliver to the other party such further documents and instruments, in form and substance reasonably necessary to confirm and/or effectuate the obligations of either party hereunder and the consummation of the transactions contemplated hereby. The provisions of this paragraph shall survive the closing.

10. **Specific Performance**. Both the City and the Seller shall have the right to enforce the terms and conditions of this Agreement by an action for specific performance.

11. **Time of Essence**. Time is of the essence for this Agreement and in the performance of all conditions, covenants, requirements, obligations and warranties to be performed or satisfied by the parties hereto.

12. **Agreement; Amendment**. This Agreement constitutes the entire agreement between the parties, and supersedes all previous discussions, understandings and agreements, with respect to the subject matter hereof. Amendments to and waivers of the provisions of this Agreement shall be made by the parties only in writing by formal amendment.

13. **Applicable Law**. This Agreement shall be construed and interpreted in accordance with the laws of the State of Florida.

14. **Disclosure of Beneficial Interest**. Contemporaneous with the execution of this Agreement, Seller shall deliver to the City a public disclosure of its beneficial ownership which shall comply with the requirements set forth in Section 286.23, Florida Statutes. This Agreement constitutes a written notice from the City to Seller requesting the foregoing disclosure and informing Seller that such disclosure must be made under oath, subject to the penalties prescribed for perjury.

15. **Successors and Assigns**. This Agreement shall be binding upon and inure to the benefit of the parties hereto, their respective legal representatives, successors, heirs and assigns.

16. **Negotiated Price to be Without Prejudice**. The purchase price specified herein was negotiated by the parties on the basis of a total price for the Property and shall be without prejudice to any party, and inadmissable in any condemnation proceedings which might hereinafter be brought if this transaction is not closed for any reason whatsoever.

17. **Time for Acceptance**. The Seller is irrevocably executing this Agreement prior to approval by the City; provided, however, that in the event the City does not approve and execute this Agreement on or before December 18, 2023, then the Seller's execution hereof shall be automatically terminated and the City shall immediately return to the Seller the executed originals hereof.

18. **Effective Date**. The Effective Date of this Agreement shall be the date that it is executed by the City and such date shall be inserted on the front page of this Agreement.

IN WITNESS WHEREOF, the parties hereto have duly executed this Agreement, to become effective as of the date and year first above written.

Signed, sealed and delivered
in the presence of:

CARLOS JIMENEZ

SELLER:

RESERVE AT MEADOW LAKE
HOMEOWNERS ASSOCIATION, INC.

By: Kevin B Revell
Print Name: Kevin B Revell

Signed, sealed and delivered
in the presence of:

CITY:

CITY OF OCOEE, a Florida municipal corporation

By:_____
Rusty Johnson
Mayor

Attest:_____
Melanie Sibbitt
City Clerk

[AFFIX SEAL]

Executed on:_____, 2023

For use and reliance only by the City of Ocoee, Florida. Approved as to form and legality this ____ day of _____ 2023.

By:_____
Name:_____
City Attorney

APPROVED BY THE OCOEE CITY COMMISSION AT A MEETING HELD ON _____, 2023 UNDER AGENDA ITEM NO. _____.

LEGAL DESCRIPTION:

A PARCEL OF LAND, BEING A PORTION OF TRACT O, RESERVE AT MEADOW LAKE, ACCORDING TO THE PLAT THEREOF AS RECORDED IN PLAT BOOK 71, PAGES 108 THROUGH 116 OF THE PUBLIC RECORDS OF ORANGE COUNTY, FLORIDA AND LYING IN SECTION 9, TOWNSHIP 22 SOUTH, RANGE 28 EAST, ORANGE COUNTY, FLORIDA, MORE PARTICULARLY DESCRIBED AS FOLLOWS

BEGIN AT THE NORTHEAST CORNER OF TRACT L OF SAID RESERVE AT MEADOW LAKE; THENCE RUN SOUTH 71°11'16" WEST ALONG THE NORTHERLY LINE OF SAID TRACT L FOR A DISTANCE OF 22.00 FEET; THENCE DEPARTING SAID NORTHERLY LINE RUN NORTH 18°48'44" WEST FOR A DISTANCE OF 55.49 FEET; THENCE RUN NORTH 00°00'25" EAST FOR A DISTANCE OF 68.20 FEET TO THE WESTERLY RIGHT OF WAY LINE OF CLARKE ROAD, ACCORDING TO OFFICIAL RECORDS BOOK 5076, PAGE 4514 OF THE PUBLIC RECORDS OF ORANGE COUNTY, FLORIDA; THENCE RUN SOUTH 18°48'44" EAST ALONG SAID WESTERLY RIGHT OF WAY LINE FOR A DISTANCE OF 120.04 FEET TO THE POINT OF BEGINNING

THE ABOVE DESCRIBED PARCEL OF LAND CONTAINS 1,931 SQUARE FEET, OR 0.044 ACRES, MORE OR LESS.

SURVEYOR'S NOTES:

1. BEARINGS SHOWN HEREON ARE BASED ON THE NORTH LINE OF SECTION 9, TOWNSHIP 22 SOUTH, RANGE 28 EAST AS BEING SOUTH 89°41'14" EAST
2. THERE MAY BE EASEMENTS AND RESTRICTIONS OF RECORD AND/OR PRIVATE AGREEMENTS NOT FURNISHED TO THIS SURVEYOR OR SHOWN ON THIS BOUNDARY SURVEY THAT MAY AFFECT PROPERTY RIGHTS AND/OR LAND USE RIGHTS OF THE SUBJECT PROPERTY.
3. THIS SURVEY WAS PERFORMED WITHOUT THE BENEFIT OF AN INSURANCE TITLE COMMITMENT
4. THERE MAY BE ENVIRONMENTAL ISSUES AND/OR OTHER MATTERS REGULATED BY VARIOUS DEPARTMENTS OF FEDERAL, STATE OR LOCAL GOVERNMENTS AFFECTING THE SUBJECT PROPERTY NOT SHOWN ON THIS SURVEY.
5. THIS SURVEY WAS PERFORMED FOR THE SOLE AND EXCLUSIVE BENEFIT OF THE ENTITIES LISTED HEREON AND SHALL NOT BE RELIED UPON BY ANY OTHER ENTITY OR INDIVIDUAL WHOMSOEVER.
6. THIS SURVEY IS NOT VALID WITHOUT THE SIGNATURE AND ORIGINAL RAISED SEAL OF A FLORIDA LICENSED SURVEYOR AND MAPPER OR AN ELECTRONIC SIGNATURE THAT IS IN COMPLIANCE WITH FLORIDA ADMINISTRATIVE CODE 5J-17.062(3).
7. THIS SURVEY IS NOT VALID WITHOUT THE SIGNATURE AND ORIGINAL RAISED SEAL OF A FLORIDA LICENSED SURVEYOR AND MAPPER.
8. UNLESS OTHERWISE NOTED OR SHOWN HEREON, THERE ARE NO APPARENT AND/OR UNOBSTRUCTED, ABOVE GROUND PERIMETER ENCROACHMENTS. THE DISPOSITION OF ANY POTENTIAL ENCROACHING IMPROVEMENTS SHOWN IS BEYOND PROFESSIONAL PURVIEW AND SUBJECT TO LEGAL INTERPRETATION. INTERIOR IMPROVEMENTS WERE NOT LOCATED, THE SITE IS CURRENTLY UNDER CONSTRUCTION. THE SITE CONDITIONS ARE SUBJECT TO CHANGE DAILY.
9. UNLESS OTHERWISE NOTED OR SHOWN HEREON, APPARENT AND/OR VISIBLE UNOBSTRUCTED, ABOVE GROUND IMPROVEMENTS WERE LOCATED. UNDERGROUND IMPROVEMENTS, SUCH AS FOUNDATIONS AND UTILITIES, WERE NOT LOCATED.
10. SUBJECT PROPERTY SHOWN HEREON IS IN ZONE AE, AREA DETERMINED TO BE OUTSIDE THE 0.2% CHANCE ANNUAL FLOOD PLAIN, PER FLOOD INSURANCE RATE MAP (FIRM) NUMBER 12095C0210H, WITH AN EFFECTIVE MAP DATE 9/24/2021. THE ABOVE STATEMENT IS FOR INFORMATION ONLY AND THIS SURVEYOR ASSUMES NO LIABILITY FOR THE CORRECTNESS OF THE CITED MAP(S). IN ADDITION, THE ABOVE STATEMENT DOES NOT REPRESENT THIS SURVEYOR'S OPINION OF THE PROBABILITY OF FLOODING
11. THE ACCURACY OF THE SURVEY MEASUREMENTS USED FOR THIS SURVEY MEETS OR EXCEEDS THE EXPECTED USE OF THE PROPERTY DESCRIBED HEREON. (SUBURBAN) 1 FOOT IN 7,500 FEET; (RURAL) 1 FOOT IN 5,000 FEET, (COMMERCIAL/HIGH RISK) 1 FOOT IN 10,000 FEET.
12. LAST DATE IN FIELD: APRIL 3, 2023

LEGEND OF SYMBOLS AND ABBREVIATIONS

— — —	OVERHEAD WIRE
- - - -	TOP OF BANK
	WOOD UTILITY POLE
P.S.M.	PROFESSIONAL SURVEYOR & MAPPER
LB#	LICENSE BUSINESS NUMBER
LS	LICENSED SURVEYOR
●	SET 1/2" IRON ROD W/ CAP OR NAIL WITH DISC STAMPED LB#6723
(M)	MEASURED
(P)	PLAT
	BACKFLOW PREVENTER
	UNKNOWN VAULT

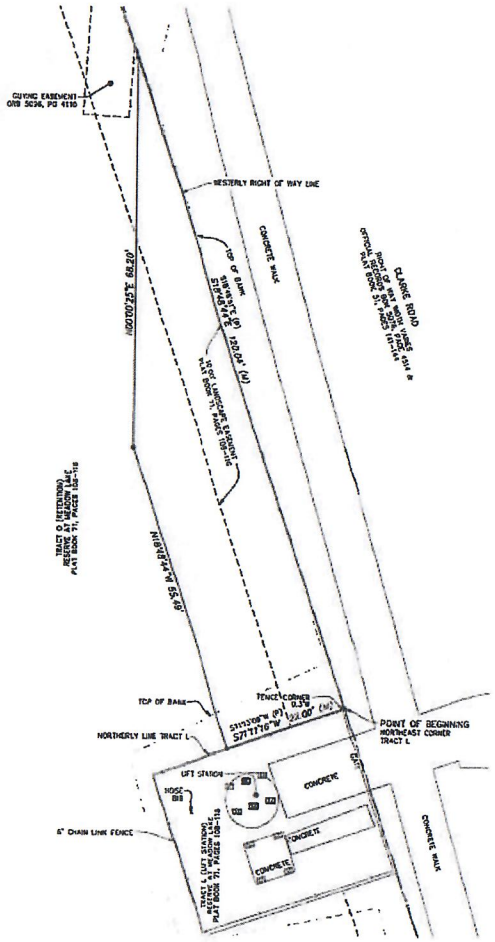

Exhibit "A"

ALLEN & COMPANY
Surveyors & Mappers
SURVEYING • MAPPING
GEOSPATIAL SERVICES
www.allen-company.com
16 EAST PLANT STREET
WINTER GARDEN, FLORIDA 34787
(407) 654-5355 LB#6723

BOUNDARY SURVEY
OF
CLARKE ROAD S. EXTENSION
LIFT STATION
SECTION 9, TOWNSHIP 22 SOUTH, RANGE 28 EAST
ORANGE COUNTY, FLORIDA

FOR: LENNAR

FOR THE LICENSED BUSINESS #6723
BY: JAMES L. FERGUSON, P.S.M. #5633

DATE	REVISIONS

JOB #	20200442
DATE:	4/24/2023
SCALE:	1"=10'
CALC BY:	BRH
FIELD BY:	JDS
DRAW BY:	BRH
CHECKED BY	JLF

SHEET 1 OF 1

PURCHASE AGREEMENT

This Purchase Agreement (the "Agreement") is made and entered into this ____ day of _____ 2023 by and between Reserve at Meadow Lake Homeowners Association, Inc., whose address is 323 Circle Drive, Maitland, FL 32751 (hereinafter referred to as the "Seller"), and the **CITY OF OCOEE,** a Florida municipal corporation, whose address is 1 North Bluford Avenue, Ocoee, Florida 34761 (hereinafter referred to as the "City").

WITNESSETH:

WHEREAS, the Seller is the owner of fee simple title to certain real property located in Orange County, Florida, as more particularly described in **Exhibit "A"** (the "Property"), and attached hereto and by this reference made a part hereof; and

WHEREAS, the City is a Florida municipal corporation which is authorized to exercise condemnation powers pursuant to Chapter 166, Florida Statutes; and

WHEREAS, the City is constructing the Clarke Road Widening Project (the "Project") and in connection therewith needs to acquire from the Seller title to the Property for the Project; and

WHEREAS, the City has advised Seller that if the City and the Seller do not enter into an agreement for the purchase and sale of the Property that the City intends to use its power of eminent domain to condemn its required interest in the Property; and

WHEREAS, Seller, under threat of condemnation, has agreed to sell the Property to the City, and the City has agreed to purchase the Property, together with any and all improvements, structures, fixtures and appurtenances thereto on the terms and conditions stated below.

NOW, THEREFORE, in consideration of the promises and other good and valuable considerations exchanged between the parties hereto, the receipt and sufficiency of which is hereby acknowledged, the parties hereto agree as follows:

1. **Recitals**. The above recitals are true and correct and are incorporated herein by reference.

2. **The Purchase – The Property**. Seller, under threat of condemnation, agrees to sell and the City agrees to purchase, for the purchase price and on the terms and conditions herein set forth, the Property, together with all tenements, hereditaments, improvements, structures, fixtures, trees, shrubbery, roads and easements, appertaining thereto and all of the Seller's right, title, and interest therein. The Seller shall convey to the City marketable, fee simple title to the Property by special warranty deed free and clear of all liens, mortgages and encumbrances, except for restrictions, reservations and easements of record, if any. The instrument of conveyance shall transfer all of Seller's interest in and to all improvements, fixtures, easements, trees, shrubbery, rights-of-way, tenements and appurtenances belonging or appertaining to the Property, including without limitation of the foregoing, all right, title and interest of Seller in and to any land lying in the bed of any street, alley, road or avenue (before or after vacation thereof, and whether previously abandoned or vacated or hereafter abandoned or vacated.

3. **Purchase Price**. The Purchase Price for the Property shall be **ELEVEN THOUSAND FOUR HUNDRED SEVEN DOLLARS ($11,407.00)** (the "Purchase Price"). The parties hereto acknowledge and agree that the Purchase Price: (a) constitutes full compensation to the Seller for the value of the Property and the resultant damage, if any, to the remainder of the lands adjacent thereto owned by the Seller; (b)

includes full compensation to the Seller for all trees, shrubbery and other improvements on the Property, all of which may be removed by the City in connection with the Project; and (c) includes compensation and reimbursement to the Seller for all costs and expenses incurred or to be incurred incident to this Agreement and the closing hereof, including but not limited to attorneys' fees and appraisal fees.

4. **Closing Costs; Tax Proration**. The City shall pay all closing costs associated with this Agreement, including all recording fees and documentary stamp taxes relating to or resulting from the transfer of title to the City of the Property. Real property taxes in connection with the conveyance of the Property shall be prorated as of the day of the acceptance of the conveyance by the City and the prorated amount shall be paid by the Seller and shall be escrowed in accordance with the provisions of Section 196.295, Florida Statutes.

5. **Not Used**.

6. **Closing**. Closing of title for the Property shall take place at the offices of Richard S. Geller, City Attorney, Fishback Dominick Law Firm, 1947 Lee Road, Winter Park, Florida on or before January 31, 2024. The City's legal counsel shall be responsible for the preparation of all closing documents, at the City's expense.

7. **Additional Documentation**. In connection with the conveyance of the Property the Seller shall execute such closing documents as may reasonably be required by the City, including but not limited to a standard form no-lien affidavit, a non-foreign certification, and a closing statement.

8. **Use of Property Prior to Closing**. From the date hereof through the date of acquisition of the Property, the City through its consultants, contractors and

employees, will be and are hereby authorized to enter upon the Property for the purposes of having scientific investigation, surveying and the taking of soil borings in connection with the Project. Any boring holes made by the City shall be promptly filled and packed to the surrounding earth level by the City.

9. **Further Documentation**. The parties agree that at anytime following a request therefor by the other party, each shall execute and deliver to the other party such further documents and instruments, in form and substance reasonably necessary to confirm and/or effectuate the obligations of either party hereunder and the consummation of the transactions contemplated hereby. The provisions of this paragraph shall survive the closing.

10. **Specific Performance**. Both the City and the Seller shall have the right to enforce the terms and conditions of this Agreement by an action for specific performance.

11. **Time of Essence**. Time is of the essence for this Agreement and in the performance of all conditions, covenants, requirements, obligations and warranties to be performed or satisfied by the parties hereto.

12. **Agreement: Amendment**. This Agreement constitutes the entire agreement between the parties, and supersedes all previous discussions, understandings and agreements, with respect to the subject matter hereof. Amendments to and waivers of the provisions of this Agreement shall be made by the parties only in writing by formal amendment.

13. **Applicable Law**. This Agreement shall be construed and interpreted in accordance with the laws of the State of Florida.

14. **Disclosure of Beneficial Interest**. Contemporaneous with the execution of this Agreement, Seller shall deliver to the City a public disclosure of its beneficial ownership which shall comply with the requirements set forth in Section 286.23, Florida Statutes. This Agreement constitutes a written notice from the City to Seller requesting the foregoing disclosure and informing Seller that such disclosure must be made under oath, subject to the penalties prescribed for perjury.

15. **Successors and Assigns**. This Agreement shall be binding upon and inure to the benefit of the parties hereto, their respective legal representatives, successors, heirs and assigns.

16. **Negotiated Price to be Without Prejudice**. The purchase price specified herein was negotiated by the parties on the basis of a total price for the Property and shall be without prejudice to any party, and inadmissable in any condemnation proceedings which might hereinafter be brought if this transaction is not closed for any reason whatsoever.

17. **Time for Acceptance**. The Seller is irrevocably executing this Agreement prior to approval by the City; provided, however, that in the event the City does not approve and execute this Agreement on or before December 18, 2023, then the Seller's execution hereof shall be automatically terminated and the City shall immediately return to the Seller the executed originals hereof.

18. **Effective Date**. The Effective Date of this Agreement shall be the date that it is executed by the City and such date shall be inserted on the front page of this Agreement.

IN WITNESS WHEREOF, the parties hereto have duly executed this Agreement, to become effective as of the date and year first above written.

Signed, sealed and delivered
in the presence of:

CARLOS JIMENEZ

SELLER:

RESERVE AT MEADOW LAKE
HOMEOWNERS ASSOCIATION, INC.

By: Kevin G Revell
Print Name: Kevin G Revell

Signed, sealed and delivered
in the presence of:

CITY:

CITY OF OCOEE, a Florida municipal corporation

By:_____
Rusty Johnson
Mayor

Attest:_____
Melanie Sibbitt
City Clerk

[AFFIX SEAL]

Executed on:_____, 2023

For use and reliance only by the City of Ocoee, Florida. Approved as to form and legality this ____ day of _____ 2023.

By:_____
Name:_____
City Attorney

APPROVED BY THE OCOEE CITY COMMISSION AT A MEETING HELD ON _____, 2023 UNDER AGENDA ITEM NO. _____.

LEGAL DESCRIPTION:

A PARCEL OF LAND, BEING A PORTION OF TRACT O, RESERVE AT MEADOW LAKE, ACCORDING TO THE PLAT THEREOF AS RECORDED IN PLAT BOOK 71, PAGES 108 THROUGH 116 OF THE PUBLIC RECORDS OF ORANGE COUNTY, FLORIDA AND LYING IN SECTION 9, TOWNSHIP 22 SOUTH, RANGE 28 EAST, ORANGE COUNTY, FLORIDA, MORE PARTICULARLY DESCRIBED AS FOLLOWS

BEGIN AT THE NORTHEAST CORNER OF TRACT L OF SAID RESERVE AT MEADOW LAKE; THENCE RUN SOUTH 71°11'16" WEST ALONG THE NORTHERLY LINE OF SAID TRACT L FOR A DISTANCE OF 22.00 FEET; THENCE DEPARTING SAID NORTHERLY LINE RUN NORTH 18°48'44" WEST FOR A DISTANCE OF 55.49 FEET; THENCE RUN NORTH 00°07'25" EAST FOR A DISTANCE OF 68.20 FEET TO THE WESTERLY RIGHT OF WAY LINE OF CLARKE ROAD, ACCORDING TO OFFICIAL RECORDS BOOK 5076, PAGE 4514 OF THE PUBLIC RECORDS OF ORANGE COUNTY, FLORIDA; THENCE RUN SOUTH 18°48'44" EAST ALONG SAID WESTERLY RIGHT OF WAY LINE FOR A DISTANCE OF 120.04 FEET TO THE POINT OF BEGINNING

THE ABOVE DESCRIBED PARCEL OF LAND CONTAINS 1,931 SQUARE FEET, OR 0.044 ACRES, MORE OR LESS.

SURVEYOR'S NOTES:

1. BEARINGS SHOWN HEREON ARE BASED ON THE NORTH LINE OF SECTION 9, TOWNSHIP 22 SOUTH, RANGE 28 EAST AS BEING SOUTH 89°41'14" EAST.
2. THERE MAY BE EASEMENTS AND RESTRICTIONS OF RECORD AND/OR PRIVATE AGREEMENTS NOT FURNISHED TO THIS SURVEYOR OR SHOWN ON THIS BOUNDARY SURVEY THAT MAY AFFECT PROPERTY RIGHTS AND/OR LAND USE RIGHTS OF THE SUBJECT PROPERTY.
3. THIS SURVEY WAS PERFORMED WITHOUT THE BENEFIT OF AN INSURANCE TITLE COMMITMENT.
4. THERE MAY BE ENVIRONMENTAL ISSUES AND/OR OTHER MATTERS REGULATED BY VARIOUS DEPARTMENTS OF FEDERAL, STATE OR LOCAL GOVERNMENTS AFFECTING THE SUBJECT PROPERTY NOT SHOWN ON THIS SURVEY.
5. THIS SURVEY WAS PERFORMED FOR THE SOLE AND EXCLUSIVE BENEFIT OF THE ENTITIES LISTED HEREON AND SHALL NOT BE RELIED UPON BY ANY OTHER ENTITY OR INDIVIDUAL WHOMSOEVER.
6. THIS SURVEY IS NOT VALID WITHOUT THE SIGNATURE AND ORIGINAL RAISED SEAL OF A FLORIDA LICENSED SURVEYOR AND MAPPER OR AN ELECTRONIC SIGNATURE THAT IS IN COMPLIANCE WITH FLORIDA ADMINISTRATIVE CODE 5J-17.062(3).
7. THIS SURVEY IS NOT VALID WITHOUT THE SIGNATURE AND ORIGINAL RAISED SEAL OF A FLORIDA LICENSED SURVEYOR AND MAPPER.
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12. LAST DATE IN FIELD: APRIL 3, 2023

LEGEND OF SYMBOLS AND ABBREVIATIONS

- OVERHEAD WIRE
- TOP OF BANK
- WOOD UTILITY POLE
- P.S.M. PROFESSIONAL SURVEYOR & MAPPER
- LB# LICENSE BUSINESS NUMBER
- LS LICENSED SURVEYOR
- SET 1/2" IRON ROD W/ CAP OR NAIL WITH DISC STAMPED LB#6723
- (M) MEASURED
- (P) PLAT
- BACKFLOW PREVENTER
- UNKNOWN VAULT

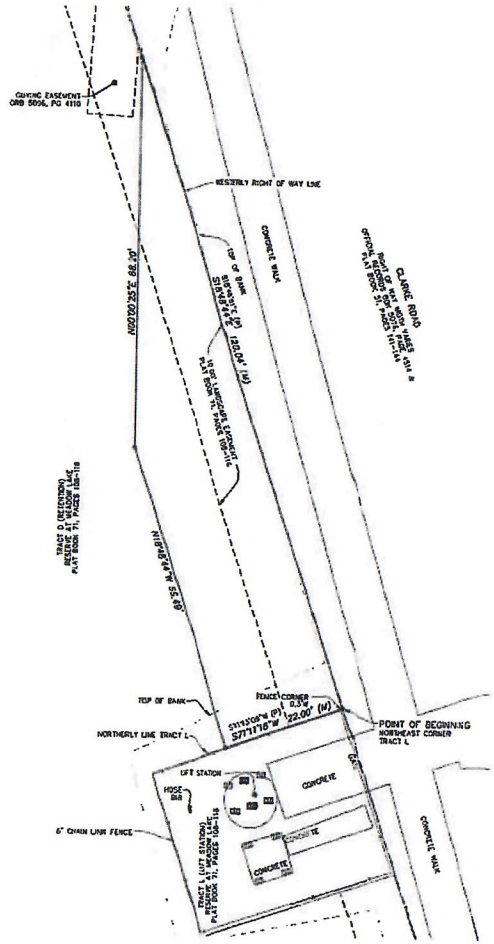

Exhibit "A"

ALLEN & COMPANY
Established in 1988
SURVEYING • MAPPING
GEOSPATIAL SERVICES
www.allen-company.com
16 EAST PLANT STREET
WINTER GARDEN, FLORIDA 34787
(407) 654-5355 LB#6723

BOUNDARY SURVEY OF CLARKE ROAD S. EXTENSION LIFT STATION
SECTION 9, TOWNSHIP 22 SOUTH, RANGE 28 EAST
ORANGE COUNTY, FLORIDA

FOR: LENNAR

FOR THE LICENSED BUSINESS #6723
BY:
JAMES T. BOURNE, P.S.M. #6533

DATE	REVISIONS

JOB #	20200442
DATE:	4/24/2023
SCALE	1"=10'
CALC BY:	GPH
FIELD BY:	JCS
DRAWN BY:	GPH
CHECKED BY	JLB

SHEET 1 OF 1

DISCLOSURE OF BENEFICIAL INTERESTS IN REAL PROPERTY

TO: Rusty Johnson, Mayor, City of Ocoee, a Florida municipal corporation

FROM: Reserve at Meadow Lake Homeowners Association, Inc.

SUBJECT: Proposed Sale from Reserve at Meadow Lake Homeowners Association, Inc. ("Seller") to City of Ocoee ("Buyer") of real property described in **Exhibit "A"** attached hereto (the "Property")

Please be advised that the undersigned, after diligent search and inquiry, hereby states under oath, and subject to the penalties prescribed for perjury: (i) that the Seller is the owner of fee simple title to the Property, (ii) that the Seller's address is 323 Circle Drive, Maitland, FL 32751 (iii) that the undersigned has been authorized by Seller to execute this disclosure on behalf of Seller, and (iv) that the name and address of each person having a legal or beneficial interest in the Property is as follows:

Name	**Address**
_____	_____
	_____
_____	_____
	_____
_____	_____
	_____
_____	_____
	_____
_____	_____
	_____

I swear and affirm that the information furnished herein is accurate as of the date hereof, and I agree to promptly disclose any changes in the information contained herein, or any errors in such information between the date hereof and the date of the sale of the Property from Seller to Buyer.

This disclosure is made under oath and I understand I am subject to penalties for perjury for any false information contained herein.

This disclosure is made pursuant to Section 286.23, Florida Statutes, in connection with a conveyance of the Property to the Buyer.

SIGNATURE AND NOTARY FOR
DISCLOSURE OF BENEFICIAL INTERESTS

RESERVE AT MEADOW LAKE
HOMEOWNERS ASSOCIATION, INC.

By: Kevin G Rerich
Print Name: Kevin G Rerich

STATE OF FLORIDA)
COUNTY OF _____)

The foregoing instrument was acknowledged before me by means of ☐ physical presence or ☐ online notarization, this ___ day of _____, 2022 by _____ as _____ of Reserve at Meadow Lake Homeowners Association, Inc. on behalf of the corporation, who is personally known to me or who has produced _____ as identification.

_____
Notary Public
My Commission expires: _____

LEGAL DESCRIPTION:

A PARCEL OF LAND, BEING A PORTION OF TRACT O, RESERVE A' MEADOW LAKE, ACCORDING TO THE PLAT THEREOF AS RECORDED IN PLAT BOOK 71, PAGES 108 THROUGH 116 OF THE PUBLIC RECORDS OF ORANGE COUNTY, FLORIDA AND LYING IN SECTION 9, TOWNSHIP 22 SOUTH, RANGE 28 EAST, ORANGE COUNTY, FLORIDA, MORE PARTICULARLY DESCRIBED AS FOLLOWS

BEGIN AT THE NORTHEAST CORNER OF TRACT L OF SAID RESERVE AT MEADOW LAKE; THENCE RUN SOUTH 71°31'15" WEST ALONG THE NORTHERLY LINE OF SAID TRACT L FOR A DISTANCE OF 22.00 FEET; THENCE DEPARTING SAID NORTHERLY LINE RUN NORTH 18°48'44" WEST FOR A DISTANCE OF 55.49 FEET; THENCE RUN NORTH 00°00'25" EAST FOR A DISTANCE OF 68.20 FEET TO THE WESTERLY RIGHT OF WAY LINE OF CLARKE ROAD, ACCORDING TO OFFICIAL RECORDS BOOK 5078, PAGE 4514 OF THE PUBLIC RECORDS OF ORANGE COUNTY, FLORIDA; THENCE RUN SOUTH 18°48'44" EAST ALONG SAID WESTERLY RIGHT OF WAY LINE FOR A DISTANCE OF 120.04 FEET TO THE POINT OF BEGINNING

THE ABOVE DESCRIBED PARCEL OF LAND CONTAINS 1,931 SQUARE FEET, OR 0.044 ACRES, MORE OR LESS.

SURVEYOR'S NOTES:

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3. THIS SURVEY WAS PERFORMED WITHOUT THE BENEFIT OF AN INSURANCE TITLE COMMITMENT.
4. THERE MAY BE ENVIRONMENTAL ISSUES AND/OR OTHER MATTERS REGULATED BY VARIOUS DEPARTMENTS OF FEDERAL, STATE OR LOCAL GOVERNMENTS AFFECTING THE SUBJECT PROPERTY NOT SHOWN ON THIS SURVEY.
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12. LAST DATE IN FIELD: APRIL 3, 2023

LEGEND OF SYMBOLS AND ABBREVIATIONS

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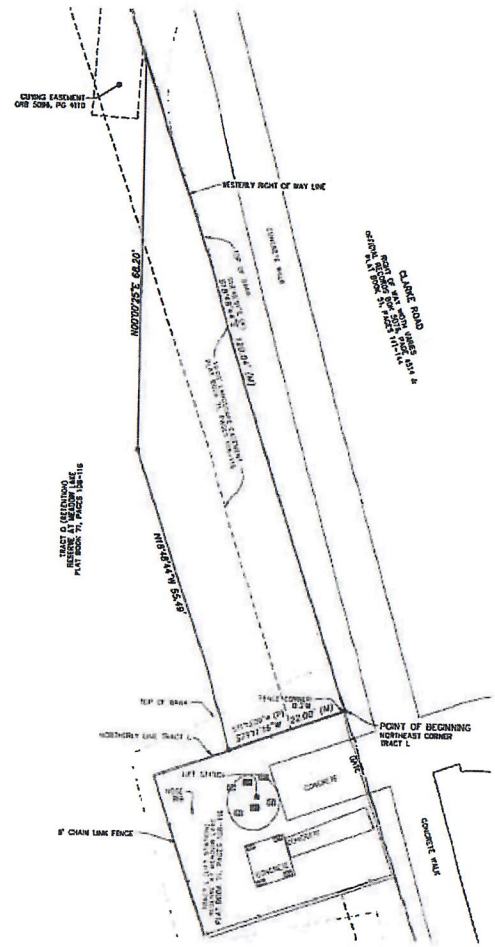

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BOUNDARY SURVEY OF CLARKE ROAD S. EXTENSION LIFT STATION

SECTION 9, TOWNSHIP 22 SOUTH, RANGE 28 EAST
ORANGE COUNTY, FLORIDA

FOR: LENNAR

FOR THE LICENSED BUSINESS #6723
JAMES L. ROBINS, P.S.M. #6533

DATE	REVISIONS

JOB #	20200442
DATE:	4/24/2023
SCALE:	1"=10'
CALC BY:	GRH
FIELD BY:	JDS
DRAWN BY:	GRH
CHECKED BY:	JLR

SHEET 1 OF 1

DISCLOSURE OF BENEFICIAL INTERESTS IN REAL PROPERTY

TO: Rusty Johnson, Mayor, City of Ocoee, a Florida municipal corporation

FROM: Reserve at Meadow Lake Homeowners Association, Inc.

SUBJECT: Proposed Sale from Reserve at Meadow Lake Homeowners Association, Inc. ("Seller") to City of Ocoee ("Buyer") of real property described in **Exhibit "A"** attached hereto (the "Property")

Please be advised that the undersigned, after diligent search and inquiry, hereby states under oath, and subject to the penalties prescribed for perjury: (i) that the Seller is the owner of fee simple title to the Property, (ii) that the Seller's address is 323 Circle Drive, Maitland, FL 32751 (iii) that the undersigned has been authorized by Seller to execute this disclosure on behalf of Seller, and (iv) that the name and address of each person having a legal or beneficial interest in the Property is as follows:

Name	Address
_____	_____
	_____
_____	_____
	_____
_____	_____
	_____
_____	_____
	_____
_____	_____
	_____

I swear and affirm that the information furnished herein is accurate as of the date hereof, and I agree to promptly disclose any changes in the information contained herein, or any errors in such information between the date hereof and the date of the sale of the Property from Seller to Buyer.

This disclosure is made under oath and I understand I am subject to penalties for perjury for any false information contained herein.

This disclosure is made pursuant to Section 286.23, Florida Statutes, in connection with a conveyance of the Property to the Buyer.

SIGNATURE AND NOTARY FOR
DISCLOSURE OF BENEFICIAL INTERESTS

RESERVE AT MEADOW LAKE
HOMEOWNERS ASSOCIATION, INC.

By: Kevin G Revell
Print Name: Kevin G. Revell

STATE OF FLORIDA)
COUNTY OF _____)

The foregoing instrument was acknowledged before me by means of ☐ physical presence or ☐ online notarization, this ___ day of _____, 2022 by _____ as _____ of Reserve at Meadow Lake Homeowners Association, Inc. on behalf of the corporation, who is personally known to me or who has produced _____ as identification.

_____
Notary Public
My Commission expires: _____

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12. LAST DATE IN FIELD: APRIL 3, 2023

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●	SET 1/2" IRON ROD W/ CAP OR NAIL WITH DISC STAMPED LB#6723
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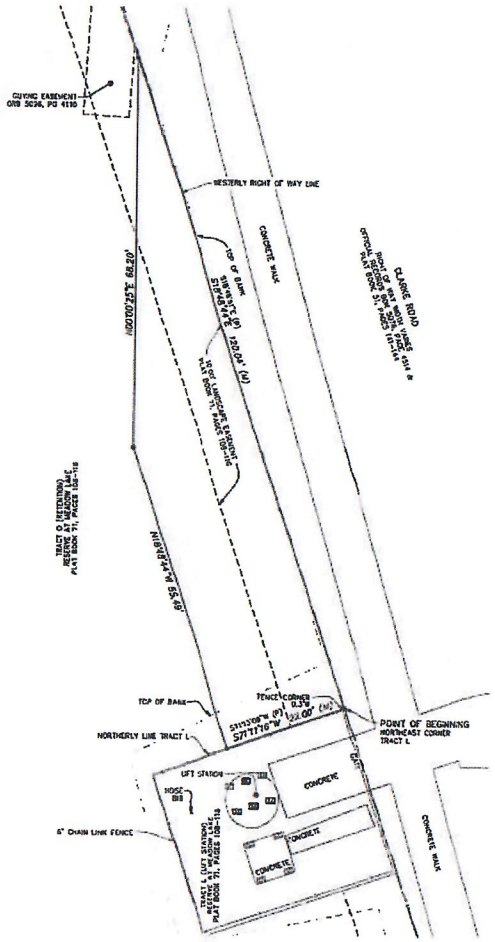

Exhibit "A"

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BOUNDARY SURVEY OF CLARKE ROAD S. EXTENSION LIFT STATION
SECTION 9, TOWNSHIP 22 SOUTH, RANGE 28 EAST
ORANGE COUNTY, FLORIDA

FOR: LENNAR

FOR THE LICENSED BUSINESS #6723 BY: JAMES L. FERGUSON, P.S.M. #5633

DATE	REVISIONS

JOB # 20200442
DATE: 4/24/2023
SCALE: 1"=10'
CALC BY: BRH
FIELD BY: JDS
DRAW BY: BRH
CHECKED BY: JLF

SHEET 1 OF 1

STAFF REPORT

Meeting Date: February 6, 2024
Item #: 6

Contact Name: Stephen Krug
Contact Number: Ext. 6002

Department Director: Stephen Krug
City Manager: Robert Frank

Subject: Approval of Contracted Sidewalk Repairs Utilizing Existing City of Kissimmee Contract with APEC LLC. (Public Works Director Krug)

Background Summary:

The City Commission approved funding in the current budget to perform contracted sidewalk repairs. In order to expedite the project, Public Works is requesting Commission authorization to piggyback on the existing competitively bid City of Kissimmee contract IFB2022-002, Alternative Paving Methods, awarded to APEC, LLC, which also includes sidewalk replacement items. APEC is one of the City's continuing contractors for small construction services providers (RFQ22-005). The attached cost estimate of $103,744.56, to provide the sidewalk replacement, is based on the competitive bid and the awarded City of Kissimmee contract. This award does not exhaust the budget for the sidewalk replacement and additional locations will be added to the work, in accordance with the Purchasing manual. Public Works recommends approval of this proposal in order to start the sidewalk replacement process in the City.

Issue:

Should the Honorable Mayor and City Commissioners award the contracted sidewalk repairs, utilizing an existing City of Kissimmee contract with APEC, LLC?

Recommendations:

Staff recommends the Honorable Mayor and City Commissioners authorize a purchase order be issued for the contracted sidewalk repairs with APEC, LLC, utilizing the existing competitive bid, City of Kissimmee contract IFB2022-002, in the amount of $103,744.56, and authorize the City Manager and Staff to approve change orders to this contract up to the limit of his purchasing authority for each change order, and up to the budgeted amount for this project for all change orders.

Attachments:

1. Proposal City of Ocoee Side Walk Project
2. Sidewalk Quantities
3. Agreement City of Kissimmee APEC IFB 2022-002
4. Sidewalk Project Map

Financial Impacts:

The work is adequately funded in the Public Works Streets Division budget.

Type of Item: Consent

American Persian Engineering & Construction LLC
5401 S. Kirkman Rd #336, Orlando, FL 327819
(407)6197888

01/22/2024

APEC takes Pride in every project and milestone completed. We strive to set a standard higher than the industry and are immensely proud to practice the best methodologies on providing the most efficient project management process.

OVERVIEW

We are pleased to provide you the below quote on the services requested on removal of existing sidewalk and installation of new sidewalk. This proposal has been prepared in conjunction with the list which was provided by your office and below is information of contract.
Contract : Piggyback Kissimmee IFB 2022-002 Alternative Paving Methods.
Project Name: City Wide Remove and Replace Sidewalk

No	Item	Description	Estimated Quantity	Unit of Measure	Quantity	Unit Price	Total Price
1	18	Miscellaneous Concrete Removal	1-200	SY	591.67	$40.00	$23,666.80
2	121	Concrete Sidewalk-(4" thickness)	1-100	SY	410.67	$100.00	$41,067.00
3	124	Concrete Sidewalk-(6" thickness)	1-100	SY	181	$120.00	$21,720.00
						Total	**$86,453.80**
4	1	Mobalization	1	%	1	10%	$8,645.38
5	3	Maintenance of Traffic	1	%	1	10%	$8,645.38
						Grand Total	**$103,744.56**

Sincerely

Arman PourMirza, PMP

Full Address	Primary Cause of Damage	Sidewalk Length	Sidewalk Width	Depth inch	Area SF 4"	Area SF 6"
2034 Applegate Drive	Driven Over	10	4	4	40	
2042 Applegate Drive	Tree Roots	31	4	4	124	
2079 Applegate Drive	Tree Roots	11	4	4	44	
6913 Cross Cut Court	Tree Roots	71	4	4	284	
6919 Cross Cut Court	Tree Roots	67	4	4	268	
6913 Cross Cut Court	Tree Roots	22	7	6	-	154
6919 Cross Cut Court	Tree Roots	22	7	6	-	154
6938 Cross Cut Court	Tree Roots	22	4	4	88	
6901 Cross Cut Court	Tree Roots	5	4	4	20	
6900 Cross Cut Court	Tree Roots	27	4	4	108	
7000 Sawmill Boulevard	Tree Roots	67	4	4	268	
?	Buckling	18	6	5	-	108
6943 Log Jam Court	Tree Roots	77	4	4	308	
6931 Log Jam Court	Tree Roots	50	4	4	200	
1114 Caballero Road	Buckling	14	11	6	-	154
1114 Caballero Road	Driven Over	15	4	4	60	
1116 Caballero Road	Buckling	14	7	6	-	98
1116 Caballero Road	Driven Over	22	4	6	-	88
1118 Caballero Road	Driven Over	37	4	5	-	148
17 Lakeview Street	Tree Roots	144	4	6	-	576
932 Cool Springs Circle	Tree Roots	14	4	4	56	
932 Cool Springs Circle	Tree Roots	7	4	6	-	28
5166 Wood Ridge Court	Tree Roots	68	4	4	272	
5160 Wood Ridge Court	Tree Roots	23	4	4	92	
5148 Wood Ridge Court	Driven Over	8	4	4	32	
5148 Wood Ridge Court	Tree Roots	27	4	4	108	
5136 Wood Ridge Court	Tree Roots	11	4	4	44	
6930 Sawmill Boulevard	Tree Roots	60	4	4	240	
6821 Mill Stream Road	Tree Roots	32	4	4	128	
6821 Mill Stream Road	Tree Roots	11	11	6	-	121
6808 Mill Stream Road	Tree Roots	57	4	4	228	
6809 Mill Stream Road	Tree Roots	29	4	4	116	
401 E Orlando Avenue	Tree Roots	115	4	4	460	
1976 Aspenridge Court	Tree Roots	27	4	4	108	
				Totals:	3696	1629
				SY	**410.67**	**181**
				Total Removal		**591.67**

AGREEMENT between CITY OF KISSIMMEE

And

American Persian Engineering & Construction, LLC

THIS AGREEMENT is made this 21st day of June, 2022 by and between the CITY OF KISSIMMEE, a municipal corporation of the State of Florida, 101 Church Street, Kissimmee, Florida 34741, hereinafter "City" and American Persian Engineering & Construction, LLC, whose business address is 5401 S. Kirkman Road #336, Orlando, FL 327819, hereinafter "Contractor" and each represents as follows:

WITNESSETH

WHEREAS, City advertised IFB 2022-002 Annual Contract for Milling, Resurfacing and Minor Concrete Work, attached hereto and incorporated herein as Exhibit "A"; and

WHEREAS, Contractor provides milling, resurfacing and minor concrete work services and was the lowest responsive and responsible bidder, a copy of said bid response is attached hereto and incorporated herein as Exhibit "B"; and

WHEREAS, City desires to award IFB 2022-002 to Contractor consistent with the terms and conditions and requirements of the bid specifications.

NOW THEREFORE, in consideration of the mutual promises contained herein and for other good and value considerations, the receipt and sufficiency of which I hereby acknowledged, each Party hereby promises to the other as follows:

1. **RECITALS.** The foregoing recitals are true and correct and specifically incorporated herein.

2. **SPECIFICATIONS.** Contractor agrees to perform miscellaneous alternative paving methods on an as-needed basis on City premises and facilities. Work may include, but not limited to, milling, resurfacing, striping, micro-surfacing, reclaimed asphalt paving, concrete work, and sodding.

3. **WORKMANSHIP and WARRANTY.** Contractor agrees to furnish all material, labor, equipment and tools necessary to provide the contracted services in accordance with the Exhibit "A", Exhibit "B", any and all change orders, and this Agreement. Contractor agrees to provide these services in a professional manner in accordance with the standards outlined Exhibit "A". Contractor shall supervise the performance of work by employees who shall present a favorable image for the City at all times when working on City property.

4. **TERM.** The term of this Agreement shall commence on the date of execution and terminate on September 20, 2025. This Agreement may, by mutual written consent of the Parties, be

extended for two (2) additional twelve-month periods. City reserves the right to cancel this Agreement without cause on any and all locations.

5. **PAYMENT.** Payments to Contractor shall be made only upon submission of proof of satisfactory completion of the services, or the increment(s) thereof, for which payment is made. Contractor shall provide at the post award conference a payment schedule for work phases. Payment prior to initiation of the project and receipt by the City for services for which payment is invoiced is strictly prohibited. A payment will be made based on proof of satisfactory completion of each cycle. The amount of each payment will be based upon final contract payment schedule. Invoices shall provide details of all project expenses permitted in this Agreement. Upon review and approval of the Contractor's invoice and verification that services have been rendered in conformity with this Agreement, the City, through payment issued by the Public Works and Engineering Department, shall pay Contractor in accordance with the Local Government Prompt Payment Act, Chapter 218, Part VII, Florida Statutes. Contractor shall not apply any late charges, interest or penalties to any invoice or charges for services until 30 days from the City's receipt of the invoice. If this Agreement is terminated for convenience for any reason, then the Contractor shall be paid pro rata for all services performed, materials purchased, and administrative costs incurred, including lost profit, to the effective date of termination.

6. **BOND**. Contractor shall furnish City with a performance bond issued by a surety licensed to do business in the State of Florida prior to commencement of work in the amount of $10,000.00.

7. **INSURANCE.** Contractor is required to submit to the City Certificates of Insurance naming the City as an additional insured. Said Certificate of Insurance shall also provide that at least thirty (30) days written notice shall be given to the City. During the term of the Agreement and any renewals, Contractor, at its sole cost and expense, shall maintain insurance coverage as follows:

   A. **Workers Compensation**: Contractor will provide Worker's Compensation coverage for all employees at the site location. The limits will be statutory for Worker's Compensation and $300,000.00 for Employers' Liability.

   B. **Comprehensive General Liability**: Contractor will provide coverage for all owned and non-owned vehicles for limits of not less than $1,000,000.00.

   C. **Comprehensive Automobile Liability**: Contractor will provide coverage for all owned and non-owed vehicles for limits of not less than $1,000,000.00.

   D. **Umbrella Insurance**: The Contractor will provide an umbrella in excess to the coverage in paragraphs B), and C) of not less than $1,000,000.00.

8. **WORK ORDERS**. The City may issue subsequent modifications to the work order(s) for additional work that was not known or included in the Specifications that is found to be needed during the course of this Agreement and above the amount set forth in Exhibit "C." Contractor must seek approval from the City before performing any additional work. The City must provide the Contractor with written documentation of the modification to any work order within three (3) business days of verbal approval. Contractor is not obligated to perform additional work until written modification has been received from the City but may commence work based upon a reasonable assumption that written modification will be issued. Incidental additional work performed by the Contractor without City consent will be evaluated and considered for payment based upon the work's merit. If the City determines the incidental additional work was not included in the original scope of the project and required for the Contractor's uninterrupted performance in fulfillment of the contract, then the City will approve the Contractor's request for payment for incidental additional work.

9. **TERMINATION FOR CONVENIENCE.** The City reserves the right to terminate the Agreement in whole or part by giving the Contractor written notice at least thirty (30) days prior to effective date of termination. Upon receipt of termination from the City, the Contractor shall only provide those services specifically approved or directed by the City. All other rights and duties of the parties under the Agreement shall continue during such notice period, and the City shall continue to be responsible to the vendor for the payment of any obligation to the extent such responsibility has not been excused by breach or default of the Contractor.

   Upon termination, Contractor shall bill the City for all amounts not previously billed and due to the vendor at that time. The vendor shall not be entitled to a profession fee nor expenses for any work commenced or expenses incurred after the notice of termination was received by the vendor, unless specifically approved or requested by the City. The Contractor shall however, be entitled to payment for services commenced and approved by the City prior to receipt of notice, or with the expressed written consent of the City, prior to the effective date of termination.

10. **TERMINATION FOR CAUSE**. If City wishes to terminate the Contractor for cause due to the failure of Contractor to perform as required under this Agreement and/or in a manner consistent with the degree of care and skill ordinarily exercised by members of the same profession currently practicing under similar circumstances, then the City must provide the Contractor with written notice of said failure to perform. The City must give ten (10) working days from the Contractor's receipt of the Notice to Cure for the Contractor to cure or take reasonable action to commence to cure the performance concerns specified. If the Contractor does not take appropriate action within the ten (10) day period, the City may issue a Final Notice to Cure. The Contractor will have an additional five (5) working days from the receipt of the Notice to Cure to cure or take reasonable action to commence to cure before the City can terminate the Agreement. If the Contractor is terminated for cause, the Contractor may provide or employ any necessary labor and materials in lieu of Contractor to finish part or all of the work under the Agreement or to supplement the work of Contractor, and to deduct the cost

thereof from any money, then due or thereafter to become due to the Contractor; and if such cost shall exceed the balance due to Contractor, then the Contractor shall pay the difference to the City.

11. **BREACH.** Failure of Contractor or the City to perform the covenants, conditions, or provisions of the Agreement shall constitute a material default and breach of the Agreement. In the event of any default, the City has the right to terminate this Agreement immediately without notice to Contractor In the event of any default of the City, except the payments required under the Agreement, Contractor may terminate this Agreement immediately without notice. If the City fails to timely pay the monies required under this Agreement, it has fifteen (15) days after written notice from Contractor to cure said default, unless the City disputes satisfactory performance of services.

12. **E-VERIFY.** In compliance with Section 448.095, Fla. Stat., Contractor and its subcontractors shall, register with and use the E-Verify system to verify work authorization status of all employees hired after January 1, 2021.

a. Contractor shall require each of its subcontractors to provide Contractor with an affidavit stating that the subcontractor does not employ, contract with, or subcontract with an unauthorized alien. Contractor shall maintain a copy of the subcontractor's affidavit as part of and pursuant to the records retention requirements of this Agreement.

b. The City, Contractor, or any subcontractor who has a good faith belief that a person or entity with which it is contracting has knowingly violated Section 448.09(1), Fla. Stat. or the provisions of this section shall terminate the contract with the person or entity.

c. The City, upon good faith belief that a subcontractor knowingly violated the provisions of this section, but Contractor otherwise complied, shall promptly notify Contractor and Contractor shall immediately terminate the contract with the subcontractor.

d. A contract terminated under the provisions of this section is not a breach of contract and may not be considered such. Any contract termination under the provisions of this section may be challenged pursuant to Section 448.095(2)(d), Fla. Stat. Contractor acknowledges that upon termination of this Agreement by the City for a violation of this section by Contractor, Contractor may not be awarded a public contract for at least one (1) year. Contractor further acknowledges that City is liable for any additional costs incurred by the City as a result of termination of any contract for a violation of this section.

13. **INDEMNIFICATION/HOLD HARMLESS.** To the extent permitted by law, Contractor hereby releases and waives all claims against the City, its officers, employees, agents, independent Contractors for any injury or damaged to the person, property, or business of Contractor, its agents, employees, sub-contractors, or other persons, for which injury or damages result from any act, neglect, occurrence, or condition in or about any City properties whether such damage is caused by the City or any other person. Nothing in the agreement shall

be construed as a waiver of the City's statutory sovereign immunity pursuant to Section 768.28, Florida Statutes.

Contractor agrees to indemnify and hold harmless the City, its agents, officers, employees against any and all claims, demand, cost, and expenses of every kind and nature, including reasonable attorney fees for the enforcement, defense, or appeals thereof arise from Contractor performance of the Agreement or any breach or default of Contractor.

14. **PUBLIC RECORDS.** Contractor specifically acknowledges the City's obligations under Article I, Section 24, of the Florida Constitution and under Chapter 119, Florida Statutes, to release public records to members of the public upon request and that the constitutional and statutory provisions control over the terms of this Agreement. As such, the Contractor shall keep and maintain public records required by the City and to comply with §119.071, F.S., shall:

a) Keep and maintain public records that ordinarily and necessarily would be required by the City in order to perform the services required under this Agreement;

b) Provide the public with access to public records on the same terms and conditions that the City would provide the records and at a cost that does not exceed the cost provided in Chapter 119, Florida Statutes, or as otherwise provided by law;

c) Ensure that public records that are exempt or confidential and exempt from public records disclosure requirements are not disclosed, except as authorized by law; and

d) Meet all requirements for retaining public records and transfer, at no cost to the City, all public records in possession of Contractor upon termination of this Agreement and destroy any duplicate public records that are exempt or confidential and exempt from public records disclosure requirements. All records stored electronically must be provided to the City in a format that is compatible with the information technology system of the City.

If the Contractor has questions regarding the application of Chapter 119, Florida Statutes, to Contractor's duty to provide public records relating to this Agreement, contact the Custodian of Public Records at 407-518-2308, cityclerkemail@kissimmee.gov, and 101 Church Street, Kissimmee, Florida 34741.

15. **NON-ASSIGNMENT.** Contractor shall not assign, sell or transfer this Agreement or any portion hereof without receiving the written consent of the City. This Agreement is hereby deemed to be of a personal service contact nature, thus, subcontracting any portion of this Agreement is prohibited.

16. **APPLICABLE LAWS.** This Agreement shall be governed, construed and enforced in accordance with the laws of the State of Florida.

17. **JURY TRIAL WAIVER/VENUE/WAIVER OF ATTORNEY FEES.** Contractor agrees to waive the right to a jury trial in any action, proceeding, or counterclaim. Venue shall be Osceola County, Florida. Each party waives the right to attorney fees in any action to enforce this Agreement.

18. **WAIVER.** No failure of the City to insist upon strict performance in any one or more terms of this Agreement, nor any failure of the City to exercise any right or remedy under this Agreement shall constitute a waiver of any such term, right or remedy the City may have, or future rights to enforce compliance.

19. **NOTICES.** Notice under this Agreement shall be deemed effective when mailed, certified mail return receipt requested or when delivered personally at the parties address below:

Notice to CITY:
Natrevia Gradney-Mitchell, Public Works and Engineering Director
101 N. Church Street
Kissimmee, Florida 34741

Notice to Contractor:
Arman Pourmirza – President
5401 S. Kirkman Road #336
Orlando, Florida 32819

20. **ENTIRETY OF AGREEMENT.** This Agreement shall constitute the entire Agreement of the Parties. Any prior understanding or representations of any kind preceding the date of this Agreement shall not be binding on either Party except as incorporated herein.

21. **MODIFICATIONS.** Any modifications or additional obligations assumed by either Party shall be binding only if written and valued considerations exchanged.

(*Signature page to follow*)

IN WITNESS WHEREOF, the Parties hereto have caused this Agreement to be executed:

CONTRACTOR

By: Aman Pourmurzi

Title: President

Date: 6/9/22

STATE OF FLORIDA

COUNTY OF Orange

The foregoing instrument was acknowledged before me this 09 day of June, 2022, by means of ☑ physical presence or ☐ online notarization, by Aman Pourmurzi as President for APEC, a Florida corporation, who is personally known to me or has produced identification.

Notary Seal:

Notary Public State of Florida
Nandita Persaud
My Commission GG 908209
Expires 08/27/2023

Notary: Nandita Persaud

Print Name: Nandita Persaud

My Commission Expires: 08/27/2023

CITY OF KISSIMMEE

By: Olga Gonzalez

Olga Gonzalez, Mayor-Commissioner

Date: 6/21/2022

ATTEST:

Linda Hansell

Linda Hansell, City Clerk

Approved as to form a legal sufficiency:

Olga Sanez on behalf

City Attorney

AMERPER-01 MTORRES

ACORD

CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY) 6/9/2022

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER
Jean Arthur Associates, Inc.
5626 Red Bug Lake Road
Winter Springs, FL 32708

CONTACT NAME:
PHONE (A/C, No, Ext): (407) 699-9930 FAX (A/C, No): (407) 699-5626
E-MAIL ADDRESS:

INSURER(S) AFFORDING COVERAGE	NAIC #
INSURER A : Ohio Security Insurance Company	24082
INSURER B : The Ohio Casualty Insurance Company	24074
INSURER C : Ace American Insurance Company	22667
INSURER D :	
INSURER E :	
INSURER F :	

INSURED
AMERICAN PERSIAN ENGINEERING AND CONSTRUCTION LLC
5401 S Kirkman Rd Ste 210
Orlando, FL 32819

COVERAGES CERTIFICATE NUMBER: REVISION NUMBER:

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
A	X COMMERCIAL GENERAL LIABILITY						EACH OCCURRENCE	$ 1,000,000
	CLAIMS-MADE X OCCUR			BLS60986450	2/12/2022	2/12/2023	DAMAGE TO RENTED PREMISES (Ea occurrence)	$ 300,000
							MED EXP (Any one person)	$ 15,000
							PERSONAL & ADV INJURY	$ 1,000,000
	GEN'L AGGREGATE LIMIT APPLIES PER:						GENERAL AGGREGATE	$ 2,000,000
	X POLICY PRO-JECT LOC						PRODUCTS - COMP/OP AGG	$ 2,000,000
	OTHER:							$
A	AUTOMOBILE LIABILITY						COMBINED SINGLE LIMIT (Ea accident)	$ 1,000,000
	ANY AUTO			BAS64076536	2/12/2022	2/12/2023	BODILY INJURY (Per person)	$
	OWNED AUTOS ONLY / SCHEDULED AUTOS						BODILY INJURY (Per accident)	$
	X HIRED AUTOS ONLY / X NON-OWNED AUTOS ONLY						PROPERTY DAMAGE (Per accident)	$
								$
B	X UMBRELLA LIAB X OCCUR			USO60986450	2/12/2022	2/12/2023	EACH OCCURRENCE	$ 2,000,000
	EXCESS LIAB CLAIMS-MADE						AGGREGATE	$ 2,000,000
	DED X RETENTION $ 0						Completed Ops	$ 2,000,000
A	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY						X PER STATUTE / OTH-ER	
	ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) Y/N N	N/A		XWS64648408	3/14/2022	3/14/2023	E.L. EACH ACCIDENT	$ 1,000,000
	If yes, describe under DESCRIPTION OF OPERATIONS below						E.L. DISEASE - EA EMPLOYEE	$ 1,000,000
							E.L. DISEASE - POLICY LIMIT	$ 1,000,000
C	Pollution Liability			G73604989-01	3/17/2022	3/17/2023	General Aggregate	2,000,000
C	Pollution Liability			G73604989-01	3/17/2022	3/17/2023	Each Pollution Cond	1,000,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)
Project: IFB 2022-002 Alternative Paving Methods.

CERTIFICATE HOLDER

City of Kissimmee
Attn: Victor Aponte
101 Church Street, Suite 301
Kissimmee, FL 34741

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE
Malinda Torres

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EXHIBIT "A"

EXHIBIT "B"

**** THIS SCHEDULE OF OFFERS SHOULD BE THE FIRST PAGE SUBMITTED WITH YOUR BID ****
Bid IFB2022-002

I/we, the undersigned, hereby declare that I/we have reviewed the bid documents and with full knowledge and understanding of all specifications and conditions contained therein do submit, (in duplicate), our bid as follows with full understanding that the bid package in its entirety is made a part of any agreement, contract or order between the City of Kissimmee and the successful bidder.

ITEM NO.	DESCRIPTION	COST
1	TOTAL BID AMOUNT OF ITEMS 5 to 229	$22,962.00
2	TOTAL BID AMOUNT OF ITEMS S-1 to S-9	No Bid
3	TOTAL BID AMOUNT OF ITEMS S-10 to S-15	No Bid
4	TOTAL BID AMOUNT OF ITEMS S-16 to S-26	No Bid
5	TOTAL BID AMOUNT OF ITEMS S-27 to S-29	No Bid
6	TOTAL BID AMOUNT OF ITEMS S-30 to S-32	No Bid
7	TOTAL BID AMOUNT OF ITEMS S-33 to S-35	No Bid
8	TOTAL BID AMOUNT OF ITEMS S-36 to S-38	No Bid
9	TOTAL BID AMOUNT OF ITEMS S-39 to S-41	No Bid
10	TOTAL BID AMOUNT OF ITEMS S-42 to S-47	$1,420.00
11	TOTAL BID AMOUNT OF ITEMS S-48 to S-50	No Bid

ACKNOWLEDGMENT OF ADDENDA NO.(S) 1,2,3&4 (IF APPLICABLE)

_____
(Signature)

ALL PRICES QUOTED ARE GOOD FOR A PERIOD OF 90 DAYS.

AP We do not take exception to Specifications.
(initial)

_____ We take exception to Specifications as follows:
(initial)

_____
_____
_____
(attach additional sheets, if necessary)

COMPANY NAME American Persian Engineering and construction LC DBA APEC LLC
COMPANY ADDRESS 5401 S. Kirkman Rd #336,
Orlando, FL 32819

NOTE: OFFERS NOT RECEIVED IN DUPLICATE MAY BE REJECTED.
VENDORS ARE RESPONSIBLE FOR DELIVERY OF THEIR BID TO THE ADDRESS INDICATED ON THE BID COVER SHEET PRIOR TO THE DATE AND TIME SHOWN. BIDS NOT SO DELIVERED MAY BE REJECTED.

BY: _____ DATE: 5/05/2022
(signature)
Arman Pourmirza/ President EMAIL: Arman@Apec2.com
(typed name/title of signer)

TELEPHONE NO.: (407)619 7888 FAX NO.: (___)_____

Attachment A

Local Vendor Affidavit of Eligibility

This form is to be completed in its entirety by the vendor and submitted along with your bid or quote. Incomplete forms will be rejected for preference evaluation.

State of Florida
County of Osceola

Before me on this _____day of _____20___, personally appeared

(print name) Arman Pourmirza/ President **being an authorized representative of lawful age, who being by me first duly sworn, on his/her oath, deposes and says:**

(print name of company) American Persian Engineering and construction LC DBA APEC LLC **MEETS ALL CRITERIA AS REQUIRED BY THE CITY OF KISSIMMEE TO QUALIFY FOR LOCAL VENDOR PREFERENCE. Qualification documentation attached.**

._____
Signature of Affiant

. Arman Pourmirza
Typed/Printed Name of Affiant

. 5401 s. Kirkman Rd #336

. Orlando, FL, 32819
Address of Affiant

State of Florida
County of Orange

Sworn to (or affirmed) and subscribed before me this ____day of _____20__, by

._____
(Signature of Notary Public-State of Florida)

._____
(Print, Type, or Stamp commissioned name of notary public)___personally known or ____ produced identification. Type of identification produced_____

Attachment C

CITY OF KISSIMMEE
ALTERNATIVE PAVING METHODS
SCHEDULE OF UNIT PRICES

Mobilization/Maintenance of Traffic				
Item	**Description**	**Estimated Quantity**	**Unit of Measure**	**Unit Price**
1	Mobilization	1	%	10.00%
2	Night Work Mobilization	1	%	10.00%
3	Maintenance of Traffic	1	%	10.00%
4	Maintenance of Traffic Nightwork	1	%	10.00%
Asphalt, Earthwork, and Concrete				
5	Inlet Protection System	1-25	EA	$200.00
6	Inlet Protection System	26-50	EA	$50.00
7	Inlet Protection System	51-100+	EA	$50.00
8	Floating Turbidity Barrier	1-200	LF	$200.00
9	Floating Turbidity Barrier	201-500	LF	$150.00
10	Floating Turbidity Barrier	501-1000+	LF	$50.00
11	Staked Silt Fence	1-200	LF	$20.00
12	Staked Silt Fence	201-500	LF	$20.00
13	Staked Silt Fence	501+	LF	$5.00
14	Clearing and Grubbing	1	AC	$3,000.00
15	Curb and Gutter Removal	1-200	LF	$40.00
16	Curb and Gutter Removal	201-500	LF	$35.00
17	Curb and Gutter Removal	501+	LF	$30.00
18	Miscellaneous Concrete Removal	1-200	SY	$40.00
19	Existing Pipe Removal	1-200	LF	$35.00
20	Existing Pipe Removal	201-500	LF	$30.00
21	Existing Pipe Removal	501+	LF	$30.00
22	Removal of Existing Pavement	1-200	SY	$25.00
23	Removal of Existing Pavement	201-500	SY	$23.00
24	Removal of Existing Pavement	501+	SY	$20.00
25	Roadway Excavation	1-200	CY	$50.00
26	Roadway Excavation	201-500	CY	$30.00
27	Roadway Excavation	501+	CY	$30.00
28	Swale Grading	1-200	LF	$30.00
29	Swale Grading	201-500	LF	$25.00
30	Swale Grading	501+	LF	$20.00
31	Embankment (Truckload)	1-200	CY	$50.00
32	Embankment (Truckload)	201-500	CY	$45.00
33	Embankment (Truckload)	501+	CY	$40.00
34	Flowable Fill	1-9	CY	$400.00
35	Flowable Fill	10-18	CY	$350.00
36	Flowable Fill	19-27+	CY	$300.00
37	Asphaltic Base Course	1-200	TN	$400.00
38	Asphaltic Base Course	201-500	TN	$250.00

39	Asphaltic Base Course	501+	TN	$230.00
40	Optional Base Group 1	1-200	SY	$50.00
41	Optional Base Group 1	201-500	SY	$28.00
42	Optional Base Group 1	501-1000+	SY	$25.00
43	Optional Base Group 4	1-200	SY	$30.00
44	Optional Base Group 4	201-500	SY	$28.00
45	Optional Base Group 4	501-1000+	SY	$25.00
46	Optional Base Group 6	1-200	SY	$30.00
47	Optional Base Group 6	201-500	SY	$28.00
48	Optional Base Group 6	501-1000+	SY	$25.00
49	Optional Base Group 9	1-200	SY	$50.00
50	Optional Base Group 9	201-500	SY	$45.00
51	Optional Base Group 9	501-1000+	SY	$40.00
52	Optional Base Group 11	1-200	SY	$50.00
53	Optional Base Group 11	201-500	SY	$45.00
54	Optional Base Group 11	501-1000+	SY	$40.00
55	Milling (1")	1-200	SY	$20.00
56	Milling (1")	201-500	SY	$18.00
57	Milling (1")	501-1000+	SY	$15.00
58	Milling (1.5")	1-200	SY	$25.00
59	Milling (1.5")	201-500	SY	$23.00
60	Milling (1.5")	501-1000+	SY	$20.00
61	Milling (2")	1-200	SY	$25.00
62	Milling (2")	201-500	SY	$23.00
63	Milling (2")	501-1000+	SY	$20.00
64	Milling (3")	1-200	SY	$25.00
65	Milling (3")	201-500	SY	$23.00
66	Milling (3")	501-1000+	SY	$20.00
67	Milling (4")	1-200	SY	$25.00
68	Milling (4")	201-500	SY	$23.00
69	Milling (4")	501-1000+	SY	$20.00
70	Milling (5")	1-200	SY	$25.00
71	Milling (5")	201-500	SY	$23.00
72	Milling (5")	501-1000+	SY	$20.00
73	Milling (6")	1-200	SY	$25.00
74	Milling (6")	201-500	SY	$23.00
75	Milling (6")	501-1000+	SY	$20.00
76	Type III Asphaltic Concrete	1-200	TN	$450.00
77	Type III Asphaltic Concrete	201-500	TN	$425.00
78	Type III Asphaltic Concrete	501+	TN	$400.00
79	Asphaltic Concrete Type "S-1"	1-200	TN	$400.00
80	Asphaltic Concrete Type "S-1"	201-500	TN	$350.00
81	Asphaltic Concrete Type "S-1"	501+	TN	$300.00
82	Asphaltic Concrete Type "S-3"	1-200	TN	$400.00
83	Asphaltic Concrete Type "S-3"	201-500	TN	$350.00
84	Asphaltic Concrete Type "S-3"	501+	TN	$300.00
85	Adjusting Manholes (Metal Riser Rings)	1-5	EA	$400.00

86	Adjusting Manholes (Metal Riser Rings)	6-10	EA	$300.00
87	Adjusting Manholes (Metal Riser Rings)	11-20+	EA	$200.00
88	Adjusting Valve Boxes (Metal Riser Rings)	1-5	EA	$400.00
89	Adjusting Valve Boxes (Metal Riser Rings)	6-10	EA	$200.00
90	Adjusting Valve Boxes (Metal Riser Rings)	11-20+	EA	$150.00
91	18" RCP CD - CI	1-200	LF	$200.00
92	18" RCP CD - CI	201-500	LF	$160.00
93	18" RCP CD - CI	501+	LF	$140.00
94	Type "A" Curb	1-25	LF	$60.00
95	Type "A" Curb	26-50	LF	$55.00
96	Type "A" Curb	51-100+	LF	$50.00
97	Type "B" Curb	1-20	LF	$60.00
98	Type "B" Curb	26-50	LF	$55.00
99	Type "B" Curb	51-100+	LF	$50.00
100	Type "D" Curb	1-25	LF	$60.00
101	Type "D" Curb	26-50	LF	$55.00
102	Type "D" Curb	51-100+	LF	$50.00
103	Type "E" Curb	1-25	LF	$60.00
104	Type "E" Curb	26-50	LF	$55.00
105	Type "E" Curb	51-100+	LF	$50.00
106	Type "F" Curb	1-25	LF	$60.00
107	Type "F" Curb	26-50	LF	$55.00
108	Type "F" Curb	51-100+	LF	$50.00
109	Valley Gutter	1-25	LF	$70.00
110	Valley Gutter	26-50	LF	$65.00
111	Valley Gutter	51-100+	LF	$60.00
112	Traffic Separator - (4')	1-25	LF	$120.00
113	Traffic Separator - (4')	26-50	LF	$110.00
114	Traffic Separator - (4')	51-100+	LF	$100.00
115	Traffic Separator - (6')	1-25	LF	$130.00
116	Traffic Separator - (6')	26-50	LF	$120.00
117	Traffic Separator - (6')	51-100+	LF	$110.00
118	Traffic Separator - (width varies)	1-25	SY	$130.00
119	Traffic Separator - (width varies)	26-50	SY	$120.00
120	Traffic Separator - (width varies)	51-100+	SY	$110.00
121	Concrete Sidewalk - (4" thickness)	1-100	SY	$100.00
122	Concrete Sidewalk - (4" thickness)	101-250	SY	$95.00
123	Concrete Sidewalk - (4" thickness)	251-500+	SY	$90.00
124	Concrete Sidewalk - (6" thickness)	1-100	SY	$120.00
125	Concrete Sidewalk - (6" thickness)	101-250	SY	$110.00
126	Concrete Sidewalk - (6" thickness)	251-500+	SY	$100.00
127	Concrete Sidewalk - (6" Thickness)	1-100	SY	$120.00
128	Concrete Sidewalk - (6" Thickness)	101-250	SY	$110.00
129	Concrete Sidewalk - (6" Thickness)	251+	SY	$100.00
130	Detectable Warning Surfaces (Inset)	1-50	SF	$60.00
131	Detectable Warning Surfaces (Inset)	51-100	SF	$60.00
132	Detectable Warning Surfaces (Inset)	101+	SF	$50.00

133	Detectable Warning Surfaces (Screwdown Retro-Fit)	1-50	SF	$60.00
134	Detectable Warning Surfaces (Screwdown Retro-Fit)	51-100	SF	$60.00
135	Detectable Warning Surfaces (Screwdown Retro-Fit)	101+	SF	$50.00
136	Sodding (Bahia)	1-200	SY	$40.00
137	Sodding (Bahia)	201-500	SY	$30.00
138	Sodding (Bahia)	501+	SY	$15.00
139	Sodding (Floratam)	1-200	SY	$40.00
140	Sodding (Floratam)	201-500	SY	$30.00
141	Sodding (Floratam)	501+	SY	$15.00
142	Loop Assembly, F&I - Type B	1	AS	$2,000.00
Pavement Markings				
143	Install Sign (single post)	1-5	EA	$300.00
144	Install Sign (single post)	6-15	EA	$250.00
145	Install Sign (single post)	16-30+	EA	$200.00
146	Install Sign (multi-post)	1-5	EA	$450.00
147	Install Sign (multi-post)	6-15	EA	$400.00
148	Install Sign (multi- post)	16-30+	EA	$350.00
149	Reflective Pavement Markers (RPM's)	1-20	EA	$20.00
150	Reflective Pavement Markings (RPM's)	21-60	EA	$17.00
151	Reflective Pavement Markers (RPM's)	61-100+	EA	$15.00
152	6" Solid Traffic Stripe (paint) (white)	1-200	LF	$15.00
153	6" Solid Traffic Stripe (paint) (white)	201-500	LF	$14.00
154	6" Solid Traffic Stripe (paint) (white)	501-1000+	LF	$13.00
155	6" Solid Traffic Stripe (paint) (yellow)	1-200	LF	$15.00
156	6" Solid Traffic Stripe (paint) (yellow)	201-500	LF	$14.00
157	6" Solid Traffic Stripe (paint) (yellow)	501-1000+	LF	$13.00
158	12" Solid Traffic Stripe (paint)	1-25	LF	$16.00
159	12" Solid Traffic Stripe (paint)	26-50	LF	$15.00
160	12" Solid Traffic Stripe (paint)	51-100+	LF	$14.00
161	18" Solid Traffic Stripe (paint)	1-25	LF	$18.00
162	18" Solid Traffic Stripe (paint)	26-50	LF	$17.00
163	18" Solid Traffic Stripe (paint)	51-100+	LF	$16.00
164	24" Solid Traffic Stripe (paint)	1-25	LF	$20.00
165	24" Solid Traffic Stripe (paint)	26-50	LF	$19.00
166	24" Solid Traffic Stripe (paint)	51-100+	LF	$18.00
167	6" Skip Traffic Stripe (paint)	1-200	LF	$15.00
168	6" Skip Traffic Stripe (paint)	201-500	LF	$14.00
169	6" Skip Traffic Stripe (paint)	501-1000+	LF	$13.00
170	6" Dotted Guide Lines (paint)	1-50	LF	$15.00
171	6" Dotted Guide Lines (paint)	51-100	LF	$14.00
172	6" Dotted Guide Lines (paint)	101-150+	LF	$13.00
173	Directional Arrows (Paint)	1-10	EA	$200.00
174	Directional Arrows (Paint)	11-50	EA	$180.00
175	Directional Arrows (Paint)	51+	EA	$160.00
176	Pavement Messages (Paint)	1-10	EA	$200.00
177	Pavement Messages (Paint)	11-50	EA	$180.00
178	Pavement Messages (Paint)	51+	EA	$160.00

179	8" Solid Traffic Stripe (Paint)	1-200	LF	$16.00
180	8" Solid Traffic Stripe (Paint)	201-500	LF	$15.00
181	8" Solid Traffic Stripe (Paint)	501-1000+	LF	$14.00
182	6" Solid Stripe/Extru. Thermo (white)	1-200	LF	$20.00
183	6" Solid Stripe/Extru. Thermo (white)	201-500	LF	$19.00
184	6" Solid Stripe/Extru. Thermo (white)	501-1000+	LF	$18.00
185	6" Solid Stripe/Extru. Thermo (yellow)	1-200	LF	$20.00
186	6" Solid Stripe/Extru. Thermo (yellow)	201-500	LF	$19.00
187	6" Solid Stripe/Extru. Thermo (yellow)	501-1000+	LF	$18.00
188	12" Solid Traffic Stripe/Extru. Thermo	1-25	LF	$20.00
189	12" Solid Traffic Stripe/Extru. Thermo	26-50	LF	$19.00
190	12" Solid Traffic Stripe/Extru. Thermo	51-100+	LF	$18.00
191	18" Solid Traffic Stripe/Extru. Thermo	1-25	LF	$22.00
192	18" Solid Traffic Stripe/Extru. Thermo	26-50	LF	$21.00
193	18" Solid Traffic Stripe/Extru. Thermo	51-100+	LF	$20.00
194	24" Solid Traffic Stripe/Extru. Thermo	1-25	LF	$23.00
195	24" Solid Traffic Stripe/Extru. Thermo	26-50	LF	$22.00
196	24" Solid Traffic Stripe/Extru. Thermo	51-100+	LF	$21.00
197	6" Skip Traffic Stripe/Extru. Thermo	1-200	LF	$20.00
198	6" Skip Traffic Stripe/Extru. Thermo	201-500	LF	$19.00
199	6" Skip Traffic Stripe/Extru. Thermo	501-1000+	LF	$18.00
200	6" Dotted Guide Lines/Extru. Thermo	1-50	LF	$20.00
201	6" Dotted Guide Lines/Extru. Thermo.	51-100	LF	$19.00
202	6" Dotted Guide Lines/Extru. Thermo.	101-150+	LF	$18.00
203	Directional Arrows / Extru. Thermo.	1	EA	$200.00
204	Preformed Symbol	1	EA	$200.00
205	Pavement Messages / Extru. Thermo.	1	EA	$200.00
206	8" Solid Traffic Stripe / Extru. Thermo	1-200	LF	$22.00
207	8" Solid Traffic Stripe / Extru. Thermo	201-500	LF	$21.00
208	8" Solid Traffic Stripe / Extru. Thermo	501-1000+	LF	$20.00
209	Remove Ex. Pavement Markings(paint)	1-100	SF	$15.00
210	Remove Ex. Pavement Markings(paint)	101-300	SF	$14.00
211	Remove Ex. Pavement Markings(paint)	301-500+	SF	$13.00
212	Rem. Ex. Pavement Markings(thermo)	1-100	SF	$15.00
213	Rem. Ex. Pavement Markings(thermo)	101-300	SF	$14.00
214	Rem. Ex. Pavement Markings(thermo)	301-500+	SF	$13.00
		TOTAL BID AMOUNT OF ITEMS 5 to 214 ABOVE		$22,962.00
Item	**Description**	**Estimated Quantity**	**Unit of Measure**	**Unit Price**
HOT-IN-PLACE (With Virgin Top Course) Asphalt Recycling				
215	Asphalt Recycling	1 - 10,000	SY	No Bid
216	Asphalt Recycling	10,001 - 50,000	SY	No Bid
217	Asphalt Recycling	50,001+	SY	No Bid
218	Recycling Agent	1 - 10,000	GAL	No Bid
219	Recycling Agent	10,001 - 50,000	GAL	No Bid
220	Recycling Agent	50,001+	GAL	No Bid
HOT-IN-PLACE (100%) Asphalt Recycling				

221	Base Course HIPR	1 - 10,000	SY	No Bid
222	Base Course HIPR	10,001 - 50,000	SY	No Bid
223	Base Course HIPR	50,001+	SY	No Bid
224	2" Complete HIPR	1 - 10,000	SY	No Bid
225	2" Complete HIPR	10,001 - 50,000	SY	No Bid
226	2" Complete HIPR	50,001+	SY	No Bid
227	Asphalt Recycling Agent	1 - 10,000	SY	No Bid
228	Asphalt Recycling Agent	10,001 - 50,000	SY	No Bid
229	Asphalt Recycling Agent	50,001+	SY	No Bid
		TOTAL BID AMOUNT OF ITEMS 215 to 229 ABOVE		No Bid
Item	**Description**	**Estimated Quantity**	**Unit of Measure**	**Unit Price**
Specialty Paving Methods				
1	Mobilization	1	%	No Bid
2	Night Work Mobilization	1	%	No Bid
3	Maintenance of Traffic	1	%	No Bid
4	Maintenance of Traffic Nightwork	1	%	No Bid
S-1	Rut Fill / Scratch Course (Micro)	1-50	TN	No Bid
S-2	Rut Fill / Scratch Course (Micro)	51-100	TN	No Bid
S-3	Rut Fill / Scratch Course (Micro)	101+	TN	No Bid
S-4	Single Micro Surface 20-24 lbs	1-10,000	SY	No Bid
S-5	Single Micro Surface 20-24 lbs	10,001 - 50,000	SY	No Bid
S-6	Single Micro Surface 20-24 lbs	50,001+	SY	No Bid
S-7	Double Micro Surface 30-34 lbs	1-10,000	SY	No Bid
S-8	Double Micro Surface 30-34 lbs	10,001 - 50,000	SY	No Bid
S-9	Double Micro Surface 30-34 lbs	50,001+	SY	No Bid
		TOTAL BID AMOUNT OF ITEMS S-1 to S-9 ABOVE		No Bid
Item	**Description**	**Estimated Quantity**	**Unit of Measure**	**Unit Price**
1	Mobilization	1	%	No Bid
2	Night Work Mobilization	1	%	No Bid
3	Maintenance of Traffic	1	%	No Bid
4	Maintenance of Traffic Nightwork	1	%	No Bid
S-10	Single Chip Seal -#89 Granite	1-10,000	SY	No Bid
S-11	Single Chip Seal -#89 Granite	10,001 - 50,000	SY	No Bid
S-12	Single Chip Seal -#89 Granite	50,001+	SY	No Bid
S-13	Double Chip Seal -#57 w #89 Granite	1-10,000	SY	No Bid
S-14	Double Chip Seal -#57 w #89 Granite	10,001 - 50,000	SY	No Bid
S-15	Double Chip Seal -#57 w #89 Granite	50,001+	SY	No Bid
		TOTAL BID AMOUNT OF ITEMS S-10 to S-15 ABOVE		No Bid
Item	**Description**	**Estimated Quantity**	**Unit of Measure**	**Unit Price**
1	Mobilization	1	%	No Bid
2	Night Work Mobilization	1	%	No Bid
3	Maintenance of Traffic	1	%	No Bid
4	Maintenance of Traffic Nightwork	1	%	No Bid
S-16	Full Depth Reclamation /6"-9"	1-10,000	SY	No Bid
S-17	Full Depth Reclamation /6"-9"	10,001 - 50,000	SY	No Bid

S-18	Full Depth Reclamation /6"-9"	50,001+	SY	No Bid
S-19	Full Depth Reclamation 9"-12"	1-10,000	SY	No Bid
S-20	Full Depth Reclamation 9"-12"	10,001 - 50,000	SY	No Bid
S-21	Full Depth Reclamation 9"-12"	50,001+	SY	No Bid
S-22	Cement for Reclamation	1	TN	No Bid
S-23	Emulsion for Reclamation	1	Gal	No Bid
S-24	Reclaimed Asphalt Paving (RAP)	1-10,000	SY	No Bid
S-25	Reclaimed Asphalt Paving (RAP)	10,001 - 50,000	SY	No Bid
S-26	Reclaimed Asphalt Paving (RAP)	50,001+	SY	No Bid
		TOTAL BID AMOUNT OF ITEMS S-16 to S-26 ABOVE		No Bid
Item	**Description**	**Estimated Quantity**	**Unit of Measure**	**Unit Price**
1	Mobilization	1	%	No Bid
2	Night Work Mobilization	1	%	No Bid
3	Maintenance of Traffic	1	%	No Bid
4	Maintenance of Traffic Nightwork	1	%	No Bid
S-27	Fog Seal	1- 10,000	SY	No Bid
S-28	Fog Seal	10,001- 50,000	SY	No Bid
S-29	Fog Seal	50,000+	SY	No Bid
		TOTAL BID AMOUNT OF ITEMS S-27 to S-29 ABOVE		No Bid
Item	**Description**	**Estimated Quantity**	**Unit of Measure**	**Unit Price**
1	Mobilization	1	%	No Bid
2	Night Work Mobilization	1	%	No Bid
3	Maintenance of Traffic	1	%	No Bid
4	Maintenance of Traffic Nightwork	1	%	No Bid
S-30	Cape Seal	1- 10,000	SY	No Bid
S-31	Cape Seal	10,001- 50,000	SY	No Bid
S-32	Cape Seal	50,000+	SY	No Bid
		TOTAL BID AMOUNT OF ITEMS S-30 to S-32 ABOVE		No Bid
Item	**Description**	**Estimated Quantity**	**Unit of Measure**	**Unit Price**
1	Mobilization	1	%	No Bid
2	Night Work Mobilization	1	%	No Bid
3	Maintenance of Traffic	1	%	No Bid
4	Maintenance of Traffic Nightwork	1	%	No Bid
S-33	In-Place Recycling-Reconstrction	1- 10,000	SY	No Bid
S-34	In-Place Recycling-Reconstrction	10,001- 50,000	SY	No Bid
S-35	In-Place Recycling-Reconstrction	50,000+	SY	No Bid
		TOTAL BID AMOUNT OF ITEMS S-33 to S-35 ABOVE		No Bid
Item	**Description**	**Estimated Quantity**	**Unit of Measure**	**Unit Price**
1	Mobilization	1	%	No Bid
2	Night Work Mobilization	1	%	No Bid
3	Maintenance of Traffic	1	%	No Bid
4	Maintenance of Traffic Nightwork	1	%	No Bid
S-36	Crack Filling/Sealing	1-500	GAL	No Bid
S-37	Crack Filling/Sealing	501 - 1000	GAL	No Bid
S-38	Crack Filling/Sealing	1,001+	GAL	No Bid

			TOTAL BID AMOUNT OF ITEMS S-36 to S-38 ABOVE	No Bid
Item	**Description**	**Estimated Quantity**	**Unit of Measure**	**Unit Price**
1	Mobilization	1	%	No Bid
2	Night Work Mobilization	1	%	No Bid
3	Maintenance of Traffic	1	%	No Bid
4	Maintenance of Traffic Nightwork	1	%	No Bid
S-39	Asphalt Rejuvenator	1-50,000	SY	No Bid
S-40	Asphalt Rejuvenator	50,001 - 100,000	SY	No Bid
S-41	Asphalt Rejuvenator	100,001+	SY	No Bid
			TOTAL BID AMOUNT OF ITEMS S-39 to S-41 ABOVE	No Bid
Item	**Description**	**Estimated Quantity**	**Unit of Measure**	**Unit Price**
1	Mobilization	1	%	10.00%
2	Night Work Mobilization	1	%	10.00%
3	Maintenance of Traffic	1	%	10.00%
4	Maintenance of Traffic Nightwork	1	%	10.00%
S-42	Speed Hump W/ Curbing	1-50	FT	$240.00
S-43	Speed Hump W/ Curbing	51-100	FT	$240.00
S-44	Speed Hump W/ Curbing	101+	FT	$230.00
S-45	Speed Hump No Curbing	1-50	FT	$240.00
S-46	Speed Hump No Curbing	51-100	FT	$240.00
S-47	Speed Hump No Curbing	101+	FT	$230.00
			TOTAL BID AMOUNT OF ITEMS S-42 to S-47 ABOVE	$1,420.00
Item	**Description**	**Estimated Quantity**	**Unit of Measure**	**Unit Price**
1	Mobilization	1	%	No Bid
2	Night Work Mobilization	1	%	No Bid
3	Maintenance of Traffic	1	%	No Bid
4	Maintenance of Traffic Nightwork	1	%	No Bid
S-48	Slurry Seal	1-10,000	SY	No Bid
S-49	Slurry Seal	10,001 - 50,000	SY	No Bid
S-50	Slurry Seal	50,001+	SY	No Bid
			TOTAL BID AMOUNT OF ITEMS S-48 to S-50 ABOVE	No Bid

**Quantities are not guaranteed. Final payment will be based on actual quantities.

NAME OF CONTRACTOR:_____

AMERPER-01 MTORRES

ACORD

CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY) 6/9/2022

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER
Jean Arthur Associates, Inc.
5626 Red Bug Lake Road
Winter Springs, FL 32708

CONTACT NAME:
PHONE (A/C, No, Ext): (407) 699-9930 FAX (A/C, No): (407) 699-5626
E-MAIL ADDRESS:

INSURER(S) AFFORDING COVERAGE	NAIC #
INSURER A : Ohio Security Insurance Company	24082
INSURER B : The Ohio Casualty Insurance Company	24074
INSURER C : Ace American Insurance Company	22667
INSURER D :	
INSURER E :	
INSURER F :	

INSURED
AMERICAN PERSIAN ENGINEERING AND CONSTRUCTION LLC
5401 S Kirkman Rd Ste 210
Orlando, FL 32819

COVERAGES CERTIFICATE NUMBER: REVISION NUMBER:

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS		
A	X COMMERCIAL GENERAL LIABILITY CLAIMS-MADE [X] OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: X POLICY PRO-JECT LOC OTHER:			BLS60986450	2/12/2022	2/12/2023	EACH OCCURRENCE	$	1,000,000
							DAMAGE TO RENTED PREMISES (Ea occurrence)	$	300,000
							MED EXP (Any one person)	$	15,000
							PERSONAL & ADV INJURY	$	1,000,000
							GENERAL AGGREGATE	$	2,000,000
							PRODUCTS - COMP/OP AGG	$	2,000,000
								$	
A	AUTOMOBILE LIABILITY ANY AUTO OWNED AUTOS ONLY / SCHEDULED AUTOS X HIRED AUTOS ONLY / X NON-OWNED AUTOS ONLY			BAS64076536	2/12/2022	2/12/2023	COMBINED SINGLE LIMIT (Ea accident)	$	1,000,000
							BODILY INJURY (Per person)	$	
							BODILY INJURY (Per accident)	$	
							PROPERTY DAMAGE (Per accident)	$	
								$	
B	X UMBRELLA LIAB / X OCCUR EXCESS LIAB / CLAIMS-MADE DED X RETENTION $ 0			USO60986450	2/12/2022	2/12/2023	EACH OCCURRENCE	$	2,000,000
							AGGREGATE	$	2,000,000
							Completed Ops	$	2,000,000
A	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) Y/N [N] If yes, describe under DESCRIPTION OF OPERATIONS below	N/A		XWS64648408	3/14/2022	3/14/2023	X PER STATUTE / OTH-ER		
							E.L. EACH ACCIDENT	$	1,000,000
							E.L. DISEASE - EA EMPLOYEE	$	1,000,000
							E.L. DISEASE - POLICY LIMIT	$	1,000,000
C	Pollution Liability			G73604989-01	3/17/2022	3/17/2023	General Aggregate		2,000,000
C	Pollution Liability			G73604989-01	3/17/2022	3/17/2023	Each Pollution Cond		1,000,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)
Project: IFB 2022-002 Alternative Paving Methods.

CERTIFICATE HOLDER

City of Kissimmee
Attn: Victor Aponte
101 Church Street, Suite 301
Kissimmee, FL 34741

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE
Malinda Torres

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EXHIBIT "C"

CITY OF KISSIMMEE
PUBLIC WORKS & ENGINEERING
WORK ORDER FORM

Work Order #:
Purchase Order#:

DATE:

Per the terms, conditions, and specifications of the City of Kissimmee purchasing policies and procedures, this work order is issued to _____ with the following described work as agreed upon and are hereby accepted and incorporated:

DESCRIPTION OF ASSIGNMENT:

FORM OF COMPLETED DELIVERABLES:

BASIS OF PAYMENT: Services shall be made on the basis of_____ method in accordance with the Scope of Services, the total not to exceed _____ without further authorization from the City of Kissimmee.

ESTIMATED DATE OF COMPLETION: This assignment shall be completed by _____ from the receipt of the official Notice to Proceed from the City.

TASK	FEE
1)	
2)	
3)	
4)	
5)	
6)	
7)	
	$ -
Contract Dollars:	$0.00
NET Dollars for this Work Order/Addendum (Addition/Subtraction):	$0.00
CONTRACT TOTAL DOLLARS:	$0.00

Accepted By: _____ (Signature)

Title/Position: _____

City Commission Approval Date: _____

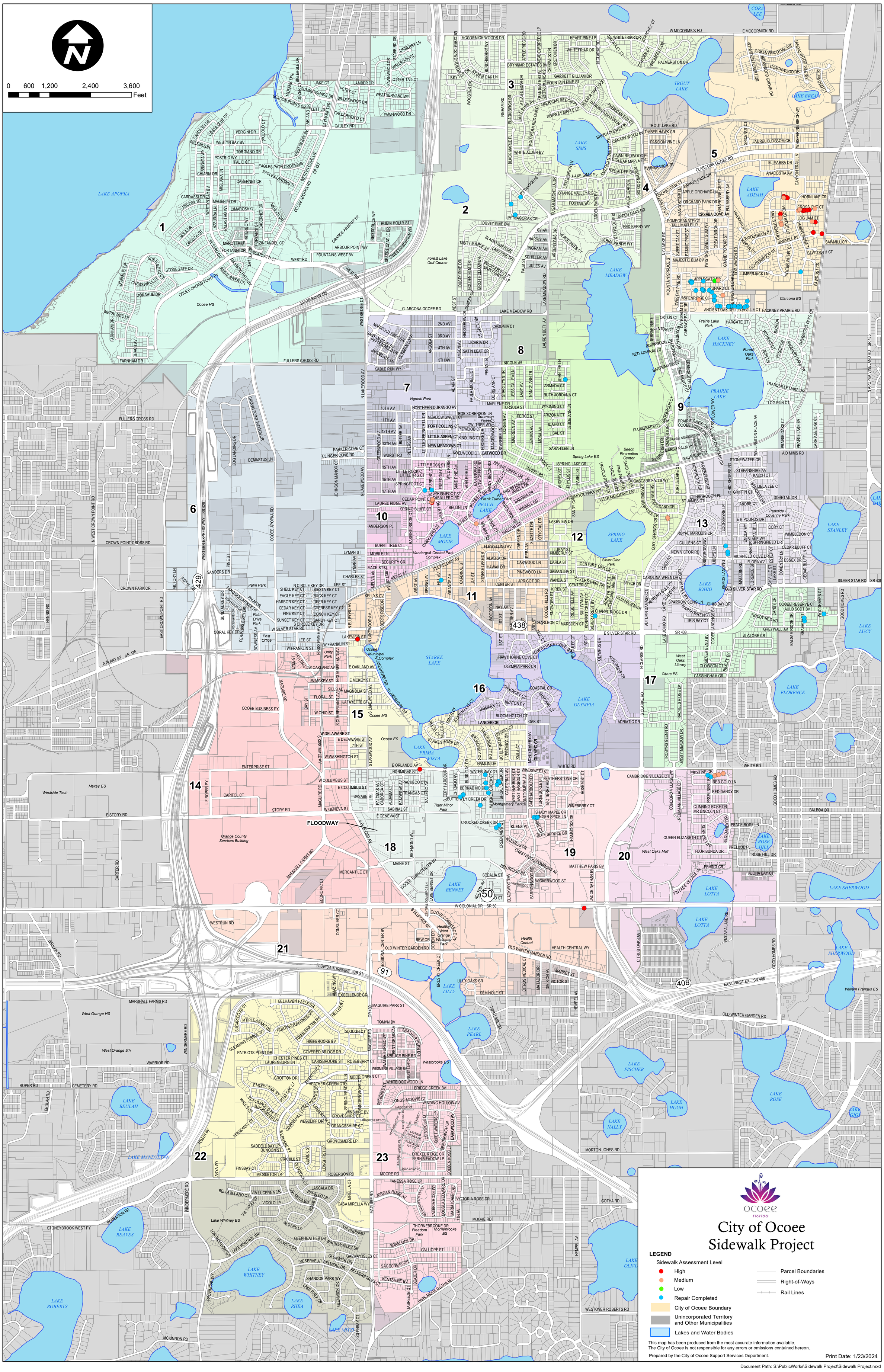
Requested By: _____ (Signature)

Approved By: _____ (Signature)

Title/Position: _____

Approved By: _____ (Signature)

Title/Position: _____



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STAFF REPORT

Meeting Date: February 6, 2024
Item #: 7

Contact Name: Doug Gaines
Contact Number: Ext. 1503

Department Director: Doug Gaines
City Manager: Robert Frank

Subject: HRDB 2024 Initiatives Presented by HRDB Board Member Kellie Beck. (Support Services Director Gaines)

Background Summary:

During the Human Relations Diversity Board (HRDB) Meeting held on February 1, 2024, a unanimous vote was made by the HRDB members to authorize Board Member Beck to present the 2024 Diversity Drives Ocoee Initiative for consideration by the City Commission. This initiative is designed to establish an ongoing educational program that corresponds with the HRDB's objectives delineated in its bylaws. Furthermore, Board Member Beck seeks approval for a brochure detailing the Board's goals, featuring an infographic illustrating Ocoee's demographics, and including a survey aimed at soliciting feedback from Ocoee residents.

Issue:

Should the Honorable Mayor and City Commissioners approve the items presented by the HRDB, so they can move forward with their 2024 Diversity Drives Ocoee Initiative?

Recommendations:

The HRDB Board recommends the Honorable Mayor and City Commissioners approve the items presented, so they can move forward with their 2024 Diversity Drives Ocoee Initiative.

Attachments:

1. Diversity Drives Ocoee Initiative
2. HRDB Brochure
3. Survey Questions

Financial Impacts:

The HRDB has $2,000 budgeted in FY23/24.

Type of Item: Regular

HUMAN
RELATIONS
DIVERSITY
BOARD

ocoee
florida

DIVERSITY DRIVES OCOEE

A Community Journey to Diversity, Equity, and Inclusion

PURPOSE

The purpose of the "Diversity Drives Ocoee: A Community Journey to Diversity, Equity, and Inclusion" initiative is to promote understanding of DEI for the citizens of the City of Ocoee. This initiative aligns with the mission of the Human Relations Diversity Board (HRDB) to foster mutual understanding and respect, facilitate communication, and make recommendations to advance diversity and inclusion within the community.

OBJECTIVE

The objective of this initiative is to provide a structured and continuous educational program that aligns with the objectives of the HRDB as outlined in its bylaws. By offering monthly training topics aligned with various diversity months, this initiative aims to educate, engage, and empower the community to embrace diversity, equity, and inclusion principles. Through collaboration with Orange County Library System’s partnership with LinkedIn Learning, participants will have access to curated training resources that foster a deeper understanding of diverse perspectives, cultures, and experiences, ultimately contributing to a more inclusive and equitable community environment.

RESOURCING

The successful implementation of the "Diversity Drives Ocoee: A Community Journey to Diversity, Equity, and Inclusion" initiative requires careful consideration of both financial and resource allocations. Below is an overview of the cost and resource requirements for this initiative:

Training Access: LinkedIn Learning

The core training component of this initiative will leverage access to LinkedIn Learning. The access through Orange County Library System includes a vast library of courses and resources that align with the monthly training topics. OCLS has been made aware of this upcoming initiative and are fully in support of this partnership and promotion of library resources.

Promotion: City of Ocoee Social Media and Website

To maximize community engagement and awareness, the initiative will be promoted using the official City of Ocoee social media accounts and website. This includes creating and sharing promotional content, event announcements, and highlights from the monthly training sessions. The use of social media platforms will serve as a cost-effective and efficient method to reach a broad audience within the community.

Administrative and Coordination: HRDB and City Staff Resources

The Human Relations Diversity Board (HRDB) and City staff will play a crucial role in coordinating, organizing, and facilitating the initiative's various components. This includes selecting monthly training topics, posting content, monitoring participation, and evaluating the effectiveness of the initiative.

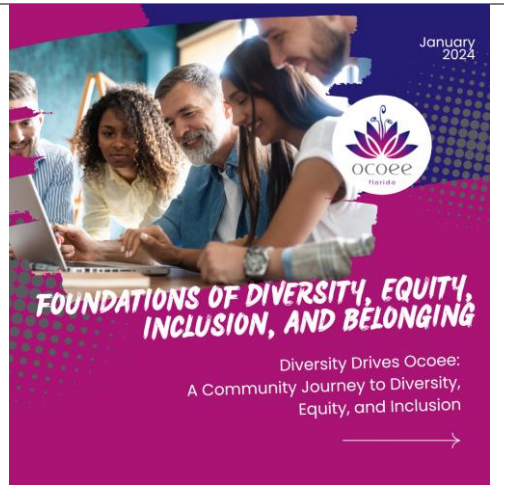
SUPPORT

Orange County Library System offers support for LinkedIn Learning via the following options:

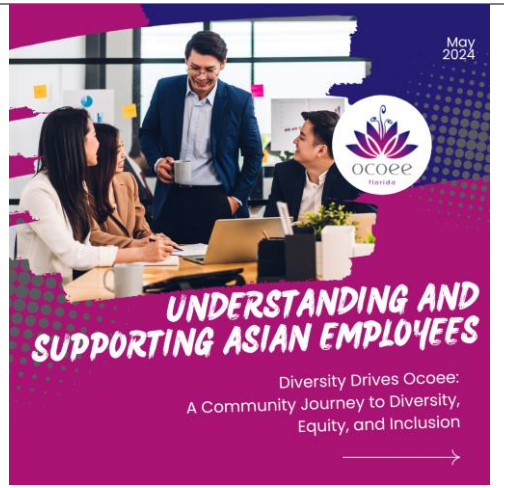
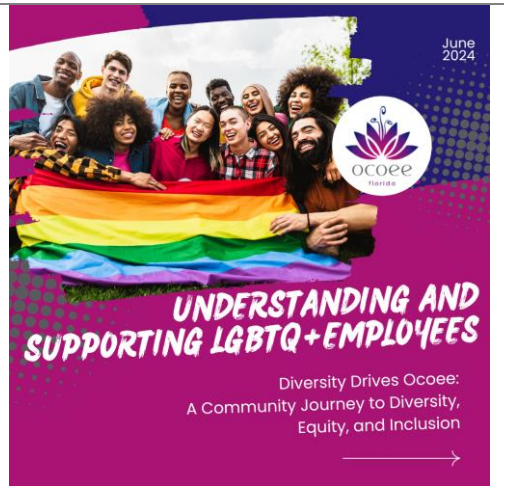
- FAQ: Learning for Library Patron FAQ | Learning Help (linkedin.com)
- Phone (Questline): 407-835-7323
- Technical Support: OCLS Help Request.

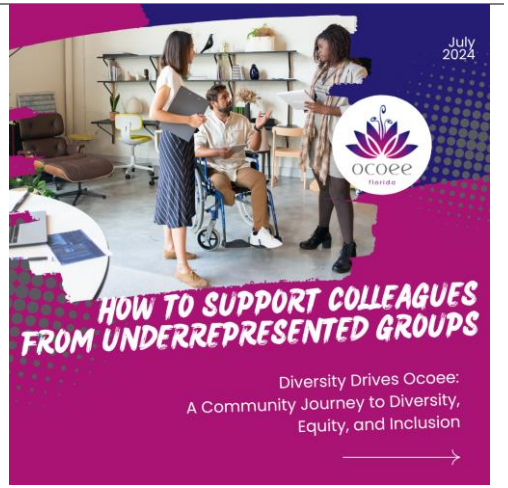
CONTENT – FACEBOOK AND CITY WEBSITE POSTS

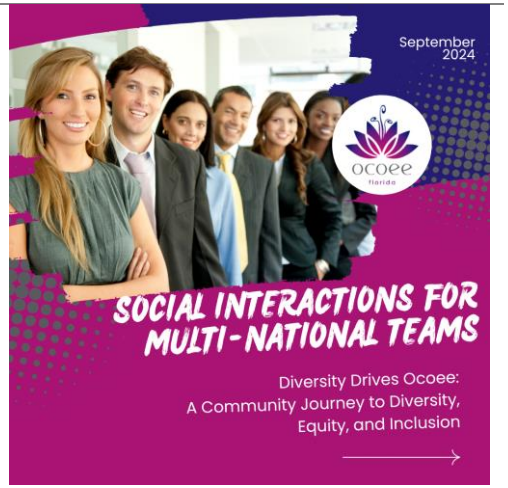
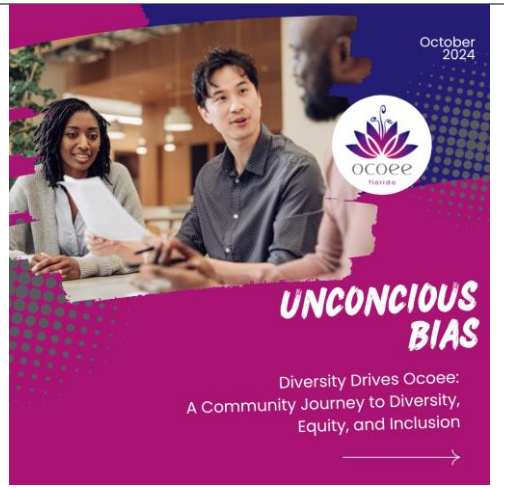
Post Date	Theme	Text	Hashtags	Image
2/9/24 *(Originally planned for January)*	New Year, New Learning Journey!	As we kick off the new year, the City of Ocoee Human Relations Diversity Board is excited to introduce our 2024 Learning initiative "**Diversity Drives Ocoee: A Community Journey to Diversity, Equity, and Inclusion**"! Each month, we'll be diving into different aspects of diversity, celebrating various cultural heritage months, and empowering our community with knowledge and understanding. Throughout this journey we will be leveraging courses from LinkedIn Learning. **This requires an Orange County Library Card! Click here to get your card today: Orange County Library Card** Let's make 2024 a year of learning, growth, and unity!	#DiversityDrivesOcoee #NewYearNewJourney #EmbraceDiversity #HRDBOcoee	

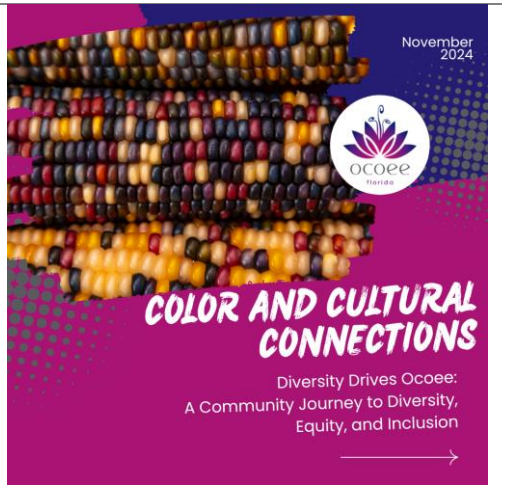
Post Date	Theme	Text	Hashtags	Image
2/14/24 *(Originally planned for January)*	Diversity Drives Ocoee Learning Kickoff	The City of Ocoee Human Relations Diversity Board invites you to join us in the new year with a new perspective by embracing diversity, understanding different perspectives, and fostering unity within our community. Explore our January training on "Foundations of Diversity, Equity, Inclusion, and Belonging", and join the learning journey. *Foundations of Diversity, Equity, Inclusion, and Belonging*	#DiversityDrivesOcoee #NewYearNewJourney #EmbraceDiversity #HRDBOcoee	
February 2/19/24	Black History Month	February marks Black History Month, a time to honor the achievements and contributions of African Americans to U.S. history. Join us for our training on "Driving Change and Anti-Racism" as we work towards a more inclusive society. *Driving Change and Anti-Racism*	#BlackHistoryMonth #AntiRacism #DiversityDrivesOcoee #HRDBOcoee	

Post Date	Theme	Text	Hashtags	Image
March	Women's History Month	March celebrates Women's History Month, honoring the vital role of women in shaping our world. Join our training on "Fighting Gender Bias in the Workplace" as we strive for gender equality. *Fighting Gender Bias in the Workplace*	#WomensHistoryMonth #GenderBias #DiversityDrivesOcoee #HRDBOcoee	
April	Autism Awareness Month	April is Autism Awareness Month, dedicated to promoting understanding and acceptance for individuals with autism. Join us in our training on "Autism in the Workplace" to foster an inclusive environment for all. *Autism in the Workplace*	#AutismAwareness #DiversityDrivesOcoee #HRDBOcoee	

Post Date	Theme	Text	Hashtags	Image
May	Asian American and Pacific Islander Heritage Month	May celebrates Asian American and Pacific Islander Heritage Month, honoring the rich cultures, histories, and contributions of Asian Americans and Pacific Islanders. Join our training on "Understanding and Supporting Asian Employees" to foster inclusion and understanding. *Understanding and Supporting Asian Employees*	#AAPIHeritageMonth #DiversityDrivesOcoee #HRDBOcoee	
June	LGBTQ+ Pride Month	June is LGBTQ+ Pride Month, a time to celebrate the diversity and contributions of the LGBTQ+ community. Join us for our training on "Understanding and Supporting LGBTQ+ Employees" as we promote an inclusive workplace for all. *Understanding and Supporting LGBTQ+ Employees*	#PrideMonth #LGBTQSupport #DiversityDrivesOcoee #HRDBOcoee	

Post Date	Theme	Text	Hashtags	Image
July	Disability Pride Month	July is Disability Pride Month, celebrating the pride and resilience of individuals with disabilities. Join our training on "Supporting Colleagues from Underrepresented Groups" to create an inclusive and supportive workplace and learn more about being an ally! *How to Support Colleagues from Underrepresented Groups*	#DisabilityPride #DiversityDrivesOcoee #HRDBOcoee	
August	International Peace Month	August is International Peace Month, a time to promote peace, understanding, and cooperation among nations and communities. Enhance your communication skills with our training on "Communicating Across Cultures". *Communicating Across Cultures*	#InternationalPeaceMonth #CulturalCommunication #DiversityDrivesOcoee #HRDBOcoee	

Post Date	Theme	Text	Hashtags	Image
September	Hispanic Heritage Month	September marks Hispanic Heritage Month, celebrating the rich cultures, histories, and contributions of Hispanic and Latino Americans. Join our training on "Social Interactions for Multi-National Teams" to enhance cross-cultural collaboration. *Social Interactions for Multi-National Teams*	#HispanicHeritageMonth #DiversityDrivesOcoee #HRDBOcoee	
October	Unconscious Bias	October is the month to reflect on "Unconscious Bias", recognizing the subtle biases that may influence our decisions and behaviors. Join us for this essential training to foster a more inclusive and equitable workplace. *Unconscious Bias*	#UnconsciousBias #DiversityTraining #InclusionMatters #DiversityDrivesOcoee #HRDBOcoee	

Post Date	Theme	Text	Hashtags	Image
November	Native American Heritage Month	November is Native American Heritage Month, a time to honor the rich histories, diverse cultures, and contributions of Native Americans. Dive into "Color and Cultural Connections" with our featured training to promote cultural understanding and appreciation. Color and Cultural Connections	#NativeAmericanHeritage #CulturalConnections #DiversityDrivesOcoee #HRDBOcoee	
December	Culturally Diverse Workplace Training	End the year by "Unlocking Authentic Communication in a Culturally Diverse Workplace" with our December training, fostering effective communication and collaboration in a diverse environment. *Unlocking Authentic Communication in a Culturally Diverse Workplace*	#CulturallyDiverseWorkplace #AuthenticCommunication #DiversityDrivesOcoee #HRDBOcoee	

The Human Relations Diversity Board (HRDB) serves as a pivotal advisory body dedicated to fostering inclusivity, understanding, and unity within our community. Comprising passionate individuals committed to promoting diversity, equity, and inclusion, the HRDB collaborates with local stakeholders, provides guidance on relevant initiatives, and works diligently to ensure that the values of respect and equality resonate throughout our community. Through advocacy, education, and outreach, the HRDB stands as a beacon of progress, striving to create a harmonious environment where every individual feels valued and empowered.

What is the Human Relations Diversity Board (HRDB)?

How can the HRDB best support Ocoee?

We want your feedback!

Meetings

The HRDB meets the first Thursday of every month at 6:15pm in the City of Ocoee Commission Chambers.

1 North Bluford Ave.
Ocoee, FL 34761

City of Ocoee Human Relations Diversity Board

ocoee
florida

The Human Relations Diversity Board's mission is to promote understanding, respect, goodwill, and equality among all citizens and businesses of the City of Ocoee.

2024 Members

Mayor's Appointee
William Maxwell
Vice Chair

District 1 Appointee
Vinny Singh
Board Member

District 2 Appointee
Michelle Cummings
Board Member

District 3 Appointee
Josh Cease
Board Member

District 4 Appointee
Jim Moyer
Chair

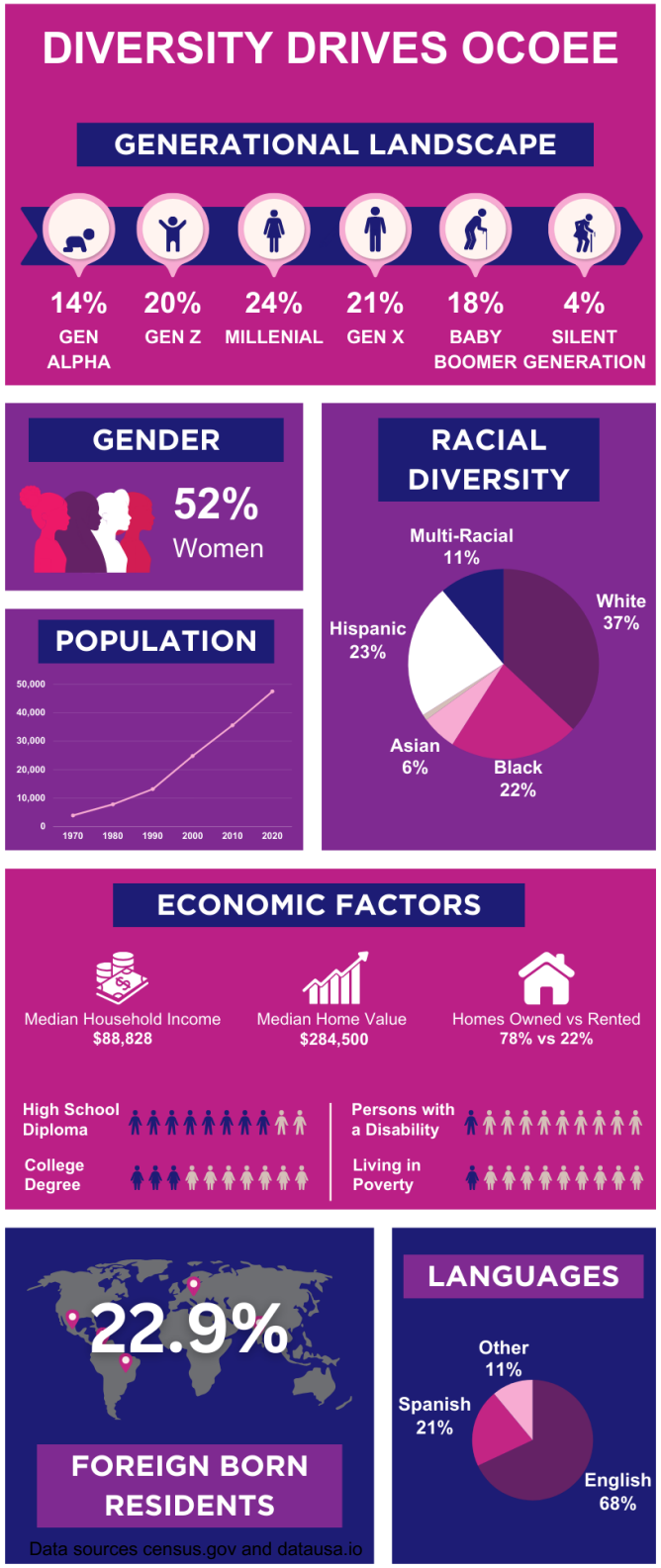
Member at Large
Jason Mellen
Board Member

Member at Large
Kellie Beck
Board Member

Non-Voting Members

Staff Liaison
Doug Gaines
Asst. Support Services Director

Elected Official
Ages Hart
City Commissioner District 4



Objectives

- Foster mutual understanding and respect among all persons, emphasizing the positive impact that diversity brings to the City of Ocoee;
- Facilitate communication between the City Commission and citizen groups, individuals, and businesses;
- Assist the City Commission in educating the community through projects devoted to eliminating prejudice, racial tension, intolerance, or discrimination;
- Provide suggestions and encourage equality of treatment for, and prevent discrimination against, any persons or businesses by Ocoee City government;
- Serve as an informational conduit to the community at large; and
- Make recommendations to the City Commission and staff on HRDB related matters, as needed.

Human Relations Diversity Board
2024 Community Feedback

City of Ocoee Human Relations Diversity Board Feedback

The Human Relations Diversity Board's objective is to promote understanding, respect, goodwill, and equality among all citizens and businesses of the City of Ocoee.

What is Diversity? Presence and acceptance of various individual differences.

What is Equity? Ensuring fair treatment, access, and opportunity for all.

What is Inclusion? Creating an environment where all are welcomed and valued.

msibbitt@ocoee.org Switch account

Not shared

* Indicates required question

How effectively do you believe the City of Ocoee promotes and celebrates diversity, equity, and inclusion (DEI) within our community? *

	1	2	3	4	
Not Effectively at All	○	○	○	○	Highly Effectively

How aware are you of the Human Relations Diversity Board's initiatives and activities in promoting diversity, equity, and inclusion (DEI) within the City of Ocoee? *

	1	2	3	4	
Not Aware at All	○	○	○	○	Highly Aware

How important are each of the items below to you? *

	Highly Important	Somewhat Important	Not Very Important	Not Important at All
Enhancing community awareness on DEI topics.	○	○	○	○
Fostering partnerships with local organizations to promote HRDB objectives.	○	○	○	○
Implementing initiatives that address unconscious biases in Ocoee.	○	○	○	○
Providing resources or support systems for marginalized or underrepresented groups.	○	○	○	○

Hosting regular community forums to discuss and address DEI matters.	○	○	○	○
Advocating for policies that promote DEI in Ocoee.	○	○	○	○
Supporting local businesses in creating inclusive environments for employees and customers.	○	○	○	○
Promoting voter registration for members of underrepresented groups.	○	○	○	○
Implement educational programs addressing DEI matters within the community.	○	○	○	○

In your opinion, what are the most pressing issues related to DEI that the HRDB should prioritize in its outreach efforts?

Your answer

OPTIONAL - Please provide your email address below if you're interested in speaking with the board further about your feedback or in attending HRDB meetings.

Your answer

Submit

Clear form