
DIVISION 2 – SUPPLEMENTARY GENERAL REQUIREMENTS

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SECTION 02000 – SUMMARY OF WORK

PART 1 - GENERAL

1.01 LOCATION OF WORK

New Restroom Facility Fran B. Adams North County Regional Park: The work is generally located within the North County Regional Park and is situated on the north side of County Road 510, east of I-95 (9450 CR512, Sebastian, FL 32958) in Indian River County, Florida.

1.02 DESCRIPTION OF WORK

Site Work

The site work improvements generally require the **CONTRACTOR to construct** approximately 349 SF pre-fabricated restroom building with approximately 350 SF paved ADA compliant parking (1 space) and approximately 729 SF of new concrete sidewalk. As well as minor regrading within the project area to support existing drainage patterns as shown on the construction drawings.

The **CONTRACTOR** shall remove and dispose of approximately 75 LF of existing metal guardrail.

Wastewater

Wastewater improvements generally require the CONTRACTOR to construct a new gravity sanitary sewer service from the proposed pre-fabricated restroom building, approximately 250 LF of 8" PVC gravity sewer with two (2) manholes and one (1) connection to an existing manhole with all related and necessary appurtenances to complete the wastewater components as shown on the construction drawings.

Water Main

Potable water improvements generally require the CONTRACTOR to construct a new water service from the proposed pre-fabricated restroom building, approximately 230 lineal feet of 6" PVC water main, two (2) sample points, one (1) 6" gate valve, one (1) RPZ, and one (1) complete fire hydrant assembly. A 1.5" PE water service is to be constructed via a 1.5" service saddle at the 6" main to the proposed building with all related and necessary appurtenances to complete the water components as shown on the construction drawings.

General

All work will include maintaining traffic control, complete restoration and all other appurtenant and miscellaneous related items and work for a completed project. It is the intent of the Indian River County to obtain complete and working installations under this contract and any items of labor, equipment, and materials that may reasonably be assumed as necessary to accomplish this end shall be supplied whether or not they are specifically stated herein. All work will be performed in accordance with the approved permits and IRCDUS Water & Wastewater Utility Standards, May 2019 or latest edition, unless specified differently in the individual Work Authorizations or changed by the Engineer or his designated representative.

The construction of the improvements described above shall also consist of, but not limited to: resetting of signs, mailboxes, and other existing facilities disturbed during construction;

utilities exploration; coordination with any permitting agencies; trenching; clearing and tree removal; dewatering; installation of pipe, structures and all appurtenances; soil backfill compaction; testing; exfiltration testing; backfill and subgrade testing; road, landscape and driveway restoration; regrading and grassing (sod); and traffic control. All rights-of-way shall be restored to like or better condition including, but not limited to sidewalks and drainage. No excavation shall be left open when work is not actively being performed. Construction fencing used in the work area shall not block sight distance near intersections, driveways or drive aisles. All construction equipment and materials shall be stored a minimum of fifteen (15) feet from the edge of pavement and shall be protected by Type II barricades with flashing yellow lights.

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PART 2 – PRODUCTS **NOT USED**

PART 3 – EXECUTION **NOT USED**

END OF SECTION

SECTION 02025 – MEASUREMENT AND PAYMENT

PART 1 - GENERAL

1.01 GENERAL

The project bid shall be based on a lump sum amount for the complete construction of the project as shown on the plans and described in the specifications. The successful contractor will be required to provide a list of major project elements to the Engineer for approval and payment purposes. Measurement and payment will be based upon work completed and accepted in accordance with the Contract Documents. No separate payment will be made for excavation, trenching, backfilling, compacting, leakage tests, surveying, construction staking or other incidental items of work not shown in the Contract Documents.

1.02 EQUIPMENT AND MATERIALS IN STORAGE

Partial payment for materials and equipment in proper storage at the site of the work or other approved storage site will be made for those items for which the Contractor has submitted paid invoices to the Engineer. The partial payment for stored materials will be 50% of the value of materials and equipment, based on receipted bills, furnished but not incorporated in the work, as determined by Engineer.

1.03 MEASUREMENT

- A. Manholes: The quantity to be paid for shall be the number of each (EA) structure of each designated type completed and accepted, and the number of each (EA) of the structures adjusted, and shall include: clear and grubbing, excavation, dewatering, backfilling, compaction, disposal of surplus material, testing; furnishing and placing of frames and covers; interior coating/lining (bituminous or fiberglass per plan); concrete bench; fittings and other material required for interior or exterior drops; bricking, mudding and grouting; concrete slab tops when necessary; and all incidentals to furnish and install the structures. A separate quantity and pay item will not be included for adjusting existing manhole tops, etc., necessary for minor grade changes (+ 3 inches). This work shall be included in the contract unit price(s) for roadway, sidewalk, pavement and parking area construction. The depth of the manhole to be used for various pay ranges shall be determined by taking the difference between the rim elevation and the invert of deepest sewer.
- B. Connect to Existing: Measurement of “Connect to Existing” shall include the installation / connection of the new utility main to the existing utility main, manhole or structure (as depicted on the plans), and shall include the cost of the “Tapping Sleeve and Valve” or “Core Saw and Connect” when depicted or called for in the plans, and for all additional work and materials required for the connection including excavation and location of existing utilities, removal of fittings, restraint of existing pipe and fittings, grouting and repairs, all necessary adaptors, gaskets or fittings, connection to the existing utility, disinfection and flushing of the utility, testing (pressure, bac-t, soil compaction, or exfiltration, as applicable) means to provide a temporary bypass when noted on plans (pumps, hoses, etc.), installation of temporary jumper and all other necessary work required to make a connection.
- C. Gravity Sewer: Measurement of gravity sewer shall be for lineal foot for construction in accordance with the plans and specifications, or as directed by the Engineer. The work shall include, but shall not be limited to, cutting of existing pavement where required,

excavation, installation of pipe, backfilling, compaction, and all restoration in kind. The replacement of pavement and roadway restoration shall comply with standards and specifications of the Indian River County Department of Public Works. The services shall be of a type and size specified, and shall be constructed in accordance with these Plans and Specification, or as directed by the Engineer. The depth of gravity sewer for various pay ranges shall be determined by taking the difference between the natural ground or manhole rim elevation, as applicable, and the invert elevation.

- D. Testing (TV of Mains): Measurement of TV testing all gravity sewer shall be for lineal foot in accordance with the plans and specifications.
- E. Sewer Laterals: The quantity to be paid for shall be the number of each (EA) sanitary sewer lateral of each designated size (in inches) and type (single or double) furnished and installed, and shall include all piping, fittings, connections, and other appurtenances to collect and carry wastewater from the new restroom building to the sanitary sewer collection main. The work shall include, but not be limited to, excavation, dewatering, backfilling, testing; installation of marking balls and other required marking and identification materials, all necessary sleeves, fittings and appurtenances to install connections to the new mains; and all restoration in kind.
- F. Pipe: Pipe will be measured along the centerline of the pipe installed. No deduction will be made for the length of valves and fittings installed in the line. Where the measurement terminates at a valve, bend, tee, or other fitting, the centerline of the valve or fitting shall be the point of termination. All required pipe lining, coating, encasement material, restraining devices, and thrust blocks shall be included in the cost of the pipe. The Indian River County inspector shall determine pipe lengths installed.
- G. Fittings: Measurement of cast iron and ductile iron fittings shall be on the basis of weight unless otherwise specified. The weights used to determine the quantity installed shall be the weights of the appropriate fittings as listed in the supplier's invoice or catalog. When mechanical joint fittings are required, the weight of the gland bolts and gaskets shall not be added to the listed weight of the fittings. Where flanged fittings are furnished, the weight of the bolts and gaskets shall not be included. The Indian River County inspector shall determine weight of fittings installed. The cost for thrust blocks as depicted or called for in the plans, specifications, and / or bid form shall be included in the unit price for each fitting as applicable.
- H. Gate Valves and Tapping Valves: Measurement shall be on the basis of furnishing and installing each type and size of valve (and tapping sleeve, if applicable) required, including the valve box, cover, and other associated items.
- I. Water Mains: Water mains will be measured along the centerline of the pipe installed. No deduction will be made for the length of valves and fittings installed in the line. Where the measurement terminates at a valve, bend, tee, or other fitting, the centerline of the valve or fitting shall be the point of termination. All required pipe lining, coating, encasement material, restraining devices, and thrust blocks shall be included in the cost of the pipe. The Indian River County inspector shall determine pipe lengths installed.
- J. Line Stops: Measurement shall be computed on the lump sum cost basis of furnishing and installing each type and size of valve, fittings, adaptors, and reverse thrust block required, including the valve box, cover, and other associated items necessary for the installation of the line stops as depicted or called for in the plans.

- K. Fire Hydrant Assembly: Measurement of fire hydrant assembly shall be for the actual number constructed in accordance with the Plans and Specifications, or as directed by the Engineer, at the unit price bid for the item “Fire Hydrant Assembly,” scheduled in the Form of Proposal. The unit price for “Fire Hydrant Assembly” shall include cutting bituminous paving, removal of paving courses and curb if required, excavation, furnishing and installation of ten (10) feet of 6” D.I.P. or PVC water main, dry-barrel traffic hydrant, concrete foundations for hydrant, fitting, one (1) 6” diameter gate valve, concrete thrust block (reaction backing) or restraining fittings for fire hydrant, backfill, blue reflective markers, all equipment, labor and all else necessary therefore and incidental thereto.
- L. Asphaltic Pavement Replacement: Measurement of asphalt pavement replacement shall be computed using the tons of asphalt removed and replaced as a result of Contractor’s operations. Minimum width of replacement shall be as described in the specifications or as shown on the plans. Unit price shall include saw-cutting, base and sub-grade materials, compaction, etc.
- M. Unimproved Driveway Replacement: Shall include (dirt, marl, shell, or gravel) driveway replacement/reconstruction removed and replaced as a result of the construction operations. Work shall include subgrade and surface (shell, marl, gravel) materials, compaction, density testing, etc. Unimproved driveway replacement shall be included in the unit cost bid for the utility main.
- N. Turf Material - Sod: Measurement of grassing (Bahia and St. Augustine) shall be computed using the square yard of grassed area disturbed and restored as a result of Contractor’s operations. The entire area of the disturbed area shall be grassed. Payment shall include all necessary grading, soil preparation, sodding, fertilizer, mulch, and irrigation.
- O. Construction Stake-Out: Measurement of construction stake-out shall be computed as a lump sum item, for all required construction stake-out, including: layout and survey of the proposed construction, setting of stakes as required, necessary computations to establish the exact position of the work, establish reference to baselines, and provide and maintain off-set stakes outside the limits of construction and marked to show offset distance.
- P. Record Drawings/As-built Survey: Measurement of record drawings/as-built survey shall be computed as a lump sum item, for the preparation of “As-built Drawings”, including field survey, drawing preparation in “ACAD”, with ties to state plan coordinates, all in accordance with applicable agency standards/requirements . The as-built drawings shall be provided certified by a licensed and registered land surveyor.
- Q. Erosion & Sediment Control: Measurement shall be computed as a lump sum item and shall include furnishing all labor, materials and equipment and perform all work required for the prevention of environmental pollution in conformance with applicable laws and regulations, during and as the result of construction operations under this Contract.

1.04 PAYMENT

Payment will be made at the respective contract unit and/or lump sum price for each item shown in the Agreement, installed and accepted, which price and payment shall constitute full compensation for performing all work in connection therewith and incidental thereto.

1.05 RESTORATION OF DAMAGED SURFACES, STRUCTURES AND PROPERTY

Where pavement, trees, shrubbery, fences, or other property or surface structures not designated as pay items have been damaged, removed, or disturbed by the Contractor, whether deliberately or through failure to carry out the requirements of the Contract Documents, state laws, municipal ordinances, or the specific direction of the Engineer, or through failure to employ usual and reasonable safeguards, such property and surface structures shall be replaced or repaired at the expense of the Contractor to a condition equal to that before work began within a time frame approved by the Engineer.

END OF SECTION

SECTION 02035 – CHANGE ORDER PROCEDURES

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDE

- A. Promptly implement Change Order Procedures
 - 1. Provide full written data required to evaluate changes.
 - 2. Maintain detailed records of work done on a time-and-material/force account basis.
 - 3. Provide full documentation to Engineer on request.
- B. Designate in writing the member of Contractor's organization:
 - 1. Who is authorized to accept changes in the Work,
 - 2. Who is responsible for informing others in the Contractor's employ of the authorization of changes in the Work.
- C. Owner will designate in writing the person who is authorized to execute Change Orders.

1.02 RELATED REQUIREMENTS

- A. The amount of established unit prices.
- B. Conditions of the Contract:
 - 1. Methods of determining cost or credit to Owner resulting from changes in Work made on a time-and-materials basis.
 - 2. Contractor's claims for additional costs.
- C. Applications for Payment are included in Section 02052.
- D. Construction Schedules is included in Section 01310.

1.03 DEFINITIONS

Change Order: See General Conditions

1.04 PRELIMINARY PROCEDURES

- A. Owner or Engineer may initiate changes by submitting a proposal Request to Contractor. Request will include the following:
 - 1. Detailed description of the Change, Products, and location of the change in the Project.
 - 2. Supplementary or revised Drawings and Specifications.
 - 3. The projected time span for making the change and a specific statement as to whether overtime work is, or is not, authorized.

4. A specific period of time during which the requested price will be considered valid.
 5. Such request is for information only, and is not an instruction to execute the changes, nor to stop work in progress.
- B. Contractor may initiate changes by submitting a written notice to Engineer, containing:
1. Description of the proposed changes
 2. Statement of the reason for making the changes.
 3. Statement of the effect on the Contract Sum and the Contract Time.
 4. Statement of the effect on the work of separate contractors.
 5. Documentation supporting any changes in Contract Sum or Contract Time, as appropriate.

1.05 CONSTRUCTION CHANGE AUTHORIZATION

- A. In lieu of Proposal Request, Engineer may issue a “Work Directive Change” for Contractor to proceed with a change for subsequent inclusion in a Change Order.
- B. Authorization will describe changes in the work, both additions and deletions, with attachments of revised Contract Documents to define details of the change.
- C. Owner and Engineer will sign and date the Work Directive Change as authorization for the Contractor to proceed with the Changes.

1.06 DOCUMENTATION OF PROPOSALS AND CLAIMS

- A. Support each quotation for a lump sum proposal, and for each unit price which has not previously been established, with sufficient substantiating data to allow Engineer to evaluate the quotation.
- B. On request, provide additional data to support time and cost computation including the following:
 1. Labor required.
 2. Equipment required.
 3. Products required:
 - a. Recommended source of purchase and unit cost.
 - b. Quantities required.
 4. Taxes, insurance bonds.
 5. Credit for work deleted from Contract, similarly documented.
 6. Overhead and profit.
 7. Justification for any change in Contract Time.
- C. Support each claim for additional costs, and for work done on a time-and-material / force account basis, with documentation as required for a lump sum proposal, plus the following additional information:

1. Name of the Owner's authorization agent who ordered the work, and date of the order.
 2. Dates and time work performed, and by whom.
 3. Time record, summary of hours worked, and hourly rates paid.
 4. Receipts and invoices for:
 - a. Equipment used, listing dates and times of use.
 - b. Products used, listing quantities.
 - c. Subcontracts.
- D. Document requests for substitutions for Products as specified in Section 01630.

1.07 PREPARATION OF CHANGE ORDERS

- A. Contractor will prepare each Change Order.
- B. Form: Change Order format provided in the Contract Documents.
- C. Change Order will describe changes in the Work, both additions and deletions, with attachments of revised Contract Documents to define details of change.
- D. Change Order will provide an accounting of the adjustment in the Contract Sum and in the Contract Time.

1.08 LUMP SUM / FIXED PRICE CHANGE ORDER

- A. Content of Change Orders will be based on either:
 1. Engineer's Proposal Request and Contractor's responsible Proposal as mutually agreed upon between OWNER and Contractor.
 2. Contractor's Proposal for a change, as recommended by Engineer.
- B. Owner and Engineer will sign and date the Change Order as authorization for the contractor to proceed with the changes.
- C. Contractor shall sign and date the Change Order to indicate agreement with the terms therein.

1.09 UNIT PRICE CHANGE ORDER (If Applicable)

- A. Content of Change Orders will be based on, either:
 1. Engineer definition of the scope of the required changes.
 2. Contractor's Proposal for a change, as recommended by Engineer.
 3. Survey of completed work
- B. The amount of the unit prices shall be:
 1. Those stated in the Agreement.
 2. Those mutually agreed upon between Owner and Contractor.

- C. When quantities of each of the items affected by the Change Order can be determined prior to start of the work:
 - 1. Owner and Engineer will sign and date the Change Order as authorization for Contractor to proceed with the changes.
 - 2. Contractor shall sign and date the Change Order to indicate agreement with the terms therein.

- D. When quantities of the items cannot be determined prior to start of the work:
 - 1. Engineer or Owner will issue a Change Order directing Contractor to proceed with the change on the basis of unit prices, and will cite the applicable unit prices.
 - 2. At completion of the change, Engineer will determine the cost of such work based on the unit prices and quantities used.
 - a. Contractor shall submit documentation to establish the number of units of each item and any claims for a change in Contract Time.
 - 3. Engineer will sign and date a second Change Order to establish the change in Contract Sum and in Contract Time.
 - 4. Owner and Contractor will sign and date the second Change Order to indicate their agreement with the terms therein.

1.10 TIME AND MATERIAL / FORCE ACCOUNT CHANGE ORDER / CONSTRUCTION AUTHORIZATION

- A. Engineer and Owner will issue a Work Change Directive directing Contractor to Proceed with the changes on a time-and-material / force account basis.
- B. At completion of the change, Contractor shall submit itemized accounting and supporting data as provided in the Article “Documentation of Proposals and Claims” of this section.
- C. Engineer will determine the allowable cost of such work, as provided in General Conditions and Supplementary Condition.
- D. Engineer will sign and date the Change Order to establish the change in Contract Sum and in Contract Time.
- E. Owner and Contractor will sign and date the Change Order to indicate their agreement therein.

1.11 CORRELATION WITH CONTRACTOR’S SUBMITTALS

- A. Contractor shall periodically revise Schedule of Values and Request for Payment forms to record each change as a separate item of Work, and to record the adjusted Contract Sum.
- B. Contractor shall periodically revise the Construction Schedule to reflect each change in Contract Time.

1. Revise sub-schedules to show changes for other items of work affected by the changes.
- C. Upon completion of work under a Change Order, enter pertinent changes in Record Documents.

PART 2 – PRODUCTS

NOT APPLICABLE

PART 3 – EXECUTION

NOT APPLICABLE

END OF SECTION

SECTION 02052 – APPLICATIONS FOR PAYMENT

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDE

- A. Submit Applications for Payment to Engineer in accordance with the schedule established by Conditions of the contract and Agreement between Owner and Contractor.
- B. The accepted Schedule of Values, Section 00300, shall be used as the basis for the CONTRACTOR's Application for Payment.

1.02 RELATED REQUIREMENTS

- A. In other parts of the Construction Documents:
 - 1. Agreement between Owner and Contractor
 - 2. General Conditions of the Contract
 - 3. Article 2 – Preliminary Matters
 - 4. Article 14 – Payments to Contractor and Completion
- B. Specified in Other Sections:
 - 1. Summary of Work is included in Section 01000.
 - 2. Contract Closeout is included in Section 01700.

1.03 FORMAT AND DATA REQUIRED

- A. Submit itemized applications typed in a format approved by Engineer. All applications for payment must be numbered, dated, signed by the Contractor, and notarized.
- B. Provide itemized data on payment application (format, schedules, line items and values accepted by Engineer).

1.04 SCHEDULE OF VALUES

- A. General:
 - 1. Submit a Schedule of Values to Engineer per Article 2.05.
 - 2. Upon request of Engineer, furnish additional data to support values given that will substantiate their correctness.
 - 3. Approved Schedule of Values will be used as basis for reviewing Contractor's Applications for Payment.
- B. Form and Content:
 - 1. Format: 00622 – Contractor's Application for Payment
 - 2. Use Table of Contents of Project Manual as basis of format for listing costs of Work.
 - 3. List installed value of component parts of Work in sufficient detail to serve as basis for computing values for progress payments.
 - 4. Include separate line items for:
 - a. Site mobilization.
 - b. Bonds and insurance.

- c. Contractor's overhead and profit.
 5. For items on which payment will be requested for stored materials, break down value into:
 - a. Cost of materials, delivered and unloaded, with taxes paid.
 - b. Total installed value.
 6. For each line item that has a value of more than \$25,000.00, break down costs to list major products or operations under each item.
 7. Total of costs listed in Schedule shall equal Contract Sum.
- C. Submit electronically in Adobe PDF format.
- D. Review and Resubmittal:
1. After initial review by Engineer, revise and resubmit if required.
 2. Revise and resubmit along with next Application for Payment when a Change Order is issued. List each Change Order as a new line item. Change Orders modifying the Project Price or Project Time must also be approved by OWNER.

1.05 PREPARATION OF APPLICATION FOR EACH PROGRESS PAYMENT

- A. Application Form:
1. Format: Form 00622 – Contractor's Application for Payment.
 2. Prepare required information in typewritten format or on electronic media format.
 3. Use data from reviewed Schedule of Values. Provide dollar value in each column for each line item representing portion of work performed.
 4. List each authorized Change Order as a separate line item, listing Change Order number and dollar value.
 5. Execute certification with the signature of a responsible officer of the contract firm

1.06 SUBSTANTIATING DATA FOR PROGRESS PAYMENTS

- A. When the Owner or the Engineer requires substantiating data, Contractor shall submit suitable information, with a cover letter identifying:
1. Project
 2. Application number and date
 3. Detailed list of enclosures
 4. For stored products:
 - a. Item number and identification
 - b. Description of specific material
- B. Submit one (1) copy of data and cover letter for each copy of application.

1.07 PREPARATION OF APPLICATION FOR FINAL PAYMENT

- A. Application for payment is required for progress payments.
- B. Only one (1) application will be acceptable in any one (1) month.

1.08 SUBMITTAL PROCEDURE

- A. Submit Applications for Payment to Engineer at the time stipulated in the Agreement.

- B. Submit electronically in Adobe PDF format.
- C. When Engineer finds the Application properly completed and correct, he will transmit the application for payment to the Owner.

PART 2 – PRODUCTS

NOT APPLICABLE

PART 3 – EXECUTION

NOT APPLICABLE

END OF SECTION

SECTION 02060 - REGULATORY REQUIREMENTS AND NOTIFICATION

PART 1 - GENERAL

1.01 GENERAL

1. Contractor shall comply with and furnish all items necessary to satisfy any general and specific conditions that are part of the Owner and Contractor obtained permits and licenses.
2. Obtain and pay for all permits and licenses as provided for in the General Conditions, except as otherwise provided herein.
3. Schedule all inspections and obtain all written approvals of the agencies required by the permits, easements, and licenses.
4. A copy of the permits and easements obtained by the Owner will be furnished to the Contractor.
5. The Contractor shall keep a copy of all permits and easements complete with conditions, attachments, exhibits, and modifications at the work site. And provide copies of the permits to the appropriate subcontractors. The contractor is responsible for ensuring that the permit conditions are explained to the appropriate construction personnel.

1.02 PERMITS/EASEMENTS BY OWNER

The following is a list of permits that have been submitted by and/or received by the Owner and a copy is provided in APPENDIX A in these Specifications:

1. Florida Department of Environmental Protection (FDEP) General Wastewater Construction Permit
2. FDEP General Water Main Construction Permit
3. Indian River County Administrative Approval
4. Indian River County Type C Flood Management System Permit
5. Indian River County Utility Construction Permit
6. Indian River County Right-of-Way Utilities Permit
7. St. Johns River Water Management District Environmental Resource Permit

1.03 PERMITS BY CONTRACTOR

- A. If required, the Contractor shall prepare, submit, and pay for the Notice of Intent (NOI) to use the Generic Permit for Stormwater Discharge from Construction Activity, which will include Stormwater Pollution Prevention Plan (SWPPP) as required by F.A.C. 62-621.300(4) and the Environmental Protection Agency (EPA) as part of the National Pollutant Discharge Elimination System (NPDES) prior to beginning work. The Contractor will be responsible for the application fee and the costs associated with preparation of the NOI and SWPPP. The Contractor shall conform to the conditions of this permit as part of this Contract.
- B. Other Permits Required: The Contractor is responsible for obtaining any temporary discharge permits that may be required by local drainage districts as well as any right-of-way permits necessary to complete the Work.

1.04 NOTIFICATION

- A. Indian River County: The Contractor is required to notify the Indian River County Utilities Department 48 hours prior to initiating construction through the Engineer-of-Record's representative (Paul Trodglen, 772-473-8441 ptrodglen@mastellermoler.com or mastmolr@bellsouth.net). The Contractor is required to notify the Indian River County Road and Bridge Department 72 hours prior to blocking any County roads or detouring any traffic through the Engineer-of-Record's representative (Paul Trodglen, 772-473-8441, ptrodglen@mastellermoler.com or mastmolr@bellsouth.net)
- B. Utility Companies: Contractor shall notify the utility companies in the area 48 hours prior to initiating construction and contact SunShine State One Call by dialing 811.
- C. The Contractor shall give the Engineer not less than seven (7) calendar days' notice to schedule a preconstruction meeting.
- D. When the Contractor's excavating operations encounter prehistoric remains or artifacts of historical or archeological significance, the operations shall be temporarily discontinued in that area and the Engineer shall be notified. The Engineer will consult archaeological authorities and determine the disposition of the remains or artifacts. The Contractor agrees that he will make no claim for additional payment or for extension of time because of any delays in or alteration of his procedure due to removal of any such remains or artifacts.

PART 2 – PRODUCTS

Not applicable

PART 3 – EXECUTION

Not applicable

END OF SECTION

SECTION 02110 - ENVIRONMENTAL PROTECTION PROCEDURES

PART 1 – GENERAL

1.01 SCOPE OF WORK

- A. Furnish all labor, materials and equipment and perform all work required for the prevention of environmental pollution in conformance with applicable laws and regulations, during and as the result of construction operations under this Contract. For the purpose of this Section, environmental pollution is defined as the presence of chemical, physical, or biological elements or agents which adversely affect human health or welfare; unfavorably alter ecological balances of importance to human life; affect other species of importance to man; or degrade the utility of the environment for aesthetic and/or recreational purposes.
- B. The control of environmental pollution requires consideration of air, water and land, and involves management of noise and solid waste, as well as other pollutants.
- C. Schedule and conduct all work in a manner that will minimize the erosion of soils in the area of the work. Provide erosion control measures such as diversion channels, sedimentation or filtration systems, berms, staked hay bales, seeding, mulching or other special surface treatments as are required to prevent silting and muddying of streams, rivers, impoundments, lakes, etc. All erosion control measures shall be in place in an area prior to any construction activity in that area.
- D. This Section is intended to ensure that construction is achieved with a minimum of disturbance to the existing ecological balance between a water resource and its surroundings. These are general guidelines. It is the Contractor's responsibility to determine the specific construction techniques to meet these guidelines.
- E. All phases of sedimentation and erosion control shall comply with and be subject to the approval of the Florida Department of Environmental Protection. Contractor shall prepare sedimentation and erosion control drawings meeting the requirements for approval by that agency. Upon approval, furnish two copies of the approved Drawing to the Engineer.

1.02 APPLICABLE REGULATIONS

Comply with all applicable Federal, State, and local laws and regulations concerning environmental pollution control and abatement.

1.03 NOTIFICATIONS

The Engineer will notify the Contractor in writing of any non-compliance with the foregoing provisions or of any environmentally objectionable acts and corrective action to be taken. State or local agencies responsible for verification of certain aspects of the environmental protection requirements shall notify the Contractor in writing, through the Engineer, of any non-compliance with State or Local requirements. After receipt of such notice from the Engineer or from the regulatory agency through the Engineer, immediately take corrective action. Such notice, when delivered to the Contractor or his authorized representative at the site of the work, shall be deemed sufficient for the purpose. If the Contractor fails or refuses to comply promptly, the Owner may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No part of the time lost due to any such stop

orders shall be made the subject of a claim for extension of time or for excess costs or damages by the Contractor unless it is later determined that the Contractor was in compliance.

1.04 IMPLEMENTATION

- A. Prior to commencement of the work, meet with the Engineer to develop mutual understandings relative to compliance with these provisions and administration of the environmental pollution control program.
- B. Remove temporary environmental control features, when approved by the Engineer and incorporate permanent control features into the project at the earliest practicable time.

PART 2 - PRODUCTS

NOT APPLICABLE

PART 3 - EXECUTION

3.01 EROSION CONTROL

Provide positive means of erosion control such as shallow ditches around construction to carry off surface water. Erosion control measures, such as siltation basins, hay check dams, mulching, jute netting and other equivalent techniques, shall be used as appropriate. Offsite surface water shall be diverted around the site, to a downstream channel ahead of siltation barriers. Flow of surface water into excavated areas shall be prevented. Ditches around construction area shall also be used to carry away water resulting from dewatering of excavated areas. At the completion of the work, ditches shall be backfilled and the ground surface restored to original condition.

3.02 PROTECTION OF STREAMS AND SURFACE WATERS

- A. Take all precautions to prevent, or reduce to a minimum, any damage to any stream or surface water from pollution by debris, sediment or other material, or from the manipulation of equipment and/or materials in or near such streams. Water that has been used for washing or processing, that contains oils or sediments that will reduce the quality of the water in the stream, shall not be directly returned to the stream. Divert such waters through a settling basin or filter before being directed into streams or surface waters.
- B. Do not discharge water from dewatering operations directly into any live or intermittent stream, channel, wetlands, surface water or any storm sewer. Water from dewatering operations shall be treated by filtration, settling basins, or other approved method to reduce the amount of sediment contained in the water to allowable levels.
- C. Take all preventative measures to avoid spillage of petroleum products and other pollutants. In the event of any spillage, prompt remedial action shall be taken in accordance with a contingency action plan approved by the Florida Department of Environmental Protection. Submit two copies of approved contingency plans to the Engineer.

- D. Water being flushed from structures or pipelines after disinfection, with a Cl₂ residue of 2 mg/l or greater shall be treated with a dechlorination solution, in a method approved by the Engineer, prior to discharge.

3.03 PROTECTION OF LAND RESOURCES

- A. Restore land resources within the project boundaries and outside the limits of permanent work to a condition, after completion of construction that will appear to be natural and not detract from the appearance of the project.
- B. Outside of areas requiring earthwork for the construction of the new facilities, do not deface, injure, or destroy trees or shrubs, nor remove or cut them without prior approval. No ropes, cables, or guys shall be fastened to or attached to any existing nearby trees for anchorage unless specifically authorized by the Engineer. Where such special emergency use is permitted, first wrap the trunk with a sufficient thickness of burlap or rags over which softwood cleats shall be tied before any rope, cable, or wire is placed. The Contractor shall in any event be responsible for any damage resulting from such use.
- C. Before beginning operations near them, protect trees that may possibly be defaced, bruised, injured, or otherwise damaged by the construction equipment, dumping or other operations, by placing boards, planks, or poles around them. Monuments and markers shall be protected similarly.
- D. Any trees or other landscape features scarred or damaged by the Contractor's equipment or operations shall be restored as nearly as possible to their original condition. The Engineer will decide the method of restoration to be used and whether damaged trees shall be treated and healed or removed and disposed of.
 - 1. All scars made on trees by equipment, construction operations, or by the removal of limbs larger than 1-inch in diameter shall be coated as soon as possible with an approved tree wound dressing. All trimming or pruning shall be performed in an approved manner by experienced workmen with saws or pruning shears. Tree trimming with axes will not be permitted.
 - 2. Climbing ropes shall be used where necessary for safety. Trees that are to remain, both within or outside established clearing limits, that are subsequently damaged by the Contractor and are beyond saving in the opinion of the Engineer, shall be immediately removed and replaced.
- E. The Contractor's storage and other construction buildings required temporarily for the performance of the work, shall be located at previously cleared portions of the job site or areas which are proposed to be cleared and shall not be within wetlands, stormwater detention areas or floodplains. The preservation of the landscape shall be an imperative consideration in the selection of all sites and in the construction of buildings. Drawings showing storage facilities shall be submitted by the Contractor for approval of the Engineer.
- F. If the Contractor proposes to construct temporary roads or embankments and excavations for plant and/or work areas, he shall submit the following for approval at least ten days prior to scheduled start of such temporary work.
 - 1. A layout of all temporary roads, excavations, embankments and drainage to be constructed within the work area.

2. Details of temporary road construction.
 3. Drawings and cross sections of proposed embankments and their foundations, including a description of proposed materials.
 4. A landscaping drawing showing the proposed restoration of the area. Indicate the proposed removal of any trees and shrubs outside the limits of existing clearing area. Indicate locations of guard posts or barriers required to control vehicular traffic and protect trees and shrubs to be maintained undamaged. The Drawing shall provide for the obliteration of construction scars as such and shall provide for a natural appearing final condition of the area. Modification of the Contractor's approved drawings shall be made only with the written approval of the Engineer. No unauthorized road construction, excavation or embankment construction including disposal areas will be permitted.
- G. Remove all signs of temporary construction facilities such as haul roads, work areas, structures, foundations of temporary structures, stockpiles of excess of waste materials, or any other vestiges of construction as directed by the Engineer. It is anticipated that excavation, filling and plowing of roadways will be required to restore the area to near natural conditions which will permit the growth of vegetation thereon. The disturbed areas shall be prepared and sodded in a manner satisfactory to the IRCDUS and/or Public Works and as described in Section 03640.
- H. All debris and excess material will be disposed of outside wetland or floodplain areas in an environmentally sound manner.

3.04 PROTECTION OF AIR QUALITY

- A. Burning - The use of burning at the project site for the disposal of refuse and debris will not be permitted.
- B. Dust Control - Maintain all excavations, embankment, stockpiles, access roads, plant sites, waste areas, borrow areas and all other work areas within or without the project boundaries free from dust which could cause the standards for air pollution to be exceeded and which would cause a hazard or nuisance to others.
- C. An approved method of stabilization consisting of sprinkling or other similar methods will be permitted to control dust. The use of petroleum products is prohibited. The use of chlorides may be permitted with approval from the Engineer.
- D. Sprinkling, to be approved, must be repeated at such intervals as to keep all parts of the disturbed area at least damp at all times, and the Contractor shall have sufficient competent equipment on the job to accomplish this. Dust control shall be performed as the work proceeds and whenever a dust nuisance or hazard occurs, as determined by the Engineer.

3.05 NOISE CONTROL

Make every effort to minimize noises caused by the construction operations. Equipment shall be equipped with silencers or mufflers designed to operate with the least possible noise in compliance with Federal and State regulations.

3.06 MAINTENANCE OF POLLUTION CONTROL FACILITIES DURING CONSTRUCTION

Maintain all facilities constructed for pollution control as long as the operations creating the particular pollutant are being carried out or until the material concerned has become stabilized to the extent that pollution is no longer being created.

END OF SECTION

SECTION 02410 - TESTING LABORATORY SERVICES

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

- A. Contractor will employ and pay for the services of an independent testing laboratory to perform certain specified testing. All testing described in the contract Documents shall be paid for by the Contractor. This requirement takes precedence over any other specification that may indicate that the testing fees (including collection, shipping and laboratory fees) be paid for by the Owner or any other party other than the Contractor.
 - 1. Contractor shall cooperate with the laboratory to facilitate the execution of its required services.
 - 2. Employment of the laboratory shall in no way relieve Contractor's obligations to perform the work of the Contract.
- B. Selection of testing laboratory shall be approved by Engineer and Owner.

1.02 RELATED REQUIREMENTS

- A. General Conditions of the contract: Inspections and testing required by laws, ordinances, rules, regulations, orders or approvals of public authorities.
- B. Respective sections of specifications: Certification of Products.
- C. Each specification section listed: Laboratory tests required and standards for testing.
- D. Testing Laboratory inspection, sampling and testing is required for but not limited to the following:
 - 1. Densities and Proctors (for soil compaction)
 - 2. Bacteriological Clearance
 - 3. Concrete Strength
 - 4. Any water quality monitoring as required by the project permits
 - 5. Other operations specified in these specifications or as required by the Engineer or Owner

1.03 QUALIFICATION OF LABORATORY

- A. Meet "Recommended Requirements for Independent Laboratory Qualification," published by American Council of Independent Laboratories.
- B. Meet basic requirements of ASTM E329, "Standards of Recommended Practice for Inspection and Testing Agencies for Concrete and Steel as Used in Construction."
- C. Authorized to operate in the State in which the Project is located.
- D. Submit copy of report of inspection of facilities made by Materials Reference Laboratory of National Bureau of Standards during the most recent tour of inspection, with memorandum of remedies of any deficiencies reported by the inspection.
- E. Testing Equipment:

1. Calibrated at reasonable intervals by devices of accuracy traceable to either:
 - a. National Bureau of Standards
 - b. Accepted values of national physical constants.

1.04 LABORATORY DUTIES

- A. Cooperate with Engineer and Contractor; provide qualified personnel after due notice.
- B. Perform specified inspections, sampling, and testing of materials and methods of construction:
 1. Comply with specified standards
 2. Ascertain compliance of materials with requirements of Contract Documents.
- C. Promptly notify Engineer and Contractor of observed irregularities or deficiencies of work or products.
- D. Promptly submit written report of each test and inspection; one copy each to Engineer, Owner, and Contractor, and one copy to Record Documents File. Each report shall include:
 1. Date issued
 2. Project title and number
 3. Testing laboratory name, address, and telephone number
 4. Name and signature of laboratory inspector
 5. Date and time of sampling or inspection
 6. Record of temperature and weather conditions
 7. Date of test
 8. Identification of product and specification section
 9. Location of sample or test in the Project
 10. Type of inspection or test
 11. Results of tests and compliance with Contract Documents
 12. Interpretation of test results, when requested by Engineer
- E. Perform additional tests as required by Engineer or the Owner

1.05 LIMITATIONS OF AUTHORITY OF TESTING LABORATORY

- A. Laboratory is not authorized to:
 1. Release, revoke, alter, or enlarge on requirements of Contract Documents
 2. Approve or accept any portion of the work
 3. Perform any duties of the Contractor

1.06 CONTRACTOR'S RESPONSIBILITIES

- A. Employ and pay for the services of an independent testing laboratory.
- B. Cooperate with laboratory personnel, and provide access to work and to manufacturer's facilities.

- C. Secure and deliver to the laboratory adequate quantities of representational samples of materials proposed to be used and which require testing.
- D. 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. Materials and equipment used in the performance of work under this Contract are subject to inspection and testing at the point of manufacture or fabrication. Standard specifications for quality and workmanship are indicated in the Contract Documents. The Engineer may require the Contractor to provide statements or certificates from the manufacturers and fabricators that the materials and equipment provided by them are manufactured or fabricated in full accordance with the standard specifications for quality and workmanship indicated in the Contract Documents. All costs of this testing and providing statements and certificates shall be a subsidiary obligation of the Contractor, and no extra charge to the Owner shall be allowed on account of such testing and certification.
- F. Furnish incidental labor and facilities:
 - 1. To provide access to work to be tested
 - 2. To obtain and handle samples at the project site or at the source of the product to be tested
 - 3. To facilitate inspections and tests
 - 4. For storage and curing of test samples
- G. Notify laboratory, in advance of operations to allow for laboratory assignments of personnel and scheduling of tests.
- H. If the tests and any subsequent retests indicate the materials and equipment fail to meet the requirements of the Contract Documents, the Contractor shall pay for the laboratory costs directly to the testing firm, and these costs will not be reimbursable to the Contractor.

PART 2 - PRODUCTS

NOT APPLICABLE

PART 3 - EXECUTION

NOT APPLICABLE

END OF SECTION

SECTION 02445 - PIPELINE TESTING AND CLEANING

PART 1 – GENERAL

1.01 SCOPE OF WORK

- A. Furnish all labor, materials, equipment and incidentals required and test and clean all new pipelines installed under this Contract as specified herein, including chlorination of all potable water lines.

1.02 RELATED WORK

- A. Polyvinyl Chloride (PVC) Pipe & Fittings is included in Sections 03622 and 03626.

PART 2 – PRODUCTS (*not used*)

PART 3 - EXECUTION

3.01 GENERAL

- A. Furnish all necessary equipment and labor for cleaning, testing and chlorinating the pipelines. The procedures and methods shall be approved by the Engineer.
- B. Make any taps and furnish all necessary caps, plugs, etc, as required in conjunction with testing pipelines. Furnish a test pump, gauges and any other equipment required in conjunction with carrying out the hydrostatic tests.

3.02 CLEANING PIPELINES

- A. As pipe laying progresses and at the conclusion of the work thoroughly clean all new pipelines by flushing with water or other means to remove all dirt, stones, pieces of wood or other material which may have entered during the construction period. If, after this cleaning, obstructions remain, they shall be removed.

3.03 TESTING PRESSURE PIPELINES

- A. Testing and Inspection of Water Mains is included in Section 03634.
- B. Testing and Inspection of Wastewater Force Mains is included in Section 03634.

3.04 CHLORINATION OF PIPELINES

- A. Before being placed in service, all new potable water pipelines (including plant water) shall be chlorinated using the continuous feed method specified in AWWA C651. The procedure shall be approved by the Engineer in advance.

- B. The location of the chlorination and sampling points will be determined by the Engineer in the field. Taps for chlorination and sampling shall be installed. Uncover and backfill the taps as required.
- C. The general procedure for chlorination shall be first to flush all dirty or discolored water from the lines and then introduce chlorine in approved dosages through a tap at one end, while water is being withdrawn at the other end of the line. The chlorine solution shall remain in the pipeline for 24 hours.
- D. Following the chlorination period, all treated water shall be flushed from the lines at their extremities and replaced with potable water. All treated water flushed from the lines shall be disposed of by discharging to the nearest sanitary sewer or by other approved means. No discharge to any storm sewer or natural water course will be allowed. Bacteriological sampling and analysis of the replacement water may then be made by the Engineer in full accordance with AWWA C651. Rechlorinate, if necessary and the line shall not be placed in service until the requirements of the State Public Health Department are met.
- E. Special disinfecting procedures shall be used in connections to existing pipelines and where the method outlined above is not practical.

END OF SECTION

SECTION 02610 - MATERIAL AND EQUIPMENT

PART 1 – GENERAL

1.01 SCOPE OF WORK

Material and equipment incorporated into the work:

- A. Conform to applicable specifications and standards.
- B. Comply with size, make, type and quality specified, or as specifically approved in writing by the Engineer.
- C. Manufactured and Fabricated Products
 - 1. Design, fabricate and assemble in accord with the best Engineering and shop practices.
 - 2. Manufacture like parts of duplicate units to standard sizes and gauges, to be interchangeable.
 - 3. Two or more items of the same kind shall be identical, by the same manufacturer.
 - 4. Products shall be suitable for service conditions.
 - 5. Equipment capacities, sizes and dimensions shown or specified shall be adhered to unless variations are specifically approved in writing.
- D. Do not use material or equipment for any purpose other than that for which it is designed or is specified.

1.02 RELATED WORK

- A. Conditions of the Contract
- B. Summary of Work is included in Section 02000.
- D. Submittals are included in Section 01340.
- E. Substitutions and Product Options are included in Section 01630.
- F. Site Cleanup and Restoration is included in Section 01710.
- H. Warranties and Bonds are included in Section 02740.

1.03 APPROVAL OF MATERIALS

- A. Only new materials and equipment shall be incorporated in the work. All materials and equipment furnished shall be subject to the inspection and approval of the Engineer. No material shall be delivered to the work without prior approval of the Engineer.
- B. Within thirty (30) days after the effective date of the Agreement, submit to the Engineer, data relating to materials and equipment proposes to be furnished for the work. Such data shall be in sufficient detail to enable the Engineer to identify the particular product

and to form an opinion as to its conformity to the specifications. The data shall comply with Section 01340.

- C. Facilities and labor for handling and inspection of all materials and equipment shall be furnished by the Contractor. If the Engineer requires, either prior to beginning or during the progress of the work, submit samples of materials for such special tests as may be necessary to demonstrate that they conform to the specifications. Such samples shall be furnished, stored, packed, and shipped as directed at the Contractor's expense. Except as otherwise noted, the Owner will make arrangements for and pay for the tests.
- D. Submit data and samples sufficiently early to permit consideration and approval before materials are necessary for incorporation in the work. Any delay of approval resulting from the failure to submit samples or data promptly shall not be used as a basis of claim against the Owner or the Engineer.
- E. In order to demonstrate the proficiency of workmen or to facilitate the choice among several textures, types, finishes and surfaces, provide such samples of workmanship or finish as may be required.
- F. The materials and equipment used on the work shall correspond to the approved samples or other data.

1.04 MANUFACTURER'S INSTRUCTIONS FOR INSTALLATION

- A. When Contract Documents require that installation of work shall comply with manufacturer's printed instructions, obtain and distribute copies of such instructions to parties involved in the installation, including one (1) PDF and one (1) hard copy to the Engineer.
 - 1. Maintain one (1) set of complete instructions at the job site during installation and until completion.
- B. Handle, install, connect, clean, condition and adjust products in strict accord with such instructions and in conformity with specified requirements.
 - 1. Should job conditions or specified requirements conflict with manufacturer's instructions, consult with Engineer for further instructions.
 - 2. Do not proceed with work without clear instructions.
- C. Perform work in accordance with manufacturer's instructions. Do not omit any preparatory step or installation procedure unless specifically modified or exempted by Contract Documents.

1.05 TRANSPORTATION AND HANDLING

- A. Arrange deliveries of products in accord with construction schedules, coordinate to avoid conflict with work and conditions at the site.
 - 1. Deliver products in undamaged condition, in manufacturer's original containers or packaging, with identifying labels intact and legible.
 - 2. Immediately on delivery, inspect shipments to assure compliance with requirements of Contract Documents and approved submittals, and that products are properly protected and undamaged.

- B. Provide equipment and personnel to handle products by methods to prevent soiling or damage to products or packaging.

1.06 STORAGE AND PROTECTION

- A. 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. Storage of equipment shall be in strict accordance with the "instructions for storage" of each equipment supplier and manufacturer including connection of heaters, placing of storage lubricants in equipment, etc. Furnish a copy of the manufacturer's instructions for storage to the Engineer prior to storage of all equipment and materials. Corroded, damaged or deteriorated equipment and parts shall be replaced before acceptance of the project. Equipment and materials not properly stored will not be included in a payment estimate.
- B. Store products in accordance with manufacturer's instructions, with seals and labels intact and legible.
 - 1. Store products subject to damage by the elements in weathertight enclosures.
 - 2. Maintain temperature and humidity within the ranges required by manufacturer's instructions.
 - 3. Store fabricated products above the ground, on blocking or skids, prevent soiling or staining. Cover products which are subject to deterioration with impervious sheet coverings, provide adequate ventilation to avoid condensation.
 - 4. Store loose granular materials in a well-drained area on solid surfaces to prevent mixing with foreign matter.
- C. All materials and equipment to be incorporated in the work shall be handled and stored 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.
- D. Cement, sand, and lime shall be stored under a roof and off the ground and shall be kept completely dry at all times. All structural and miscellaneous steel and reinforcing steel shall 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 shall be stored with the webs vertical. Precast concrete beams shall be handled and stored in a manner to prevent accumulations of dirt, standing water, staining, chipping, or cracking. Brick, block, and similar masonry products shall be handled and stored in a manner to reduce breakage, chipping, cracking, and spalling to a minimum.
- E. All materials which, in the opinion of the Engineer, have become so damaged as to be unfit for the use intended or specified shall be promptly removed from the site of the work and the Contractor shall receive no compensation for the damaged material or its removal.
- 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. Protection after Installation

1. Provide substantial coverings as necessary to protect installed products from damage from traffic and subsequent construction operations. Remove covering when no longer needed.
- H. The Contractor shall be responsible for all material, equipment, and supplies sold and delivered to the Owner under this Contract until final inspection of the work and acceptance thereof by the Owner. In the event any such material, equipment and supplies are lost, stolen, damaged, or destroyed prior to final inspection and acceptance, the Contractor shall replace same without additional cost to the Owner.
- I. Failure to take proper action on storage and handling of equipment supplied under this Contract within seven 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. These costs may be comprised of expenditures for labor, equipment usage, administrative, clerical, Engineering and any other costs associated with making the necessary corrections.

1.07 SPECIAL TOOLS

- A. Manufacturers of equipment and machinery shall furnish any special tools (including grease guns or other lubricating devices) required for normal adjustment, operations and maintenance, together with instructions for their use. Preserve and deliver to the Owner these tools and instructions in good order no later than ten (10) days prior to plant start-up.

1.08 STORAGE AND HANDLING OF EQUIPMENT ON SITE

- A. Because of the long period allowed for construction, special attention shall be given to the storage and handling of equipment on site. As a minimum, the procedure outlined below shall be followed.
 1. Equipment shall not be shipped until approved by the Engineer. The intent of this requirement is to reduce on-site storage time prior to installation and/or operation. Under no circumstances shall equipment be delivered to the site more than one (1) month prior to installation without written authorization from the Engineer.
 2. All equipment having moving parts such as gears, electric motors, etc., and/or instruments shall be stored in a temperature and humidity-controlled building approved by the Engineer, until such time as the equipment is to be installed.
 3. All equipment shall be stored fully lubricated with oil, grease, etc., unless otherwise instructed by the manufacturer.
 4. A copy of the manufacturer's storage instructions shall be given to the Engineer and shall be carefully studied by the Contractor and reviewed with the Engineer by him. These instructions shall be carefully followed and a written record of this kept by the Contractor.
 5. Moving parts shall be rotated a minimum of once weekly to insure proper lubrication and to avoid metal-to-metal "welding". Upon installation of the equipment, 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.
 6. Lubricants shall be changed upon completion of installation and as frequently as required thereafter during the period between installation and acceptance. Mechanical equipment to be used in the work, if stored for longer than ninety days,

shall have the bearings cleaned, flushed and lubricated prior to testing and startup, at no additional cost to the Owner.

7. Prior to acceptance of the equipment, 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 shall 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 guarantee the equipment equally in both instances. If such a certification is not given, the equipment shall be judged to be defective. It shall be removed and replaced at the Contractor's expense.

1.09 WARRANTY

For all major pieces of equipment, submit a warranty from the equipment manufacturer as specified in Section 02740.

1.10 SPARE PARTS

Collect and store all spare parts as required by the manufacturer in accordance with Paragraph 1.08 above. In addition, furnish to the Engineer an inventory listing all spare parts, the equipment they are associated with, the name and address of the supplier and the delivered cost of each item. Copies of actual invoices for each item shall be furnished with the inventory to substantiate the delivered cost. Deliver the spare parts to the Owner not later than ten (10) days prior to testing.

1.11 GREASE, OIL AND FUEL

- A. All grease, oil and fuel required for testing of equipment shall be furnished with the respective equipment. The Owner shall be furnished with a year's supply of required lubricants including grease and oil of the type recommended by the manufacturer with each item of equipment supplied.
- B. The Contractor shall be responsible for changing the oil in all drives and intermediate drives of each mechanical equipment after initial break-in of the equipment, which in no event shall be any longer than three weeks of operation.

PART 2 – PRODUCTS

NOT USED

PART 3 – EXECUTION

NOT USED

*** END OF SECTION ***

SECTION 02700 - CONTRACT CLOSEOUT

PART 1 – GENERAL

1.01 SCOPE OF WORK

- A. This Section specifies administrative and procedural requirements for project closeout, including but not limited to:
 - 1. Closeout procedures.
 - 2. Final cleaning.
 - 3. Adjusting.
 - 4. Project Record documents.
 - 5. Spare parts and maintenance materials.

1.02 RELATED WORK

- A. Warranties and Bonds are included in Section 02740.

1.03 SUBSTANTIAL COMPLETION

- A. Substantial completion shall be defined as installation of all pipe and appurtenant items, completion of all testing and start up, FDEP clearance issued and all systems either placed into service or able to be placed into service, Building is complete and ready for Certificate of Occupancy (CO), restoration of all disturbed areas to their pre-construction condition, and correction of all deficiencies noted by Engineer.
- B. When Contractor considers the Work is substantially complete, Contractor shall submit to Engineer:
 - 1. A written notice that the Work or designated portion thereof, is substantially complete.
- C. Within a reasonable time after receipt of such notice, Engineer will perform a field investigation to determine the status of completion.
- D. Should Engineer determine that the Work is not substantially complete:
 - 1. Engineer will promptly notify the Contractor in writing, giving the reasons therefore.
 - 2. Contractor shall remedy the deficiencies in the Work, and send a second written notice of substantial completion to the Engineer.
 - 3. Engineer will reinvestigate the Work.
- E. When the Engineer finds that the Work is substantially complete, he will:
 - 1. Prepare and deliver to Owner a tentative Certificate of Substantial Completion, with a tentative list of items to be completed or corrected before final payment.
 - 2. After consideration of any objections made by the Owner and when Engineer considers the Work substantially complete, he will execute and deliver to the Owner and the Contractor a definite Certificate of Substantial Completion with a revised tentative list of items to be completed or corrected.

1.04 FINAL SITE REVIEWS

- A. When Contractor considers Work is complete, he shall submit written certification that:
 - 1. Contract Documents have been reviewed.
 - 2. Work has been investigated for compliance with Contract Documents.
 - 3. Work has been completed in accordance with Contract Documents.
 - 4. Equipment and systems have been tested in the presence of the Owner's representative and are operational.
 - 5. Work is completed and ready for Final Investigation.
- B. Engineer will perform a field investigation to verify the status of completion with reasonable promptness after receipt of such certification.
- C. Should Engineer consider that the Work is incomplete or defective:
 - 1. Engineer will promptly notify the Contract in writing, listing the incomplete or defective work.
 - 2. Contractor shall take immediate steps to remedy the stated deficiencies, and send a second written certification to Engineer that the Work is complete.
 - 3. Engineer will reinvestigate the Work.

When the Engineer finds that the Work is acceptable under the Contract Documents, he shall request the Contractor to make closeout submittals.

1.05 CONTRACTOR'S CLOSEOUT SUBMITTALS TO ENGINEER

- A. Project Record Drawings to the requirements specified.
- B. Operating and Maintenance Manuals to the requirements specified.
- C. Contractor's affidavit of payment of debts and claims.
 - 1. Contractor's release or waiver of liens.
- D. Separate releases or waivers of liens for subcontractors, suppliers and others with lien rights against property of Owner, together with list of those parties.
- E. Applicable warranties (i.e. utilities)

1.06 RECORD DOCUMENTS

- A. Maintain on site, one (1) set of the following documents; actual revisions to the work shall be recorded in these documents:
 - 1. Contract Drawings.
 - 2. Specifications.
 - 3. Addenda.
 - 4. Change Orders and other Modifications to the Contract.
 - 5. Reviewed shop drawings, product data, and samples.
- B. Store Record Documents separate from documents used for construction.

- C. Record information concurrent with construction progress.
- D. Specifications: Legibly mark and record at each product section description of actual products installed, including the following:
 - 1. Manufacturer's name and product model and number.
 - 2. Product substitutions or alternates utilized.
 - 3. Changes made by Addenda and Modifications.
- E. Contract Drawings and Shop Drawings: Legibly mark each item to record actual construction including:
 - 1. Measured depths of foundations in relation to finish floor elevation datum.
 - 2. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
 - 3. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the work.
 - 4. Field changes of dimension and detail.
 - 5. Details not on original Contract Drawings.
- F. Submit documents to Engineer with Application for Final Payment.

1.07 CLOSEOUT PROCEDURES

- A. Submit written certification that Contract Documents have been reviewed, work has been inspected and that work is complete in accordance with Contract Documents and ready for Engineer's inspection.
- B. Provide submittals to Engineer that are required by governing or other authorities.

1.08 FINAL APPLICATION FOR PAYMENT

- A. Contractor shall submit the final Application for Payment in accordance with procedures and requirements stated in the Condition of the Contract.
- B. Submit Application for Final Payment identifying total adjusted Contract Sum, previous payments and sum remaining due.

1.09 FINAL CERTIFICATE FOR PAYMENT

- A. Engineer will issue final certificate in accordance with provisions of the Contract Documents.

END OF SECTION

SECTION 02720 - PROJECT RECORD DOCUMENTS

PART 1 – GENERAL

1.01 REQUIREMENTS INCLUDED

- A. Maintain at the site for the Owner one (1) record copy of:
 - 1. Drawings
 - 2. Specifications
 - 3. Addenda
 - 4. Change Orders and other Modifications to the Contract
 - 5. Engineer's Field Orders or written instructions
 - 6. Approved Shop Drawings, Working Drawings and Samples
 - 7. Field Test records
 - 8. Construction photographs
 - 9. Field engineering records for compliance with field engineering submittals
 - 10. Drilling Plan, Emergency Contingency Plan, and Calculations for directional drilling activities

1.02 RELATED REQUIREMENTS

- A. Section 01050: Field Engineering
- B. Section 02052: Application for Payment
- C. Section 01340: Submittals
- D. Section 03040: Record Drawings / As-Built Drawings

1.03 MAINTENANCE OF DOCUMENTS AND SAMPLES

- A. Store documents and samples in Contractor's field office apart from documents used for construction.
 - 1. Provide files and racks for storage of documents.
 - 2. Provide locked cabinet or secure storage space for storage of samples.
- B. File documents and samples in accordance with Specifications.
- C. Maintain documents in a clean, dry, legible condition and in good order. Do not use record documents for construction purposes.
- D. Make documents and samples available at all times for inspection by the Engineer.
- E. As a prerequisite for monthly progress payments, the Contractor is to exhibit the currently updated "record documents" for review by the Engineer and Owner.

1.04 MARKING DEVICES

- A. Provide felt tip marking pens for recording information in the color code designated by the Engineer.

1.05 RECORDING

- A. Label each document "PROJECT RECORD" in neat large printed letters.

- B. Record information concurrently with construction progress.
 - 1. Do not conceal any work until required information is recorded.
- C. Drawings: legibly mark to record actual construction.
 - 1. Depths of various elements of foundation in relation to NAVD 1988.
 - 2. All underground piping with elevations and dimensions, changes to piping location, horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements, and actual installed pipe material, class, etc.
 - 3. Location of internal utilities and appurtenances concealed in the construction, referenced to visible and accessible features of the structure.
 - 4. Field changes of dimension and detail.
 - 5. Changes made by Field Order or by Change Order.
 - 6. Details not on original contract drawings.
 - 7. Equipment and piping relocations.
- D. Specifications and Addenda; legibly mark each Section to record.
 - 1. Manufacturer, trade name, catalog number, and supplier of each product and item of equipment actually installed.
 - 2. Changes made by Field Order or by Change Order.
- E. Shop drawings (after final review and approval).
- F. Certified site survey, below ground piping survey, and line elevations and stationing at 100 foot increments by a licensed land surveyor registered in the state of Florida.

1.06 SUBMITTAL

- A. At contract close-out, deliver record documents listed in paragraph 1.01A to the Engineer for the Owner. The required field engineering submittals certified by a registered land surveyor.

1.07 AS-BUILT SURVEYS

- A. As-Built Surveys shall be provided per Section 03040.

PART 2 - PRODUCTS (*not used*)

PART 3 - EXECUTION (*not used*)

END OF SECTION

SECTION 02740 - WARRANTIES AND BONDS

PART 1 – GENERAL

1.01 REQUIREMENTS INCLUDED

- A. Compile specified warranties and bonds.
- B. Compile specified service and maintenance contracts.
- C. Co-execute submittal when so specified.
- D. Review submittals to verify compliance with Contract Documents.
- E. Submit to Engineer for review and transmittal to Owner.

1.02 RELATED REQUIREMENTS

- A. In other parts of the Contract Documents:
 - 1. Instructional to Bidders: Bid or Proposal Bonds
 - 2. General Conditions of Contract:
 - a. Public Construction Bond
 - b. General Warranty of Construction.
- B. Specified in other sections:
 - 1. Section 02700: Contract Closeout
 - 2. Each respective section of Specifications shall have Warranties and Bonds required for specific products.
 - 3. Provisions of Warranties and Bonds, Duration: The respective section of specification which specifies the product.

1.03 SUBMITTAL REQUIREMENTS

- A. Assemble warranties, bonds and service and maintenance contracts, executed by each of the respective manufacturers, suppliers and subcontractors.
- B. Number of original signed copies requires: Two (2) each.
- C. Table of Contents: Neatly typed, in orderly sequence. Provide complete information for each item.
 - 1. Product or work item
 - 2. Firm, with name of principal, address, and telephone number.
 - 3. Scope.
 - 4. Date of beginning of warranty, bond or service and maintenance contract.
 - 5. Duration of warranty, bond or service maintenance contract.
 - 6. Provide information for Owner's personnel:

- a. Proper procedure in case of failure
 - b. Instances which might affect the validity of warranty bonds.
7. Contractor, name of responsible principal, address and telephone number.

1.04 FORM OF SUBMITTALS

- A. Prepare in duplicate packets.
- B. Format:
 1. Size 8-1/2" x 11" punched sheets for 3-ring binder.
 - a. Fold larger sheets to fit into binders
 2. Cover: Identify each packet with typed or printed title "WARRANTIES AND BONDS." List:
 - a. Title of project
 - b. Name of Contractor
- C. Binders: Commercial quality, three-ring, with durable and cleanable plastic cover.

1.05 TIME OF SUBMITTALS

Where required, the Contractor shall supply evidence, satisfactory to the Engineer, that the Contractor can obtain manufacturers' certifications as to the Contractor's installation of equipment.

1.06 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.

PART 2 - PRODUCTS (not used)

PART 3 - EXECUTION (not used)

END OF SECTION

DIVISION 3 – TECHNICAL PROVISIONS

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FORCE MAINS AND GRAVITY SEWER LINES

SECTION 03640 - TURF MATERIAL & PERFORMANCE

SECTION 03000 - WATER, REUSE, AND WASTEWATER UTILITY STANDARDS

GENERAL

Requirements Included

Obtain a copy of utility standards and keep at job site, bearing the title “Department of Utility Services, Water, Wastewater & Reclaimed Water Utility Construction Standards, May, 2019” or latest version – herein after called “Reference Specifications”

The Approved Manufacturer’s Product List may be found in the Reference Specifications, which may be purchased at the Indian River County Utilities Department at 1801 27th Street, Vero Beach, Florida 32960 or may downloaded as a .PDF from their website <http://www.ircutilities.com/Standards.htm> in III. SPECIFICATIONS; SECTION 18. Approved Manufacturer’s Projects List.

Related Requirements

In other parts of the contract documents; contractor is required to obtain a copy of the reference specifications, and during construction, comply with the reference specifications.

Section 00020	Advertisement for Bids
Section 00100	Instruction to Bidders
Section 00300	Bid Form

Specified in other sections:

Section 00530 EJCDC – Agreement between owner and contractor; Article 8. Contract documents; Paragraph 8.6

Section 00800 – Supplementary conditions; Paragraph SC – 3.03.B.2 Coordination of Plans, Specifications, and Special Provisions.

PRODUCTS

Materials

All materials, equipment (products) used in the installation of the work shall be in accordance with the reference specifications, and in accordance with specifications found in other parts of the contract documents, including:

Drawings bearing the title “**New Restroom Facility Fran B. Adams North County Regional Park**”.

All sections of these Specifications

EXECUTION

Installation

All installation methods & handling of material (the execution of the work) shall be in accordance with the reference specifications, and in accordance with specifications found in the other parts of the contract documents, including:

Documents:

- A. Drawings
- B. All sections of the Specifications

Protection of Existing Mains and Conduits

It is acknowledged that there are areas where proposed mains and conduits will be constructed in close proximity to existing mains that must remain in service. Attention is directed to the fact that the proposed mains may be not only in close proximity horizontally, but the new mains may also at some locations need to be constructed at a greater depth than the existing mains. It shall be the Contractor's responsibility to take measures to provide support and/or restraints to maintain existing mains as necessary during the construction process utilizing sheet piling, restrained joints and/or other methods. Any necessary sheet pilings, restraints and/or other methods used to protect any existing mains and conduits and/or other utilities shall be included in the unit price of the proposed mains.

END OF SECTION

SECTION 03010 - MOBILIZATION

GENERAL

The work specified in this item shall conform to Section 101 of the Florida Department of Transportation Standard Specifications for Road and Bridge Construction (Latest Edition), except as modified herein.

Description

Mobilization shall consist of handling the Contract, and may include such portions of the following as are required at the beginning of the Project.

Scope of Work

Setting up the Contractor's general plant, offices, shops, storage areas, sanitary and other facilities as required by the specifications, by Local or State Law, or by regulation; providing access to the project site; obtaining necessary permits and licenses and payment of fees; protecting existing utilities; lighting work areas; photographs of existing conditions; providing working drawings; sampling and testing of materials and providing required insurance and bonds.

Materials

Such materials as are required that are not to be part of the completed contract shall be determined by the Contractor.

Methods of Construction

All work done in providing the facilities and services under this item shall be performed in accordance with the construction plans, specifications, and in a safe and workmanlike manner.

Measurement of payment shall be on a lump sum basis.

END OF SECTION

SECTION 03020 - MAINTENANCE OF TRAFFIC

GENERAL

The work specified in this item shall conform to Section 102 of the Florida Department of Transportation Standard Specifications for Road and Bridge Construction (Latest Edition), except as modified herein.

General Provisions-Description

The work specified in this Section consists of maintaining traffic within the limits of the project for the duration of the construction period, including any temporary suspensions of the work. It shall include the construction and maintenance of any necessary detour facilities; the providing of necessary facilities for access to residences, businesses, etc., along the project; the furnishing, installing and maintaining of traffic control and safety devices during construction, the control of dust through the use of calcium chloride if necessary, and any other special requirements for safe and expeditious movement of traffic as may be called for on the plans. The term, Maintenance of Traffic, as used herein, shall include all of such facilities, devices and operations as are required for the safety and convenience of the public as well as for minimizing public nuisance.

Beginning Date of Contractor's Responsibility

The Contractor shall present his Maintenance of Traffic Plan at the pre-construction conference. The Maintenance of Traffic Plan shall indicate the type and location of all signs, lights, barricades, striping and barriers to be used for the safe passage of pedestrians and vehicular traffic through the project and for the protection of the workmen. The plan will indicate conditions and setups for each phase of the Contractor's activities.

When the project plans include or specify a specific Maintenance of Traffic Plan, alternate proposals will be considered when they are found to be equal to or better than the plan specified.

In no case may the Contractor begin work until the Maintenance of Traffic Plan has been approved in writing by the Engineer. Modifications to the Maintenance of Traffic Plan that become necessary shall also be approved in writing. Except in an emergency, no changes to the approved plan will be allowed until approval to change such plan has been received.

The cost of all work included in the Maintenance of Traffic Plan shall be included in the pay item for Mobilization, Demobilization, MOT.

The Contractor shall be responsible for performing daily inspections, including weekends and holidays, with some inspections at nighttime, of the installations on the project and replace all equipment and devices not conforming with the approved standards during that inspection. The project personnel will be advised of the schedule of these inspections and be given the opportunity to join in the inspection as is deemed necessary.

Traffic Control - Standards

The FDOT Design Standards For Design, Construction, Maintenance and Utility Operations On The State Highway System, Edition as dated on the plans set forth the basic principles and prescribes minimum standards to be followed in the design, application, installation, maintenance and removal of all traffic control devices and all warning devices and barriers which are necessary to protect the public and workmen from hazards within the project limits. The standards

established in the aforementioned manual constitute the minimum requirements for normal conditions, and additional traffic control devices warning devices, barriers or other safety devices will be required where unusual, complex or particularly hazardous conditions exist.

The above referenced standards were developed using F.H.W.A., U.S.D.O.T. Manual on Uniform Traffic Control Devices (MUTCD).

Traffic Control Devices, Warning Devices and Barriers - Installation:

The responsibility for installation and maintenance of adequate traffic control devices, warning devices and barriers, for the protection of the travel in public and workmen, as well as to safeguard the work area in general shall rest with the Contractor. Consideration shall be given to recommendations of the Engineer. The required traffic control devices, warning devices and barriers shall be erected by the Contractor prior to creation of any hazardous condition and in conjunction with any necessary re-routing of traffic. The Contractor shall immediately remove, turn or cover any devices or barriers which do not apply to existing conditions. All traffic control devices shall conform to MUTCD standards and shall be clean and relatively undamaged. Damaged devices diminishing legibility and recognition, during either night or day conditions, are not acceptable for use.

No Waiver of Liability

The Contractor shall conduct his operations in such a manner that no undue hazard will result due to the requirements of this article, and the procedures and policies described therein shall in no way act as a waiver of any of the terms of the liability of the Contractor or his surety.

Item of Payment

Payment for the work specified in this item shall be made under: Mobilization, Demobilization, MOT - Lump Sum

END OF SECTION

SECTION 03030 - PREVENTION, CONTROL, AND ABATEMENT OF EROSION AND WATER POLLUTION

GENERAL

The work specified in this item shall conform to Section 104 of the Florida Department of Transportation Standard Specifications for Road and Bridge Construction (Latest Edition), except as modified herein.

Scope

This Section covers erosion control and the treatment of dewatering water and stormwater runoff from the construction site and work area. The pollution control measures shall prevent turbid or otherwise polluted waters from being discharged from the construction site or work area, to undeveloped portions of the site or off-site.

The OWNER considers pollution from dewatering water and stormwater runoff from a construction site or work area to be a very serious offense. The CONTRACTOR is solely responsible for preventing pollution caused by dewatering water and stormwater runoff from the construction site or work area.

The pollution control measures specified herein represent minimum standards to be adhered to by the CONTRACTOR throughout the Project's construction. The OWNER reserves the right to require the CONTRACTOR to employ additional pollution control measures, when in the sole opinion of the OWNER, they are warranted. If site specific conditions require additional erosion and stormwater pollution control measures during any phase of construction or operation to prevent erosion or to control sediment or other pollution, beyond those specified in the Drawings or herein, implement additional best management practices as necessary, in accordance with "Best Management Practices for Erosion and Sedimentation Control" of the Florida Stormwater Erosion and Sedimentation Control Inspectors Manual, and other references as may be required by regulatory permits.

(http://publicfiles.dep.state.fl.us/DEAR/DEARweb/Stormwater_training/Manual/FSESCI%20TIER%20I%20Manual%20100318.pdf)

The OWNER may terminate this Contract if the CONTRACTOR fails to comply with this Section. Alternatively, the OWNER may halt the CONTRACTOR's operations until the CONTRACTOR is in full compliance with this Section. If the OWNER halts the CONTRACTOR's work as a result of its failure to comply with this Section, the Construction Contract time clock will continue to run.

In addition to these Specifications, comply with Chapter 3 – "Temporary BMPs for Erosion and Sedimentation Control", Chapter 4 - "BMPs – Vegetation for Erosion Control" and Chapter 5 – "BMPs for Dewatering" of the Florida Stormwater Erosion and Sedimentation Control Inspectors Manual. In the event of a conflict between the referenced Chapters and these Specifications, the more stringent requirement shall prevail.

Some Permits to Be Obtained By the Contractor

The OWNER has obtained certain permits for this project and they are listed in paragraph SC-6.08 of the Supplementary Conditions. Per paragraph SC-6.08.A.2 of the Supplementary Conditions, the CONTRACTOR shall apply for, obtain, and pay for all other required permits, licenses, sampling, and tests. Permits the CONTRACTOR may need to secure may include but not be limited to:

1. Long-term and/or short-term dewatering permit as required by the St. Johns River Water Management District (SJRWMD). Generally, only the short-term permit is required. Contact SJRWMD at (386) 329-4570 or email compliancesupport@sjrwmd.com to determine which permit is required and the associated statutory requirements;
2. SJRWMD RDS-50 Permit (required if dewatering);
3. The State of Florida Generic Permit for Stormwater Discharge From Large and Small Construction Activities (required). Contact the Florida Department of Environmental Protection (FDEP) at (866) 336-6312 (toll free) or NPDES-stormwater@dep.state.fl.us or <https://floridadep.gov/water/stormwater/content/construction-activity-cgp>
4. FDEP's Uncontaminated Groundwater Release Permit (required if dewatering occurs). This permit requires water quality testing by a State certified laboratory.

Provide copies of all permits to the OWNER and ENGINEER, post copies of all permits at the project site, and comply with all conditions contained in all permits at no extra cost to the OWNER. If there is a conflict between any permit requirement and these Specifications, the more stringent specification or requirement shall govern.

In addition to paying for all permit fees, CONTRACTOR shall also pay for all water quality sampling and laboratory tests required by any permit.

General

Do not begin any other construction work until the pollution control and treatment system has been constructed in accordance with approved plans and permits and approved for use by the OWNER and applicable permitting authorities.

From time to time, the OWNER or ENGINEER will inspect the pollution control and treatment system and may take effluent samples for analysis by a testing laboratory selected and paid for by the OWNER. If at any time, the OWNER or ENGINEER determines that the pollution control and treatment system is not in compliance with the approved system, the OWNER or ENGINEER will shut the portion of the project down that is not in compliance, and it shall remain shut-down until the pollution control and treatment system is properly constructed or repaired, and complies with the approved pollution control and treatment system plans and specifications.

Schedule construction to minimize erosion and stormwater runoff from the construction site. Implement erosion control measures on disturbed areas as soon as practicable in portions of the site where construction activities have temporarily or permanently ceased, but in no case more than seven (7) days after the construction activity in that portion of the site has temporarily or permanently ceased. In addition to other temporary erosion control measures that may be implemented, application of polyacrylamide is required on all such disturbed areas within seven (7) days after the construction activity in that portion of the site has temporarily or permanently ceased, unless final landscaping has been installed. Polyacrylamide application shall be as specified herein.

Inspect each pollution control system at least once per day and after each rainfall event. Clean and maintain each pollution control system as required by its manufacturer or the OWNER, until the system is no longer needed. If a water quality violation occurs, immediately cease all work contributing to the water quality violation and correct the problem.

Discharge shall not violate State or local water quality standards in the receiving waters, nor cause injury to the public health or to public or private property, nor to the Work completed or in progress.

The receiving point for water from construction operations shall be approved by the applicable owner, regulatory agency, and the ENGINEER.

Promptly repair all damage at no cost to the OWNER.

Submittals

Shop Drawings: Submit shop drawings of the proposed pollution control and treatment systems in accordance with Section 1340.

Stormwater Pollution Prevention Plan.

State Certified Erosion Control Specialty Subcontractor Is Required For Installation, And Maintenance

State Certified Erosion Control Specialty Subcontractor is Required for Installation and Maintenance: Installation and maintenance of all erosion and stormwater pollution control devices, shall be by a State Certified erosion control subcontractor who specializes in the installation and maintenance of such devices. After installation, this specialty subcontractor shall maintain the erosion and stormwater pollution control devices until in the ENGINEER's sole opinion, the devices are no longer necessary (such time not to extend past the date the OWNER formally accepts the project as complete). Before beginning construction, submit to Indian River County for review and approval, a Stormwater Pollution Prevention Plan (SWPPP), prepared by the certified erosion control subcontractor. Construction shall not begin until the SWPPP has been approved by Indian River County. Submit the approved SWPPP to the ENGINEER before beginning construction. Include in the SWPPP, the "Contractor's Affidavit Regarding Erosion Control and Treatment of Dewatering Water and Stormwater From the Construction Site" (located at the end of this Section).

"Pollution" And Certain Uncontestable Pollution Events Defined

With respect to this Section and as may be further defined in the following paragraphs, "pollution" is the presence in off-site waters of any substances, contaminants, or manmade or human-induced impairment of off-site waters or alteration of the chemical, physical, biological, or radiological integrity of off-site water in quantities or at levels which are or may be potentially harmful or injurious to human health or welfare, animal or plant life, or property. Pollutants to be removed include but are not limited to, sediment and suspended solids, solid and sanitary wastes, phosphorus, nitrogen, pesticides, oil and grease, concrete truck washout, stucco mixer washout, curb machine washout, washout from other construction equipment, construction chemicals, and construction debris.

When the Discharge is Directly Into an Existing Water Body, Pollution Occurs When . . . An existing water body (including ditches and canals) is defined to be polluted by the CONTRACTOR's operations when at any time, the turbidity of the water immediately downstream of the CONTRACTOR's discharge point(s) is at least 29 nephelometric turbidity units (NTUs) higher than the turbidity of the background water upstream of the discharge point(s). [See Fla. Administrative Code 62-302.530] Exception: When the discharge is directly into or through an outfall discharging into "Outstanding Florida Waters," designated by Florida Statute 403.061(27), the turbidity of the discharged water cannot exceed the turbidity of the immediate receiving water. The ENGINEER or OWNER shall determine the locations where the turbidity is measured.

When the Discharge is not Directly Into an Existing Water Body, Pollution Occurs When . . . In some instances, dewatering water or stormwater runoff from the construction site or work area may reach a water body indirectly, such as after traveling through pipes or by overland flow. Before construction commences, the Contractor will measure background levels of total suspended solids (TSS) and

turbidity, in the immediate vicinity of the discharge water's ultimate discharge point into the receiving water body. If the discharge water's TSS and turbidity measurements exceed these pre-construction background values by 20 percent for TSS and 29 NTUs for turbidity, then the discharge from the CONTRACTOR's operations is defined to be polluted.

Pollution Always Occurs When . . . The discharge from a construction site or work area is defined to be polluted whenever the pH of the discharge is less than 6.5 or greater than 8.5, or whenever any of the following is present in the discharge water:

- (1) Hazardous waste or hazardous materials in any quantity,
- (2) Any petroleum product or by-product in any quantity,
- (3) Any chemical in any quantity, or
- (4) Concentrated pollutants.

Above paragraphs do not in any way, limit the types of conditions in which pollution may be determined to occur.

Penalties For Noncompliance With This Section

In addition to the OWNER's specific remedies, if erosion or pollution is caused by dewatering water or stormwater runoff from the construction site, the OWNER will immediately report the violations to the Indian River County Code Enforcement Board, SJRWMD, FDEP, Indian River Farms Water Control District (or other F. S. Chapter 298 Drainage District, as appropriate), and other pertinent regulatory or enforcement agencies.

PART 2 - MATERIALS AND INSTALLATION

General

Polyacrylamide: As required above, place polyacrylamide (PAM) on bare ground to reduce the potential for erosion. PAM may also be used in water bodies to remove turbidity. Use the anionic form of polyacrylamide that does not stick to fish gills. For PAM information and its proper application, contact Applied Polymer Systems, Inc., Toll Free (866) 200-9868 or (678) 494-5998, www.siltstop.com.

Staked Silt Fences:

1. General: Use silt fences to control runoff from the construction site where the soil has been disturbed.
2. Installation: Install per the manufacture's recommendations and as specified herein. In general, install the silt fence in a manner that allows it to stop the water long enough for the sediment to settle while the water passes through the silt fence fabric. All supporting posts shall be on the down-slope side of the fencing. Place the bottom of the fabric 6-inches minimum, under compacted soil to prevent the flow of sediment underneath the fence. Place silt fences away from the toe of slopes. Otherwise, install in accordance with FDOT Index No. 102.
3. Product: All material shall be new and unused. Use FDOT Types II through IV silt fences where large sediment loads are anticipated, where slopes are 1:2 (vertical: horizontal) or steeper, or as directed by the ENGINEER; otherwise use FDOT Type III silt fence.

- (a) For FDOT Type III Silt Fence - ACF Environmental, Catalog No. 360800000, Florida DOT Silt Fence. U.S. Sieve = 30, tensile strength = 120 pounds. The heavy-duty filter fabric shall be pre-attached to 48-inch long stakes on 6-foot centers. (1-800-448-3636).
- (b) For FDOT Type IV Silt Fence, modify the above Catalog No. 360800000 to comply with FDOT Index No. 102.
- (c) Or equivalent.

Turbidity Barriers:

1. General: Use turbidity barriers to control sediment contamination of rivers, lakes, ponds, canals, etc.
2. Installation: Install per the manufacturer's recommendations and per FDOT Index No. 103 unless directed otherwise by the ENGINEER.
3. Product: All material shall be new and unused. The turbidity barrier shall be a pervious barrier and the fabric color shall be yellow.
 - a. Parker Systems, Inc. (1-866-472-7537 <https://www.parkersystemsinc.com/>), model Type II or Type I
 - b. Or equivalent.

Sedimentation Control From Dewatering or Pumping Operations Using Filter Bags:

1. Remove silt, sediment, and other particles from dewatering or pumping applications using a filter bag. The bag shall be manufactured using a polypropylene non-woven geotextile and sewn by a double-needle machine, using a high strength nylon thread. The bag shall have a fill spout large enough to accommodate a 4-inch pump discharge hose. Straps shall be attached to the bag to secure the hose and prevent pumped water from escaping without being filtered.
2. Installation: Install in accordance with the manufacturer's specifications. Use as many filter bags as required, at no additional cost to the OWNER. Legally dispose of the bags offsite, at no cost to the OWNER. If the bags are placed on aggregate to facilitate filtration efficiency, do not use limerock aggregate.
3. Product: The filter bag shall be supplied with lifting straps.
 - a. "DIRTBAG 53 or 55 as applicable," supplied by ACF Environmental, Inc. (1-800-448-3636 <https://acfenvironmental.com/contact/>).
 - b. "DANDY DEWATERING BAG" supplied by Dandy Products, Inc. (1-800-591-2284 <https://www.dandyproducts.com/ContactUs.aspx>).
 - c. Or equivalent.

Curb Inlet Protection:

1. Filter stormwater before it enters curb inlets.
2. Installation: Install in accordance with the manufacturer's specifications. Use as many of the specified filtration devices as required, at no additional cost to the OWNER.
3. Product: All materials shall be new and unused. The length of the curb inlet filtration device shall be at least 2-feet longer than the curb inlet opening.

- a. "GUTTERBUDDY," supplied by ACF Environmental, Inc. (1-800-448-3636 <https://acfenvironmental.com/contact/>).
- b. Or equivalent.

Catch Basin Protection:

1. Filter stormwater before it enters catch basins (drop inlets). The filter "sack" shall be manufactured from woven polypropylene geotextile and sewn by a doubleneedle machine, using a high strength nylon thread. The sack shall be manufactured to fit the opening of the catch basin or drop inlet and it shall have the following features: two dump straps attached at the bottom to facilitate emptying; lifting loops as an integral part of the system to be used to lift the sack from the basin; and a colored restraint chord approximately halfway up the sack to keep the sides away from the catch basin walls. The colored restraint chord shall also serve as a visual means of indicating when the sack should be emptied.
2. Installation: Install in each catch basin in accordance with the manufacturer's specifications. Use as many of the specified filtration devices as required, at no additional cost to the OWNER.
3. Product: All materials shall be new and unused.
 - a. "SILTSACK" (regular flow), supplied by ACF Environmental, Inc. (1-800-448-3636 <https://acfenvironmental.com/contact/>).
 - b. "FloGuard+PLUS," supplied by Kristar Enterprises, Inc. (1-800-579-8819).
 - c. Or equivalent.

Construction Site Egress Driveways: Minimize the transport of sediment and soil from the construction site or work area by vehicle wheels. Construct a crushed rock driving surface at the vehicle exit point(s). Provide an area large enough to remove the sediment and soil from vehicle wheels before the vehicle leaves the construction site or work area. Provide wash-down stations as required to wash vehicle tires and retain all washwater on-site. Do not use limerock.

Rock and Stone for Erosion Control and Pollution Control and Treatment:

1. Crushed Limerock: Crushed limerock shall not be used under any circumstance.
2. Acceptable Material: FDOT #4 non-calcareous aggregate (usually granite), washed and meeting the requirements of FDOT Standard Specifications for Road and Bridge Construction, Section 901.

Hay Bales: Hay bales shall not be used.

PART 3 - EXECUTION

Design, construct, and maintain the pollution control and treatment system to minimize erosion and capture and remove pollutants from the construction site and from all other areas disturbed by construction activities.

Apply polyacrylamide only as directed by the polyacrylamide manufacturer/supplier.

Item of Payment

Measurement of payment shall be on a lump sum basis.

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CONTRACTOR'S AFFIDAVIT REGARDING POLLUTION

This sworn statement is submitted to Indian River County Project No. **BID 2024031** for **New Restroom Facility Fran B. Adams North County Regional Park** project.

STATE OF _____
COUNTY OF _____

Personally before me the undersigned authority, appeared _____, who upon oath duly administered, stated as follows:

1. This sworn statement is submitted by the CONTRACTOR

_____ whose business address is _____

_____ and (if applicable) its Federal Identification No.(FEIN) is _____.

2. My name is _____ and my relationship to the entity named above is _____.
(If signing as Owner's Agent, attach Letter of Authorization to Sign from Owner)

3. I understand and agree that in addition to complying with the terms and conditions of the Stormwater Management System Permit issued by Indian River County, Permittee is responsible for complying with the terms and conditions of the following as applicable to the site:

- (a) The State of Florida Generic Permit for Stormwater Discharge From Large and Small Construction Activities (for projects one acre or larger),
- (b) Stormwater Pollution Prevention Plan (regardless of project size),
- (c) St. Johns River Water Management District permit(s) (regardless of project size),
- (d) Florida Department of Environmental Protection permit(s) (regardless of project size),
- (e) All other permits required for this project not specifically listed herein, and
- (f) All Codes and Ordinances of Indian River County.

4. I understand and agree that "pollution" as defined by Florida Statutes Chapter 403.031(7) includes: ". . . the presence in the outdoor atmosphere or waters of the state of any substances, contaminants, noise, or manmade or human-induced impairment of air or waters or alteration of the chemical, physical, biological, or radiological integrity of air or water in quantities or at levels which are or may be potentially harmful or injurious to human health or welfare, animal or plant life, or property or which unreasonably interfere with the enjoyment of life or property, including outdoor recreation unless authorized by applicable law."

5. I understand and agree that in addition to the definition set forth in Item 4 above, "pollution" is also defined by Florida Administrative Code 62-302.530 and as may be further defined in the Indian River County permit(s).

6. I understand that Indian River County requires the design, installation, and maintenance of proper erosion control measures at all times during construction until complete stabilization is

achieved at the project site. Permittee understands that this requirement is for this project regardless of the project size.

7. I understand that there are civil and criminal penalties for pollution listed in Florida Statutes Ch. 403.141 and Ch. 403.161 and that there are other penalties listed in Indian River County's permits, including but not limited to, Indian River County issuing a Cease and Desist Order for the project. Permittee understands that it may be liable for these and other penalties if offsite pollution occurs as a result of activities associated with the Project.
8. Transfer of Ownership or County Issued Permits:
 - (a) Transfer of Interest in Real Property: Within twenty-one (21) days of any transfer of ownership or control of the real property at which the permitted activity, facility, or system is located or authorized, the Permittee shall notify in writing, both the Indian River County Engineering Division and the Indian River County Stormwater Division of the transfer. Permittee shall provide the name, mailing address, and telephone number of the transferee and a copy of the instrument effectuating the transfer. Said notification is in addition to notifying the County Attorney's Office as required by County Code.
 - (b) Transfer of a County Permit. To transfer a County issued permit, Permittee must provide (1) the information required in Item 8(a); (2) a written statement from the proposed transferee that it will be bound by all terms and conditions of the permit; and (3) a new "Permittee's Affidavit" form properly executed by the transferee. Upon proper receipt of these items the County shall transfer the permit to the transferee.
 - (c) Permittee is encouraged to request a permit transfer prior to the sale or legal transfer of the real property at which a permitted facility, system, or activity is located or authorized. However, the transfer shall not be effective prior to the sale or legal transfer.
 - (d) An "Illicit Discharge Sign" must be present at the site at the time of transfer. Replacement or additional signs may be obtained from the Indian River County Public Works Department at a cost of \$30.00 per sign.
9. Offsite Discharges: Permittee understands and agrees that Indian River County has specific requirements for discharging water offsite. Permittee agrees to the following Offsite Discharge Requirements:
 - (a) Offsite discharge is limited to stormwater runoff, surface water, groundwater, or any mixture thereof meeting Project discharge water quality requirements.
 - (b) All offsite discharge requirements pertain to all discharges, whether pumped or gravity flow.
 - (c) Prior to discharging offsite, Permittee shall coordinate the discharge with the County's Senior Stormwater Enforcement Officer and with the Florida Statutes Chapter 298 Drainage District (if any) having jurisdiction over the receiving water body. The date and approximate time of beginning offsite discharge shall be determined and the proposed offsite discharge ending date shall be determined when coordinating with these parties.
 - (d) Discharges shall begin and end within the aforementioned dates and times. Discharges occurring before or after the aforementioned times are a violation of the County's offsite discharge requirements and Permittee will be subject to all pertinent penalties for an illicit discharge.
 - (e) Commencement of offsite discharge may only be on a non-County holiday, Monday through Thursday, during the following hours - 9:00 AM to 3:30 PM. If offsite discharge is commenced at any other time, it will be deemed an illicit discharge and Permittee will be subject to all pertinent penalties for an illicit discharge.
 - (f) Unless specifically approved in writing by County staff, no discharge shall occur during weekends or County holidays, except under emergency conditions (e.g. significant tropical weather events).

- (g) The discharge shall not contain pollutants or create pollution (e.g. stirring up mud and creating turbidity in the receiving water body). Pollution is further defined in Items 4 and 5 above, and as may be defined by the Project's various permits.
- (h) Permittee shall take and analyze samples of background receiving water and discharge water. Minimum sample frequency is: (1) For singular day discharge, take samples at the beginning, estimated midpoint, and end of the discharge event; (2) For multiple-day discharges, take samples at the beginning, midpoint, and end of each day. As a minimum, all samples shall be analyzed onsite by the Permittee for turbidity and pH. Other analysis shall be as required by Project permits. All test results shall be legibly recorded in a notebook that shall be available at any reasonable time for County staff to review.
- (i) If any sample fails to meet the Project's discharge criteria, then all offsite discharge shall immediately be ceased and Permittee shall immediately notify the County's Senior Stormwater Enforcement Officer. No further offsite discharge is permitted until Permittee properly addresses the discharge issue and a written approval to recommence discharge is issued by County staff.
- (j) County staff shall have the right to test offsite discharge water at any time. If staff discovers discharge water does not meet the Project's offsite discharge water quality criteria, all discharge shall immediately stop and no further offsite discharge is permitted until Permittee properly addresses the discharge issue and a written approval to recommence discharge is issued by County staff

Contractor understands and agrees that violation of any aforementioned Offsite Discharge Requirement will result in immediate revocation of Permittee's right to discharge offsite and the discharge will be classified as an "Illicit discharge," and prosecuted as such under Indian River County Ordinance No. 2018-015, Resolution 2018-057, and all other supporting Indian River County resolutions; together with all other penalties and actions against Permittee that the County deems appropriate.

Under penalty of perjury, Permittee declares that it has read the foregoing affidavit and Permittee declares the facts stated in it are true, and that Permittee fully understands and agrees to all stipulations and requirements set forth in the affidavit.

FURTHER AFFIANT SAYETH NAUGHT

Contractor: _____

Authorized Signature: _____
(If signing as Owner's Agent, attach Letter of Authorization to Sign from Owner)

Printed Name: _____

Date: _____

Work Telephone: _____

Mobile Telephone: _____

Email Address: _____

The foregoing instrument was subscribed and sworn to before me this ___ day of _____,
20 by _____, who is personally known to me or
has produced _____ as identification and who did take oath.

Notary Public State of Florida at Large
My Commission expires: _____

END OF SECTION

SECTION 03040 - RECORD DRAWINGS / AS-BUILT DRAWINGS

GENERAL

The work specified in this item shall conform to Section 108 of the Florida Department of Transportation Standard Specifications for Road and Bridge Construction (Latest Edition), except as modified herein.

Maintain, prepare and provide the ENGINEER with record documents as specified below, except where otherwise specified or modified within the scope of work provided in the specific project contract documents. The Contractor and/or Developer shall be responsible for, and required to provide, Record Drawings as outlined in this section.

REQUIREMENTS

“For Review Only” “As-Built” survey prepared by a Land Surveyor licensed in the State of Florida shall be provided by the Contractor to the Engineer periodically for review and to submit to IRCDUS prior to testing. Final “As-Built” survey shall be provided by the Contractor prior to project close-out conforming to all IRCDUS Utility Standards, latest edition. The As-Built shall illustrate the horizontal and vertical location of all pipe, fittings, valves, and service connections installed and site improvements/modifications (i.e. paving, grading, storm structures, etc.) as part of this project. The As-Built shall illustrate the location of any pipe abandoned “in place”.

The As-Built shall contain at least two (2) points identified with reference to State Plane Coordinates. All pipe, fittings, valves, and service connections installed and site improvements/modifications (i.e. paving, grading, storm structures, etc.) shall be labeled with horizontal reference to the Construction Baseline (station and offset), and vertical reference to the North American Vertical Datum (NAVD 1988).

Maintenance of Record Documents:

1. Maintain in CONTRACTOR's field office in clean, dry, legible condition complete sets of the following project documents: Drawings, Specifications, Addenda, approved Shop Drawings, samples, photographs, Change Orders, other modifications of Contract Documents, test records, survey data, Field Orders, and all other documents pertinent to CONTRACTOR'S Work.
2. Provide files and racks for proper storage and easy access.
3. Make documents available at all times for inspection by ENGINEER and OWNER.
4. Do not use record documents for any other purpose and do not remove them from the field office.
5. Label each document "RECORD DRAWING" in 2-inch high printed letters.
6. Keep record documents current at all times.
7. No work shall be permanently concealed until the required record data has been obtained.

Record / As-Built Drawings

During the construction operation, the CONTRACTOR shall maintain records of all deviations from the approved Project Plans and Specifications and shall prepare therefrom “RECORD” drawings showing correctly and accurately all changes and deviations from the work made during construction to reflect the work as it was actually constructed.

The Record/As-Built survey shall be performed and subsequent plans prepared by a Professional Surveyor and Mapper, registered in the state of Florida and certified to the standards set forth in Chapter 472, Florida Statutes and Chapter 5J-17.050 Florida Administrative Code (Florida Minimum Technical Standards).

Field measurements of vertical or horizontal dimensions of constructed improvements shall be obtained so that the constructed facility can be delineated in such a way that the location of the construction may be compared with the construction plans. Clearly shown by symbols, notations, or delineations, those constructed improvements located by the survey.

All vertical information (elevations) provided on the Record Drawings shall be referenced to the North American Vertical Datum of 1988 (NAVD 88) unless otherwise specified by the Project Engineer.

The horizontal information provided on the Record Drawings shall be referenced to the State of Florida, State Plane Coordinate System, Florida East Zone as established by Global Positioning System (GPS) which meets or exceeds Third Order Class I Accuracy Standards according to current publication of the Federal Geodetic Control Committee (FGCC) procedures.

All Record/As-Built drawings shall be prepared in digital format (ACAD Ver.2015) and shall utilize the digital design drawings as prepared by the Project Engineer as a base for the Record/As-Built drawings. It is the responsibility of the Surveyor to request these files from the Contractor or Project Owner in order to produce the Record/As-Built drawing set.

ALL improvements proposed to be constructed as shown on the approved construction plans shall be field measured upon completion and shown on the Record/As-Built survey. Any improvements that appear in both plan and profile views shall show the Record/As- Built information in both views.

The following items are required to be shown on all Indian River County project Record/As- Built drawings submitted to the County:

A. DRAINAGE:

1. Right-of-way Swale/Drainage – All culvert inverts, elevations and station offsets; inlet grate and bottom elevations; swale beginning and end bottom elevations; and highs and lows along top of bank. Size of swale.
2. Pipe Culvert/PVC Sleeves – All inverts, pipe size, stations and offsets.
3. Outfalls – All pipe inverts, pipe size, elevations and station offsets, weir box elevations, weir elevation, bleeder elevation and sizes.
4. Roadway/Off Site Drainage – All inverts, elevations and station offsets; manhole top elevation; grate top elevations.
5. Retention Ponds – Provide perimeter elevations, grade breaks, depths and calculated pond areas at control elevation and grade breaks above and below water surface. Show as-built of typical cross section as shown on design plan.

B. ROADWAY:

1. Stations and offsets related to controlling baseline and elevations of all structures, side street and major driveway radius returns (edge of pavement), bends and/or change in direction of roadway alignment, minimum of 1000' intervals along roadway alignment.

2. Elevations along Profile Grade Line (PGL), of all edge of pavements on each side of Profile Grade Line (PGL), at medians at the high/low and PVI points along Profile Grade Line (PGL).
3. All final Elevations to be plotted on PGL AND Plan & Profile sheets as applicable.
4. Elevations of edge of pavement and flow line at curb inlets and on the adjacent edge of pavement at curb inlets.

C. WATER MAINS AND FORCE MAINS:

1. Show size and type of material used to construct mains.
2. Show horizontal location and elevation of all tees, crosses, bends, terminal ends, valves, fire hydrants, air release valves, and sampling points, etc., by distances from known reference points.
3. Show location, size and type of material of all sleeves and casing pipes.
4. Elevation and horizontal location of all storm sewers, gravity sewers including laterals, force mains, water mains, etc. which are crossed; including clearance dimension at all conflicts or crossings.
5. Top of pipe elevation and horizontal location of all water and force main stub-outs.
6. Horizontal location of all services at the property lines.
7. Horizontal and vertical location of pipe including size of all mains and ground elevation shall be obtained at one-hundred (100) foot intervals. Contractor shall place temporary PVC stand pipes (tell-tales) at each of the one-hundred (100) foot intervals and at all fittings and conflicts/crossings to facilitate the record drawing survey. The tell-tale pipes shall be constructed of 2-inch PVC pipe, shall be placed on the top of the pipes to be surveyed, and shall be removed by the Contractor after completion of the field survey by the "As-Built" Professional Surveyor.
8. Location of fire lines.
9. Dedicated easement locations, identified by O.R. Book and Page Number.

D. GRAVITY SEWER:

1. Manholes: Elevation of top rim, bottom elevation and invert of each influent and effluent line.
2. Show distance between manholes center-to-center and horizontal location by baseline station and offset.
3. Show material size and type used to construct sewer mains.
4. Show length (center of manhole to end of stub) distances from known reference points or baseline offsets, and elevation of stub-outs.
5. Show which services have twenty (20) foot length of DIP at water main crossings.
6. Show station and offset location of sanitary services at property line. Particular care in dimensioning needed in special situations, i.e., cul-de-sacs and locations where services are not perpendicular to wye.
7. Show invert elevation of sanitary service at property line.

8. Any and all necessary dedicated easement locations, identified by O.R. Book and Page Number.

E. PUMP / LIFT STATION:

Record Drawings shall show elevations for the top and bottom and diameter of wet well along with invert of effluent line. Record Drawings should also indicate the make, model number, horsepower, impeller and condition point of pumps selected and installed, shape of wet well, location of control panel, location of pump out connection, float level settings, any deviation from the plans, and serial number(s) of the pump(s).

Survey Control

Install/re-establish: It shall be the contractor's responsibility to hire a Professional Surveyor and Mapper as defined per Chapter 472, Florida Statutes, to replace any horizontal and vertical control shown on the engineering plans that was destroyed during construction.

New roadway alignment control points (survey baseline or controlling line and all points as indicated on the plans or control sheet) upon final roadway completion. Include all intersections and side streets. State plane coordinates and elevations for all control points.

If shown on plans or not: Any Public Land Corner or Governmental Survey Control point(s), vertical control (bench marks), property corners destroyed and/or disturbed during the scope of the project shall be properly re-established as per standards as set forth within Florida Statutes, Administrative code and Minimum Technical Standards for that type of survey. All said surveying mentioned above shall be performed under the direct supervision of a registered Professional Surveyor and Mapper in the state of Florida and certified accordingly. Said Governmental agency(s) shall be notified in writing of disturbance and re-establishments.

Record/As-Builts Drawings Format - Submittal

ENGINEER will supply the CONTRACTOR with the electronic file of the approved construction plans for the input of the As-Built (record) information.

CONTRACTOR shall deliver five (5) certified sets of Record/As-Builts with Electronic Drawing files prepared in AutoCAD 2015 AND PDF format or in current version as agreed by the ENGINEER.

CONTRACTOR's surveyor shall review, sign and seal As-Builts or Record drawing(s). Said drawing(s) shall clearly state type of survey, positional tolerances, adhere and be certified to by a registered Professional Surveyor and Mapper in the state of Florida, any standards set forth by Florida Statutes, Administrative code and Minimum Technical Standards for As-Built/Record surveys.

All Record/As-Built drawings are subject to review and approval by County Surveyor.

Accuracy

The CONTRACTOR will be held responsible for the accuracy and completeness of Record Drawings and Electronic As-Builts and shall bear any costs incurred in finding utilities as a result of incorrect data furnished by the CONTRACTOR.

Completion of Work

Upon Substantial Completion of the Work, deliver Record Drawings/As-Built Drawings to ENGINEER. Final payment will not be made until satisfactory record documents are received and approved by ENGINEER.

Item of Payment

Measurement of payment shall be on a lump sum basis..

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BOARD OF PROFESSIONAL SURVEYORS AND MAPPERS

Record As-Built Survey Checklist

Lic. Name _____ Date: _____

Project Name: **New Restroom Building Facility – Fran B. Adams North County Regional Park**

Project No.: **Bid 2024031**

Chapter 61G17-6 Minimum Technical Standards F.A.C.

61G17-6.003 General Survey, Map, and Report Content Requirements

(1) REGULATORY OBJECTIVE: The public must be able to rely on the accuracy of measurements and maps produced by a surveyor and mapper. In meeting this objective, surveyors and mappers must achieve the following minimum standards of accuracy, completeness, and quality:

- (a) Accuracy of survey measurements based on the type of survey and expected use.
- (b) Measurements made in accordance with the United States standard, feet or meters.
- (c) Records of measurements maintained for each survey (check field notes.)
- (d) Measurement and computation records dated.
- (e) Measurement and computation records substantiate the survey map.
- (f) Measurement and computation records support accuracy statement (closure calculations or redundant measurements, if applicable.)

(2) Other More Stringent Requirements:

- (a) Met more stringent requirements set by federal, state, or local governmental agencies.

(3) Other Standards and/or Requirements that Apply to All Surveys, Maps, and/or Survey Products:

- (a) REGULATORY OBJECTIVE: In order to avoid misuse of a survey and map, the surveyor and mapper must adequately communicate the survey results to the public through a map, report, or report with an attached map.
- (b) Survey map or report identified the responsible surveyor and mapper and contain standard content. In meeting this objective, surveyors and mappers must meet the following minimum standards of accuracy, completeness, and quality:

(c) Type survey stated on map and report:

As-Built Survey

Mean High Water Line Survey

Boundary Survey

Quantity Survey

Condominium Survey

Record Survey

Construction Layout Survey

Specific or Special Purpose Survey

Control Survey

Topographic Survey

Hydrographic Survey

- (d) Name, certificate of authorization number, and street and mailing address of the business entity on the map and report.

- (e) Name and license number of the surveyor and mapper in responsible charge.
- (f) Name, license number, and street and mailing address of a surveyor and mapper practicing independent of any business entity on the map and report.
- (g) Survey date (date of data acquisition.)
- (h) Revision date for any graphic revisions (when survey date does not change.)
- (i) Map and report statement "Survey map and report or the copies thereof are not valid without the signature and the original raised seal of a Florida licensed surveyor and Mapper."
- (j) Insurance statement in 1/4" high letters "The survey depicted here is not covered by professional liability insurance" if there is no professional liability insurance.
- (k) Additions or deletions to survey maps or reports by other than the signing party or parties is prohibited without written consent of the signing party or parties.
- (l) All computed data or plotted features shown on survey maps supported by accurate survey measurements unless clearly stated otherwise.
- (m) Bearings, distances, coordinates, and elevations shown on a survey map shall be substantiated by survey measurements unless clearly stated otherwise.
- (n) Bearing reference (well established and monumented line)
- (o) A designated "north arrow"
- (p) Stated scale or graphic scale
- (q) Abbreviations in legend or notes.
- (r) Special conditions and any necessary deviation from the standards noted upon the map or report.
- (s) Responsibility for all mapped features stated on the map or report
- (t) Map or report clearly states the individual primarily responsible for the map or report when mapped features have been integrated with others.
- (u) Map Accuracy.
 - (1) Vertical Feature Accuracy:
 - (a) Vertical Control: Field-measured control for elevation information shown upon survey maps or reports shall be based on a level loop or closure to a second benchmark.
 - (b) Closure in feet must be accurate to a standard of plus or minus .05 ft. times the square root of the distance in miles.
 - (c) All surveys and maps or reports with elevation data shall indicate the datum and a description of the benchmark(s) upon which the survey is based.
 - (d) Minor elevation data may be obtained on an assumed datum provided the base elevation of the datum is obviously different than the established datum.
 - (2) Horizontal Feature Accuracy:
 - (a) Horizontal Control: All surveys and maps or reports expressing or displaying features in a publicly published coordinate system shall indicate the coordinate datum and a description of the control points upon which the survey is based.
 - (b) Minor coordinate data may be obtained and used on an assumed datum provided the numerical basis of the datum is obviously different than a publicly published datum.

- (c) The accuracy of control survey data shall be verified by redundant measurements or traverse closures. All control measurements shall achieve the following closures:
Commercial/High Risk Linear: 1 foot in 10,000 feet;
Suburban: Linear: 1 foot in 7,500 feet;
Rural: Linear: 1 foot in 5,000 feet;
- (d) When statistical procedures are used to calculate survey accuracies, the maximum acceptable positional tolerance, based on the 95% confidence level, should meet the same equivalent relative distance standards as set forth in 61G17-6.003(3)(p)(2.) (c) F.A.C.
- (e) Intended Display Scale: All maps or reports of surveys produced and delivered with digital coordinate files must contain a statement to the effect of: "This map is intended to be displayed at a scale of 1/___ or smaller".

61G17-6.004 Specific Survey, Map, and Report Requirements

(1) As-Built/Record Survey:

- (a) Obtained field measurements of vertical or horizontal dimensions of constructed improvements so that the constructed facility can be delineated in such a way that the location of the construction may be compared with the construction plans.
- (b) Clearly shows by symbols, notations, or delineations, those constructed improvements located by the survey.
- (c) All maps prepared shall meet applicable minimum technical standards.
- (d) Vertical and horizontal accuracy of the measurements made shall be such that it may be determined whether the improvements were constructed consistent with planned locations.

END OF SECTION

SECTION 03050 - CLEARING & GRUBBING

GENERAL

The work specified in this item shall conform to Section 110 of the Florida Department of Transportation Standard Specifications for Road and Bridge Construction (Latest Edition), except as modified herein.

Prior to any clearing and grubbing, the contractor will stake the right-of-way. Unimproved areas shall be cleared of trees, logs, stumps, brush, vegetation, rubbish and other perishable or objectionable matter within limits shown on the plans excepting for certain trees and shrubs shown on the plans or as directed by the Engineer which are to remain undisturbed and protected. Stumps and roots between slope stakes in cuts and in embankments 3 feet or less in depth shall be removed to a depth of 18 inches below subgrade. No stumps, roots, or perishable matter of any description shall remain under concrete slabs or footing, including pavement and sidewalks.

No trees shall be removed or relocated until the Engineer or his representative has marked all trees to be saved, after a review of the project site with the Contractor's representative.

Where the final pavement or structural work will be close to existing trees, the Contractor shall exercise care in the vicinity of the trees. Further, the Contractor shall saw cut along the edge of the outside limits of the stabilization, structure subgrade or sidewalk to a minimum depth of 4 feet below the finish grade and paint with a commercial grade pruning paint the ends of all sawn roots. If directed by the Engineer or where shown on the drawings, work shall be done by hand in order to protect the trees.

The Contractor shall exercise care when working in the vicinity of all trees to remain so as to not damage or remove major root structures. The Contractor shall not pull hair or major root structures. All severed roots shall be sawn clean and paint with pruning paint. Stumps, roots, etc., shall be completely removed and disposed of by the Contractor. Undesirable, dead, and/or damaged trees (as so designated by the Engineer) shall be removed.

All trees to be removed shall be disposed off-site; burning will be strictly prohibited.

All trees or shrubs which are to remain shall be preserved and protected by the Contractor. Where the removal of valuable trees or shrubs specifically for transplanting is required, this work shall be done in cooperation with the Owner and at no additional expense to the Owner.

All items to be removed shall be excavated to their full depth. All culverts removed from residential driveway entrances within the right-of-way shall become the property of the respective homeowner. Those homeowners not desiring the culverts may donate them to the County free of charge. (See Paragraph C, Special Provisions) The Contractor shall transport the culverts to the County's storage yard. All metal castings for catch basins, manholes, or other structures shall be carefully removed and stored in the County's Storage Yard if they are deemed salvageable by the Engineer. The excavated materials shall be removed from the job site and disposed in a location designated or approved by the Owner. Any culverts, structures or any material excavated or removed from the project site under clearing and grubbing deemed unsalvageable by the Engineer shall be disposed of in a legal manner by the Contractor. Where required, suitable material as approved by the Engineer shall then be backfilled and compacted to restore the original contour of the ground. The fill material shall be backfilled and compacted in accordance with Section 125 of the Florida Department of Transportation Standard Specifications for Road and Bridge Construction (Latest Edition).

No additional payment will be made, nor will additional work, or change orders be authorized for work needed to remove, relocate, protect, or otherwise account for in the construction of the work depicted in the plans, for any feature, or item that would be apparent from a careful inspection of the site and review of the plans, even though such feature or item is not specifically called out in the plans. It is therefore essential the contractor make such inspection and review.

The lump sum bid shall include the cost of all labor, tools, and equipment necessary to excavate, remove, and dispose of those items as directed by the Engineer and where designated on the Drawings. The cost of restoration and backfill and compaction for the specific area of removal shall also be included.

END OF SECTION

SECTION 03075 - EXCAVATION FOR STRUCTURES & PIPE

GENERAL

The work specified in this item shall conform to Section 125 of the Florida Department of Transportation Standard Specifications for Road and Bridge Construction (Latest Edition), except as modified herein.

Item of Payment

The unit price for furnishing and installation of the sewer and water mains and appurtenances shall include Excavation for Structures and Pipe.

END OF SECTION

SECTION 03115 - TREE PROTECTION AND TRIMMING

GENERAL

Description of Work

Only those trees which are in the direct path of construction are to be removed. Contractor shall make every possible effort to save any tree of four-inch diameter or larger, including minor adjustment to the pipe routing. Changes to pipe routing must be approved by the Engineer. Any tree which is not designated for removal but which will significantly interfere with construction shall be trimmed by a qualified tree surgeon. Contractor shall minimize tree removal and tree trimming operations to as great an extent as possible.

Quality Assurance

Engage a qualified tree surgeon to perform the following work:

1. Carefully remove branches from trees as required for new construction; all wounded trees shall be immediately treated.
2. Recommend procedures to compensate for loss of roots and perform initial pruning of branches and stimulation of root growth where removed to accommodate new construction.
3. Perform tree repair work for damages incurred by new construction.

Job Conditions

Provide temporary fencing, barricades, or guards to protect trees and other plants which are to remain from damage.

PRODUCTS

Materials

Tree Pruning Compound: Waterproof, antiseptic, elastic, and free of kerosene, coal tar, Creosote, and other substances harmful to plants. Pruned or damaged trees shall be treated with the following:

1. Pine trees (all species): A mixture of twelve percent (12%) Benzene Hexachloride (BHC) emulsifiable concentrate shall be mixed at the rate of one (1) pint BHC per gallon of #2 fuel oil. Spray damaged area liberally. Spray the rest of the tree from ground level to a height of six feet (6'). Spraying of damaged trees shall be completed within five (5) days after injury occurs.
2. Hardwood (all species except pine): An application of asphalt-type tree pruning paint shall be applied to the damaged area. The paint shall be applied in sufficient quantity so as to form an airtight seal. Spraying or painting of the damaged trees shall be performed within twenty-four (24) hours after the injury occurs. In case of damage to "specimen" hardwoods, the inspecting Engineer may require the Contractor to retain a skilled and licensed tree surgeon to properly treat the damaged tree. No compensation shall be made to the Contractor for treating damaged trees.

EXECUTION

General

Protect tree root system from damage due to noxious materials in solution caused by run-off or spoilage during mixing and placement of construction materials, or drainage from stored materials. Protect root systems from flooding, erosion, or excessive wetting resulting from dewatering operations.

Repair And Replacement Of Trees

- A. Repair trees damaged by construction operations, in a manner acceptable to the Engineer. Make repairs promptly after damage occurs to prevent progressive deterioration of damaged trees.
- B. Remove and replace dead and damaged trees which are determined by the tree surgeon to be incapable of restoration to normal growth pattern.
- C. If trees over six inches in caliper measurement (taken 12 inches above grade) are required to be replaced, provide new trees of six inches caliper size, and of the species selected by the Engineer.

Disposal

Removal from Owner's property: Remove excess excavation, displaced trees, and trimmings, and dispose of off the Owner's property in a manner approved by local agencies.

Item of Payment

Payment for the work specified in this item shall be included in the price of the sitework.

END OF SECTION

SECTION 03310 - STABILIZATION

GENERAL

The work specified in this item shall conform to Section 160 of the Florida Department of Transportation Standard Specifications for Road and Bridge Construction (Latest Edition), except as modified herein.

Section 160 is modified by the addition of the following:

"The stabilization thickness indicated on plans shall be considered a minimum thickness. Thickness will vary to conform to the lines, and grades shown in the plans." Minimum L.B.R. = 40 - No under-tolerance.

Item of Payment

Payment for the work specified in this item shall be included in the price of the sitework.

END OF SECTION

SECTION 03401 - DEWATERING

GENERAL

Description Of Work

The work to be performed under this section shall include furnishing all equipment and labor necessary to remove storm or subsurface waters from excavation areas in accordance with the requirements set forth and as shown on the drawings.

Applicable Codes, Standards, And Specifications

The dewatering of any excavation areas and the disposal of the water shall be in strict accordance with the latest revision of all local and state government rules and regulations. The Contractor shall obtain any required dewatering permit from the appropriate agencies prior to commencing dewatering operations.

EXECUTION

Dewatering

The Contractor shall provide adequate equipment for the removal of storm or subsurface waters which may accumulate in the excavation. If subsurface water is encountered, the Contractor shall utilize suitable equipment to adequately dewater the excavation so that it will be dry for work and pipe laying. A wellpoint system or other Engineer-approved dewatering method shall be utilized if necessary to maintain the excavation in a dry condition for preparation of the trench bottom and for pipe laying. Wellpoint holes shall be plugged with concrete grout. Dewatering by trench pumping will not be permitted if migration of fine grained natural material from bottom, side walls, or bedding material will occur. In the event that satisfactory dewatering cannot be accomplished due to subsurface conditions or where dewatering could damage existing structures, the Contractor shall obtain the Engineer's approval of wet trench construction procedure before commencing construction. Dewatering shall cease in a manner to allow the subsurface water to slowly return to normal levels.

Disposal

Water pumped from the trench or other excavation shall be disposed of in storm sewers having adequate capacity, canals, or suitable disposal pits. Contractor is responsible for acquiring all permits required to discharge the water and shall protect waterways from turbidity during the dewatering operation. In areas where adequate disposal sites are not available, partially backfilled trenches may be used for water disposal only when the Contractor's plan for trench disposal is approved in writing by the Engineer. The Contractor's plan shall include temporary culverts, barricades, and other protective measures to prevent damage to property or injury to any person or persons. No flooding of streets, roadways, driveways, or private property will be permitted. Engines driving dewatering pumps shall be equipped with residential type mufflers.

* END OF SECTION *

SECTION 03576 - PAVEMENT, SIDEWALK, AND DRIVEWAY REPLACEMENT

GENERAL

References

Section numbers and Article numbers specified are those contained in the latest edition of the "Florida Department of Transportation Standard Specifications for Road and Bridge Construction."

All pavement, sidewalks and/or driveway restoration shall be completed in conformance with FDOT Standards. Where pavement, sidewalk and/or driveways are disturbed during the execution of this contract work, the thickness of the restored work shall be either equal to existing (i.e. in kind) or the minimum thickness required by the FDOT, whichever is greatest.

Portions of the project work are in the limits of the rights-of-way owned by Indian River County (IRC). Work in the right-of-way shall conform to the applicable Standards.

Indian River County Code Chapter 312, Section 08 C. Utility Construction in Right-of-Way shall control where applicable. It is intended that the other specifications contained herein are to be applied as more specific. In the event of a conflict between a provision of Code Section 312.08 C and any other provision of these specifications the more restrictive provision shall apply.

312.08 C. Utility construction within the right-of-way. Right-of-Way Construction Permit(s) has been/ will be secured for this project and all requirements of the permit(s) must be followed. However, the Contractor can anticipate that the permit(s) will include the following:

- A. One (1) lane of traffic in each direction should be maintained, using proper traffic control procedures as outlined in the reference material cited in section 312.08.1 (b) and (c).8u
- B. Pavement cut and restoration, where approved, shall be as follows:
 - 1) Pipe bedding, backfill and compaction shall conform to standards specified in section 312.08.1 (a) and (c). Open cut restoration shall meet specifications detailed in drawing No. 6 section 312.19. Density testing shall be performed by an approved independent testing laboratory and reports submitted to the Public Works Director prior to permanent patch. A temporary asphalt patch shall be applied within twenty-four (24) hours after backfill and compaction. The finish surface of the temporary asphalt patch shall be within one-quarter (1/4) inch of the elevation of the existing roadway surface.
 - 2) Seventy-two (72) hours prior to the time of pavement cut, the Public Works Director shall be notified of the date and time of the cut. An emergency phone number of the Contractor shall be provided.
 - 3) Work site traffic control shall be provided in conformance with "Florida Department of Transportation Roadway and Traffic Design Standards."
 - 4) Asphalt restoration will be required within fifteen (15) days after temporary patch is installed. The final finish shall be smooth and uniform within a one-quarter (1/4) inch tolerance of the required surface.
 - 5) Shoulder, right-of-way sodding, and other restoration shall be performed as required by the Public Works Director in accordance with Florida Department of Transportation Standards.
 - 6) Traffic control devices (e.g. signs, street name signs, traffic signals and pavement markings) shall be restored to their original condition or better.
 - 7) Prior to final release of the performance bond, which shall occur no sooner than ninety (90) days after final pavement restoration, the Engineer-of-record or utility company shall

request a final inspection, shall certify that the utility has been installed in accordance with standards specified in the publications listed in section 312.08, shall submit two (2) copies of as-built drawings, and shall submit release of lien by Contractors.

- 8) All utility structures will be required to have an identification tag designating proper ownership.

Restoration

All surfaces, as described, shall be completed as soon as is reasonable. In no case shall the pavement or driveway replacement operation be unfinished for more than ten (10) days after backfilling unless otherwise directed by the Engineer. Replace all damaged or cut pavement due to Contractor's operations; restore all pavement outside of trench area that is damaged by the Contract at no expense to Owner.

Guarantee

All restored areas within the public right-of-way shall be guaranteed for one year. In the event of settlement of paved areas more than one-quarter inch below the undisturbed adjacent permanent pavement, the Contractor shall make the necessary repairs to restore the pavement level within ten calendar days after notification by the Owner. The cost of such repairs shall be paid by the Contractor.

Restoration Details

See Construction Plans for construction details and notes.

PRODUCTS

Baserock

Limerock, shellrock, and local rock shall conform to FDOT specifications, Section 911.

Asphaltic Concrete

Prime and Tack Coats: Prime and tack coats shall be applied to the prepared baserock. Prime coat shall be cutback asphalt, Grade RC-70, MC-30, or MC-70, complying with FDOT Specifications, Sections 300-1 through 300-7, applied at the average rate of 0.15 gallons per square yard.

Tack coat shall be emulsified asphalt, Grade RS-2, complying with FDOT Specifications, Sections 300-1 through 300-7 respectively, applied at the average rate of 0.10 gallons per square yard. The bituminous quantities are considered as average and are subject to some variation at the discretion of the Engineer and at no additional cost.

Plant Mix Wearing Surface: A plant mix wearing surface course shall be constructed on the prepared limerock base. Materials and construction shall conform with the requirements of FDOT Standard Specifications for Type S-1 Asphaltic Concrete, Section 331, and Articles 331-1 through 331-4. The finished pavement replacement shall be smooth and even with, or slightly above, the existing abutting pavement, but shall not have any appreciable bump due to this slight elevation.

Rock, Gravel, or Marl Replacement: Roads, streets, or driveways constructed of rock, gravel, or marl shall be restored to a condition equal to or better than prior to construction using the same material unless directed otherwise.

Temporary Cold Patch: Temporary cold patch for temporary surface as required by Code Section 312.08 (c) (d) 1, shall be a commercially available mix approved by the Engineer.

Concrete Mix, Design, And Testing

Comply with requirements of applicable FDOT Section 345 for concrete mix design, sampling and testing, and quality control, and as herein specified.

Design the mix to produce standard weight concrete consisting of Portland cement, aggregate, air-entraining admixture and water to produce the following properties.

1. Compressive Strength - Class I, 3,000 psi.
2. Air Content: 3% to 6%

Concrete placement slump shall not exceed plus or minus one inch from approved design slump.

Flowable Fill

The work specified in this item shall conform to Section 121 of the Florida Department of Transportation Standard Specifications for Road and Bridge Construction (Latest Edition).

EXECUTION

Pavement Replacement

Replace pavement in accordance with the details shown on drawings. The baserock shall be placed and compacted in accordance with FDOT Specifications, Section 200.

Application of the tack coat shall follow the application of the prime coat immediately prior to the placing of the wearing surface course.

Edge Trim

Trim edges of the existing pavement with a concrete saw or other approved method to provide a clean, straight edge.

Pavement Markings

Repaint, stripe, or otherwise mark pavement to match pre-existing conditions, using FDOT-approved materials and procedures.

Temporary Pavement

Temporary pavement shall be installed as follows:

Residential Streets: In residential streets, the Contractor shall, after completion and acceptance of the backfill, construct a base course in accordance with the typical section meeting the requirements of the FDOT Specifications, Section 200, Articles 200-1 through 200-10. The top of the base course shall be constructed flush with the adjacent asphalt surface. Upon completion of the base construction, it shall be primed and sanded in accordance with FDOT Specifications, Section 300. Prime shall be applied at the rate of 0.50 gallon per square yard, or as directed by the Engineer.

Arterial Streets: In arterial streets, the Contractor shall, after completion and acceptance of the backfill, construct a base course in accordance with the typical section. Upon completion of the base course, the Contractor shall construct an asphaltic concrete surface course, Type II, in accordance with FDOT Specifications, Section 337. The top of the surface course shall be constructed flush with the adjacent asphalt surface. Thickness of the replaced course shall match the thickness of the existing surface course.

Emergency Repairs And Procedures

The Contractor shall provide the name and telephone number of at least two (2) persons designated by the Contractor to receive notification of the need for emergency repairs. These persons shall be available for emergency notification on a 24 hour basis. The County will provide the name, or names, of its designee who will be charged with giving notice to the Contractor when the need for emergency repairs, or other actions, is necessary on work that has been performed by the Contractor. When so notified by the person so designated by the County that emergency repairs, or other actions, are necessary the Contractor will be given a reasonable time to respond to the situation. At the time of notification the Contractor will give the time that he will be able to take action to rectify the emergency conditions. If this time is not satisfactory to the County, the County reserves the right to have the Road & Bridge Division make necessary repairs, or take other emergency actions as required to restore the pavement, or take other actions necessary. The County will invoice the Contractor for the actual time and materials used in executing the emergency repairs or actions. This amount will be based upon hourly rates and actual materials cost to the County. The labor rates will be supplied to the Contractor prior to beginning work under this Contract. If the Contractor does not pay the invoice as presented by the County, the County reserves the right to withhold that amount from the Contractor on the Final Pay for this Contract.

Sidewalk, Concrete Driveway, Curb, And Combined Gutter Removal And Replacement

Surface Preparation:

1. Remove loose material from the compacted sub-base surface immediately before placing concrete.
2. Proof-roll prepared sub-base surface to check for unstable areas and the need for additional compaction. Do not begin paving work until such conditions have been corrected and are ready to receive paving. Comply with requirements of FDOT Section 230, Paragraph 230-6.

Do not place concrete until sub-base and forms have been checked for line and grade. Moisten if required to provide a uniform dampened condition at the time concrete is placed. Do not place concrete around manholes or other structures until they are completed to required finish elevation and alignment. All concrete driveways shall be FDOT Class 1 and a minimum of 6 inches thick with wire or fiber mesh reinforcement. All sidewalks shall be a minimum of 4 inches thick, shall be saw-cut every 5 feet, and shall have an expansion joint every 30 feet.

1. Place concrete using methods which prevent segregation of the mix. Consolidate concrete along the face of forms and adjacent to transverse joints with an internal vibrator. Keep vibrator away from joint assemblies, reinforcement, or side forms. Use only square-faced shovels for hand-spreading and consolidation. Consolidate with care to prevent dislocation of reinforcing, dowels, and joint devices. Do not use vibrators to push or move concrete in forms or chute.
2. Deposit and spread concrete in a continuous operation between transverse joints, as far as possible. If interrupted for more than one-half hour, place a construction joint.

3. Curbs and Gutters: Automatic machine may be used for curb and gutter placement at Contractor's option. If machine placement is to be used, submit revised mix design and laboratory test results which meet or exceed the minimum herein specified. Machine placement must produce curbs and gutters to the required cross-section, lines, grades, finish, and jointing as specified for formed concrete. If results are not acceptable, remove and replace with formed concrete as specified.
4. Joints: Construct expansion, weakened-plane (contraction), and construction joints true-to-line with face perpendicular to surface of the concrete, unless otherwise indicated. Construct transverse joints at right angles to the centerline, unless otherwise indicated. When joining existing structures, place transverse joints to align with previously-placed joints, unless otherwise indicated.
 - a. Weakened-Plane Joints: Provide weakened-plane (contraction) joints sectioning concrete into areas where required. Construct weakened-plane joints for a depth equal to at least one-quarter concrete thickness, by sawing within 24 hours of placement or formed during finishing operations. Place joints at intervals not to exceed 10 feet, if not otherwise indicated.
 - b. Construction Joints: Place construction joints at the end of all pours and at locations where placement operations are stopped for a period of more than one-half hour, except where such pours terminate at expansion joints. Construction joints shall be as shown or, if not shown, use standard metal keyway-section form of appropriate height.
 - c. Expansion Joints:
 - (1) Provide premolded joint filler for expansion joints abutting concrete curbs, catch basin, manholes, inlets, structures, walks, and other fixed objects, unless otherwise indicated.
 - (2) Locate expansion joints at 30 feet o.c. for concrete walks, unless otherwise indicated.
 - (3) Extend joint fillers full width and depth of joint, and not less than one-half inch below finished surface where joint sealer is indicated. If no joint sealer, place top of joint filler flush with finished concrete surface.
 - (4) Furnish joint fillers in one-piece lengths for the full width being placed, wherever possible. Where more than one length is required, lace or clip joint filler sections together. Pieces shorter than four inches shall not be used unless specifically shown as such.
 - (5) Protect the top edge of the joint filler during concrete placement with a metal cap or other temporary material. Remove protection after concrete has been placed on both sides of joint.
 - (6) Fillers and Sealants: Comply with the requirements of these specifications for preparation of joints, materials installations and performance, and as herein specified.
5. Detectable Warning on Walking Surfaces: The work specified in this item shall conform to Section 527 of the Florida Department of Transportation Standard Specifications for Road and Bridge Construction (2017).

Concrete Finishing

1. After striking-off and consolidating concrete, smooth the surface by screening and floating. Use hand methods only where mechanical floating is not possible. Adjust the floating to compact the surface and produce a uniform texture.

2. After floating, test surface for trueness with a 20 ft. straight edge. Variations exceeding one-third inch for any two (2) points within 10 feet shall not be acceptable. Distribute concrete as required to remove surface irregularities, and refloat repaired areas to provide a continuous smooth finish.
3. Work edges of slabs, gutters, back top edge of curb, and formed joints with an edging tool, and round 10-1/2" radius, unless otherwise indicated. Eliminate any tool marks on concrete surface.
4. After completion of floating and when excess moisture or surface sheen has disappeared, broom finish sidewalks by drawing a fine-hair broom across concrete surface, perpendicular to a line of pedestrian traffic.
5. Do not remove forms for 24 hours after concrete has been placed. After form removal, clean ends of joints and point-up any minor honeycombed areas.

Curing:

Protect and cure finished concrete paving and walks, as required. Use moist-curing methods for initial curing whenever possible of approved concrete curing compounds.

Repairs And Protection:

1. Repair or replace broken or defective concrete, as directed by Engineer.
2. Drill test cores where directed by Engineer, when necessary to determine magnitude of cracks or defective areas. Fill drilled core holes in satisfactory pavement areas with Portland cement concrete bonded to pavement with epoxy resin grout.
3. Protect concrete from damage until acceptance of work. When construction traffic is permitted, maintain pavement as clean as possible by removing surface stains and spillage of materials as they occur.
4. Sweep concrete pavement and wash free of stains and discoloration, dirt, and other foreign material just prior to final inspection.

Item of Payment

Payment for the work specified in this item shall be made as a lump sum item.

*** END OF SECTION ***

SECTION 03578 - NON-PAVED STREET AND DRIVEWAY RESTORATION

GENERAL

Description of Work

This item of work shall include all furnishing of materials, equipment, testing, labor, and all else necessary to restore all non-paved streets and driveways, including sub-base course materials, for all dirt, marl, or shell streets and driveways. All non-paved streets and driveways shall be reconstructed to a minimum thickness of six (6") inches or in-kind, whichever is greater.

Materials and Methods of Construction

Materials and Methods of Construction shall conform to the Florida Department of Transportation Standard Specifications for Road and Bridge Construction, Latest Edition, and Indian River County Standards as applicable.

END OF SECTION

SECTION 03588 - STORMWATER COMPONENT REPLACEMENT

GENERAL

Description of Work

In the event the Contractor removes and replaces any stormwater pipelines, mitered end sections, flumes, inlets, headwalls, manholes or other components, the Contractor shall use new components of the same size which comply with the related Florida Department of Transportation Standard Specifications for Road and Bridge Construction, Latest Edition and subject to the approval of the Engineer.

END OF SECTION

SECTION 03610 - RESTRAINED JOINTS, EARTHWORK AND BACKFILL

RESTRAINED JOINTS

Restrained joints shall be used on lines per the Table of the IRCDUS Standards Drawing M-3. Section of piping having restrained joints or those requiring restrained joints shall be constructed using pipe and fittings with restrained "Locked-type" joints and the joints shall be capable of holding against withdrawal for line pressures up to 150 pounds per square inch (psi). The pipe fittings shall be as shown for restrained push-on joints or restrained mechanical joints on Page 416 in Section VI, in the Hand book of Cast Iron Pipe, 4th Edition. In all cases, restrained joints must be used per formula below, with thrust blocks, per contract drawings.

Restrained pipe joints that achieve restraint by incorporating cutout sections installed in the bell of the pipe shall have a minimum wall thickness at the point of cutout that corresponds with the minimum specified wall thickness for the rest of the pipe.

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. Drawing and formula below are provided for the Contractor as a guideline.

Where:

$$L = \frac{1.5PA(1-\cos X)}{Fw}$$

L = Length of pipe on each side of fittings or change in direction

P = 150 psi, unless otherwise noted

A = Cross-sectional area in square inches based on outside diameter (O.D.) of pipe

X = Angle of bend or change in direction in degrees

f = Coefficient of friction = 0.4 (maximum)

W = W (earth) + W (pipe) + W (water in pipe) W (earth)
= (density of soil*) (depth of cover in feet) (O.D. in feet)

* Maximum 12-lbs/cubic ft above maximum water table elevation and 60-lbs/cubic ft below maximum water table elevation.

Bolts and nuts for restrained joints shall be 304 stainless steel.

The Contractor shall also provide restrained joints in accordance with the above criteria wherever below ground fittings are on lines 12-inches in diameter or less.

EARTHWORK AND BACKFILL

Excavation for all utilities and/or house connections shall be adequately guarded with barricades and lights, so as to protect the public from hazard. Streets, sidewalks, driveways, curbs, parkways and other public property disturbed in the course of the work shall be restored in a manner satisfactory to the IRCDUS and/or Public Works.

Foundation material used for pipe bedding, from a minimum 6-inch distance below the pipe invert to the bottom 12-inches above the top of the pipe, shall be bank run sand and gravel.

All gravity sewer installation procedures must be in accordance with pipe manufacturer's recommendations. All mains shall be installed to have a minimum depth of 36-inches. Installation of gravity sewers shall be controlled by use of a laser to maintain proper grade. A maximum tolerance of W' dip will be accepted in gravity sewer construction.

1. Trench - Trench width shall be kept to a minimum necessary for installation of the pipe and shall comply with current OSHA requirements. The trench bottom shall be graded uniformly to match the slope of the pipe.
2. Backfill - Only good quality backfill, free of stones, hardpan materials, roots, rocks, broken cement or other debris that might be damaging to the pipe shall be used. Backfill shall be placed in the trench in uniform lifts of 12-inches.
3. Compaction - All fill must be compacted by hand tamping from under the pipe us to the center line. Backfill shall be compacted in lifts up to the surface to achieve a minimum compaction of 98% of maximum density in roadways and shoulders. Easements shall be 95% density, in accordance with AASHTO Specifications T-180 and ASTM 0-2167.
4. Dewatering - Construction shall be accomplished in a dry trench. Well pointing may be required as necessary. All water entering excavations or other parts of the work shall be contained, collected and pumped to suitable places for disposal, as permitted by local and state regulation.
5. Sheeting - Sheeting and shoring shall be installed as may be necessary for the protection of the work, preservation of adjacent property and structures and the safety of employees. Sheeting and backing shall be uniform to OSHA requirements.

Installation of force mains (sewer or reused water) shall be in accordance with latest AWWA Standard Specifications C-600 and the installation specifications for water lines in the Water Distribution Section, irrespective of the type of pipe selected. A 2-inch wide magnetic 1.0 tape and tracer wire shall be placed continuously in the trench over all pipes per Detail M-14, 12-inches below grade.

1. Trench - Trench width shall be kept to a minimum necessary for pipe installation and shall comply with current OSHA requirements. The trench bottom shall be graded and alignment shall be parallel with roadway, where possible.
2. Backfill - Only good quality backfill, free of stones, roots, rocks, broken cement or other material that might be damaging to the pipe shall be used. Backfill must be put in the trench in lifts.
3. Compaction - All pipe must be compacted by hand tamping to the centerline, under the pipe. Backfill shall be compacted in lifts up to the surface to achieve a minimum compaction of 98% of maximum density in roadways, shoulders, and easements in accordance with AASHTO Specifications T-180 and ASTM 0-2167.
4. Dewatering - Construction shall be accomplished in a dry trench. Well pointing may be required, as necessary. All water entering excavations or other parts of the work shall be contained, collected and pumped to suitable places for disposal as permitted by the Local, State or Water Management District.

5. Sheeting - Sheeting and shoring shall be installed as may be necessary for the protection of the work, preservation of adjacent property and structures and the safety of employees. Sheeting and bracing shall be uniform to OSHA requirements.

Specifications C-600 Series, irrespective of the type of pipe selected. All installation procedures must also be in conformance with pipe manufacturer's recommendations. Minimum depth of cover shall be 36-inches. A 2-inch wide magnetic 1.0. tape shall be placed continuously in the trench over all pipes, 12-inches below grade. Trace wire shall be wrapped on all pipes, per Detail M-14, valves, fittings, and all appurtenances. Allowable deflection of the pipe joints and curvature of PVC pipe shall not exceed the manufacturer's specifications.

1. Trench - Trench width shall be kept to a minimum necessary for pipe installation and shall comply with current OSHA requirements. The trench bottom shall be graded and alignment shall be parallel with roadway, where possible.
2. Backfill - Only good quality backfill, free of stones, roots, rocks, broken cement or other material that might be damaging to the pipe shall be used. Backfill must be put in the trench in lifts.
3. Compaction - All pipe must be compacted by hand tamping to the centerline, under the pipe. Backfill shall be compacted in lifts up to the surface to achieve a minimum compaction of 98% of maximum density in roadways, shoulders, and easements in accordance with AASHTO Specifications T-180 and ASTM 0-2167.
4. Dewatering - Construction shall be accomplished in a dry trench. Well pointing may be required, as necessary. All water entering excavations or other parts of the work shall be contained, collected and pumped to suitable places for disposal as permitted by the Local, State or Water Management District.
5. Sheeting - Sheeting and shoring shall be installed as may be necessary or the protection of the work, preservation of adjacent property and structures and the safety of employees. Sheeting and bracing shall be uniform to OSHA requirements.

*** END OF SECTION ***

SECTION 03622 - WATER MAINS POLYVINYL CHLORIDE PIPE AND FITTINGS

Scope

This section covers polyvinyl chloride pipe and fittings for water mains.

General

PVC pipe shall be allowed for use as potable water pipe where compatible with the specific conditions of the project. IRCDUS may require the use of material other than PVC during construction permit review or by IRCDUS field personnel during construction, if it is determined that PVC pipe is unsuitable for the particular application.

The pipe shall be identified by its nominal pipe size, plastic pipe material code, SDR class, pressure rating, ASTM Designation, manufacturers' name, production code, and the National Sanitation Foundation seal for potable water (NSF-pw).

PVC Pipe 3 inches in Diameter and Smaller

PVC pipe 3 inches and smaller in diameter intended for conveying potable water shall conform to ASTM D2241, latest revision.

Pipe shall be Iron Pipe Size (IPS), and SDR 21 with a pressure rating of 200 psi.

Joint design tested to the requirements of ASTM D3139.

Gaskets shall conform to ASTM F477 and D1869.

No solvent weld joints are permitted.

The pipe shall be "blue" in color.

PVC pipe shall be in accordance with IRCDUS Approved Manufacturers' Products List or equal.

PVC Pipe 4 Inches in Diameter and Larger

PVC pipe intended for conveying or transmitting potable water shall conform to AWWA Standard Specifications C900-16 (or latest revision) and ASTM D1784 Cell Class 12454.

Pipe shall be Ductile Iron Pipe Size (DIPS), and SDR 18 with a pressure rating of 235 psi.

Joint design tested to the requirements of ASTM D3139. Gaskets shall conform to ASTM F477.

Gasket material shall conform to ASTM F477.

The pipe shall be "blue" in color.

The pipe shall be identified by its nominal pipe size, plastic pipe material code, DR class, pressure rating, ASTM Designation, manufacturers' name, code, and the National Sanitation Foundation seal for potable water (NSF-pw).

PVC pipe shall be in accordance with IRCDUS Approved Manufacturers' Products List or equal.

Joints

Joints for PVC pipe shall be bell and spigot push-on rubber gasket type only unless otherwise approved by IRCDUS. No solvent weld or threaded joints will be permitted.

Restraining joints, when required, shall be in accordance with IRCDUS Approved Manufacturers' Products List or equal.

Fittings

All fittings shall be ductile iron mechanical joint and shall conform to AWWA Standard Specifications C110/A21.10-98 or C153/A 21.53-00, or latest revisions. Fittings shall be cement mortar lined and seal-coated in accordance with AWWA Standard Specifications C104/A21.4-95, or latest revision.

The pressure rating shall be 350 psi (3' – 24' diameter), and 250 psi (30' – 48" diameter).

Joint restraint, when required, shall be in accordance with IRCDUS Approved Manufacturer's Products List or equal.

Submittals

Before starting installation of the PVC pipe and fittings, the Contractor shall submit one set of complete working drawings (shop drawings) to the Engineer of Record and IRCDUS for approval. Such drawings shall show the pipe, fittings, valves, hydrants, blow-offs, services, and other appurtenances to be installed. Where special fittings are required, they shall be shown in large detail with all the necessary dimensions. The Engineer of Record shall review the drawings and notify IRCDUS of the drawings approved and not approved. IRCDUS shall also review the drawings and coordinate approvals and disapprovals with the Engineer of Record and Contractor.

Marking

Number 10 stranded conductor copper trace wire shall be spiral wrapped or affixed to the top of the pipe. See trace wire Detail M- 13 for specifications regarding installation.

Trace wire is required over all pipes.

Location tape is required over all pipes. Tape is to be installed 12" below proposed grade and additional tape shall be adhered directly on top of the pipe if required by IRCDUS engineering.

Installation

Handling and Protection of Pipe: Unless otherwise noted on the drawings or in other sections of these standards, the pipe shall be handled and installed in strict accordance with the manufacturers' instructions and with the applicable provisions of AWWA Standard Specifications C605-94, or latest revision. If a conflict exists between the manufacturers' instructions and the AWWA Standard Specifications, the manufacturers' instructions shall govern. The Contractor shall use every precaution during construction to protect the pipe against the entry of non-potable water, dirt, wood, small animals, and any other foreign material that would hinder the operation of the pipeline. Where

the groundwater elevation is above the bottom of the trench, the Contractor shall provide suitable dewatering equipment. All piping shall be placed in a dry trench, unless approved by IRCDUS.

Depth of Cover and Pipe Elevation: Unless otherwise shown on the drawings, or otherwise authorized by IRCDUS, all pipe shall have a minimum depth of cover of 36 inches. Contractor shall determine top of pipe elevation and top of finished grade elevation for every two joints of pipe installed using a level. Pipe must have the minimum cover described above and must be within +/- 0.2 feet of the top of pipe elevation indicated on the drawings. Installed pipe, which does not meet these requirements, shall be reinstalled until it does meet these requirements. Contractor shall record top of pipe and top of ground elevations and the locations of where these elevations were determined and submit this information to Engineer or his representative. IRCDUS reserves the right to have Contractor excavate and check top of pipe and top of ground elevations to see if they conform to the aforementioned requirements.

*** END OF SECTION ***

SECTION 03626 - GRAVITY SANITARY SEWERS POLYVINYL CHLORIDE (PVC) PIPE AND FITTINGS

Scope

This section covers polyvinyl chloride pipe and fittings for gravity sanitary sewers.

General

PVC pipe shall be allowed for use as gravity sewer pipe where compatible with the specific conditions of the project. IRCDUS may require the use of material other than PVC during construction permit review or by IRCDUS field personnel during construction, if it is determined that PVC pipe is unsuitable for the particular application.

PVC gravity sewer pipe can be used up to a depth of sixteen feet as specified herein. All pipe used for depths greater than 16 feet, shall be approved by IRCDUS.

Pipe and Fittings

Gravity sewer mains and laterals shall be extra strength PVC pipe and shall conform to the latest ASTM Designation D3034-SDR26. Fittings installed in PVC pipe shall conform to the same specifications as the pipe in which they are installed.

In addition to the requirements of ASTM specifications, the pipe shall not be out-of-round or crooked in alignment as determined by the Engineer of Record and/or IRCDUS. Any length of pipe 6 inches or greater in diameter whose inside diameters measured at right angles to each other vary more than ¼ inch may be rejected.

PVC pipe shall be a maximum of 20 feet in length and shall be in accordance with IRCDUS Approved Manufacturers' Products List.

Material shall meet or exceed the requirements of ASTM Designation 1784, Type 1, Grade 1 (12454-B). All P.V.C. materials shall be stored in accordance with the manufacturers' specifications (not in direct sunlight). PVC pipe and fittings, which show signs of ultraviolet degradation, are considered substandard and unfit for use, and will be rejected by the IRCDUS's Engineer.

All wyes, fittings, laterals, and manhole couplings shall be manufactured by same manufacturing company as the pipe or approved equal, see Approved Manufacturers' Product List. Adapters shall be compatible to the approved pipe and appurtenances. All joints shall be rubber gasketed.

The pipe shall be "green" in color.

Pipe Joint Seals

Joint seals in PVC pipe and fittings shall comply with ASTM Designation D3212.

The joint shall remain sealed by its own compression. Adhesives shall not be necessary to weld or fuse the gaskets together. No solvent weld joints are permitted.

The compressive stress which is developed in the gasket material shall be as high as is permitted by the strength of the bell in ring tension, with due regard to factor of safety, and this stress shall be at its maximum value when the joint is completely assembled.

Retrofitting Sewer Laterals

Gravity sewer systems shall be designed such that laterals are provided to serve all units and lots. In cases where sewer laterals must be added to a gravity sewer main, connections shall be made by installing a sewer service wye branch and a sleeve-type adapter, whichever is specified by IRCDUS for the particular application.

Submittals

Before starting fabrication of the PVC pipe and fittings, the Contractor shall submit one set of complete working drawings (shop drawings) to the Engineer of Record and IRCDUS for approval. Such drawings shall show the pipe, fittings, manholes, and any other appurtenances to be installed. Where special fittings are required, they shall be shown in large detail with all the necessary dimensions. The Engineer of Record shall review the drawings and notify IRCDUS of the drawings approved and not approved. IRCDUS shall also review the drawings and coordinate approvals and disapprovals with the Engineer of Record and Contractor.

Marking

Location tape is required over all pipes. Tape is to be installed 12" below proposed finished grade and additional tape shall be adhered directly on top of the pipe if required by IRCDUS engineering.

Storage

PVC pipes are not to be stored where exposed to direct sunlight because of possible ultraviolet light degradation. Pipes stored on the jobsite are to be covered. PVC pipes that exhibit discoloration or fading from their original color will be rejected by IRCDUS field representatives.

Installation

Handling and Protection of Pipe: Unless otherwise noted on the drawings or in other sections of this specification, the pipe shall be handled and installed in strict accordance with the manufacturers' instructions. The Contractor shall use every precaution during construction to protect the pipe against the entry of non-potable water, dirt, wood, small animals, and any other foreign material that would hinder the operation of the pipeline. Where the groundwater elevation is above the bottom of the trench, the Contractor shall provide suitable dewatering equipment at no additional cost to the Owner. All piping shall be placed in a dry trench, unless otherwise approved by IRCDUS.

Depth of Cover and Pipe Elevation: Unless otherwise shown on the drawings, or otherwise authorized by IRCDUS, all pipe shall have a minimum cover of 36 inches. Contractor shall determine top of pipe elevation and top of ground elevation for every two joints of pipe installed using a level. Pipe must have the minimum cover described above and must be within +/-0.2 feet of the top of pipe elevation indicated on the drawings. Installed pipe, which does not meet these requirements, shall be reinstalled until it meets these requirements. Contractor shall record top of pipe and top of ground elevations and the locations of where these elevations were determined and submit this information to IRCDUS. IRCDUS reserves the right to have Contractor excavate and check top of pipe and top of ground elevations to see if they conform to the aforementioned requirements, at no additional cost to Owner.

*** END OF SECTION ***

SECTION 03631 - MISCELLANEOUS VALVES AND APPURTENANCES

Scope

This section covers miscellaneous valves and appurtenances (Drawing with M refers to “reference specifications”).

General

All of the types of valves and appurtenances shall be on the IRCDUS Approved Manufacturers' Products List.

All valves and appurtenances shall be designed, constructed, and installed in accordance with the best practices and methods and shall comply with these specifications as applicable.

All valves and appurtenances shall have the name of the manufacturer, year manufactured, and the working pressure for which they are designed cast in raised letters upon some appropriate part of the body.

All buried valves and appurtenances shall be mechanical joint. All aboveground/exposed valves and appurtenances shall be flanged.

Gate valves shall be used on water, sewer, reclaimed, and brine mains.

Plug valves may be used in lift station valve vaults as approved by IRCDUS.

IRCDUS, on a case-by-case basis, may approve valves and appurtenances other than those specifically called out in this Section for use. Criteria for approval shall include the interchangeability of the valve or appurtenance, or its parts, with those brands specifically called out in these specifications.

All exposed valves and appurtenances shall be painted in accordance with IRCDUS Approved Manufacturers' Products List. Water mains shall be painted blue, force mains shall be painted “green”, reuse mains shall be painted “purple” and brine shall be painted “brown”.

Gate Valves – 3 Inches and Larger

All buried gate valves shall meet the requirements of AWWA Standard Specification C509-C515, or latest revision. Valves shall be rated for 150-psi working pressure and a minimum 300-psi test pressure. Valves shall be ductile iron body, bronze-mounted, resilient seated, non-rising stem type fitted with “O-Ring” seals. All bolts to be used in valve bonnet are to be 316 stainless steel. The operating nuts shall be Standard AWWA 2” square. All valves shall open counterclockwise. Stuffing boxes shall be the “O-Ring” type. Gate valves shall be mechanical joint, ANSI Standards 21.11, except where shown otherwise.

Gate valves shall be provided with a valve box, cover, and concrete pad. Box cover opening shall be for valve stem and nut. The Contractor shall provide valve wrenches and extension stems from the same manufacturer as the valve to actuate the valves. The box and cover shall be in accordance with IRCDUS Approved Manufacturers' Products List. (See Drawing M-5 and M-6 for details on the valve box, cover, and concrete pad.)

Check Valves

Check valves for ductile iron pipelines shall be swing type and shall meet the material requirements of AWWA Standard Specifications C508-01, or latest revision. The valves shall be iron body, bronze mounted, single disc, 150 psi working water pressure, non-shock, and non-slam, slow closing, and hydrostatically tested at 300 psi. Ends shall be 125-pound ANSI B16.1 flange or 125-pound ANSI B2.1 threaded fitting, depending upon location.

When there is no flow through the line, the disc shall hang lightly against its seat. When open, the disc shall swing clear of the waterway.

Check valves shall have bronze seat and body rings, extended bronze hinge pins, and bronze nuts on the bolts of bolted covers.

Valves shall be so constructed that disc and body seat may easily be removed and replaced without removing the valve from the line. Valves shall be fitted with an extended hinge arm with outside lever and weight, as necessary.

Check valves for PVC pipe less than 3" in diameter shall be of PVC Type 1, Series BC, with union, socket, threaded, or flanged ends, as required and shall be per the Approved Manufacturers' Products List.

Plug Valves

Plug valves shall be non-lubricated eccentric type with semi-steel bodies, resilient faced plugs, and stainless steel or nickel seats in the body. Port area shall be at least 80% of full pipe area for valves 20" and smaller. Port area shall be 70% for all valves 24" and larger. All valves 4" and larger shall be of the bolted design. All exposed nuts, bolts, springs, and washers shall be hot dipped galvanized, except exposed hardware for submerged valves shall be of stainless steel. Valve bodies shall be semi-steel with 125-pound ANSI Standard flanged ends for interior or aboveground service; mechanical joint for buried service and for use with threaded cast iron or ductile iron piping shall have screwed end connections. The plug shall be one-piece and of sufficient design so as not to require a stiffening member opposite the face plug.

Plug valves 6" or greater in diameter shall be equipped with gear actuators, which shall clearly indicate valve position and an adjustable stop shall be provided. Construction of actuator housing shall be semi-steel. All gearing shall be enclosed, suitable for running in oil with seals provided on all shafts to prevent entry of dirt and water into the actuator. All shaft bearings shall be furnished with permanently lubricated bearing bushings.

Three-way plug valves shall be non-lubricated gear operated. Valve bodies shall be semi-steel with 125-pound ANSI Standard flanges, and plugs shall be resilient faced. Three-way valves shall be 3-way, 3-port, 270-degree turn.

Plug valves and actuators shall be as per the Approved Manufacturers' Products List.

Air Release Valves

The air release valves shall be installed as shown on the Drawings. Valves shall be provided with a vacuum check to prevent air from re-entering the line. Aboveground air release valves for wastewater shall be per the Approved Manufacturers' Products List. (See Drawing M-8.)

The fittings shall be threaded. Belowground air release valves for wastewater shall be as on the Approved Manufacturers' Products List. (See Drawing M-7.) Air release valves for water lines shall be as per the Approved Manufacturers' Products List.

Fire Hydrants

Fire hydrants shall be traffic type, 5¼" valve opening and manufactured per the Approved Manufacturers' Products List (See Drawing M-8). Fire hydrants shall comply with the current AWWA Standard Specification C502-94, or latest revision, for fire hydrants for water works service. Each hydrant shall have 6" mechanical joint ends with harnessing lugs ("dog ears") and shall open by turning to the left (counterclockwise). Fire hydrant shall be of ample length for 18" clearance between the center of all nozzles and finished grade. Hydrant should be set so that the "bury line" on the barrel is set at finished grade. It shall be provided with two 2½" hose nozzles and one 5¼" pumper nozzle, all having National Standard hose threads. Nozzles shall have caps attached by chains. Operating nuts shall be AWWA Standard (pentagonal, measuring 1½" point to flat). Fire hydrants shall be equipped with "O-Ring" packing. Fire hydrant shall be painted "Federal Safety Red".

Backflow Preventers

All backflow preventers shall be mounted aboveground, in non-traffic areas on the customer's side of the meter. Above ground piping shall be flanged ductile iron. Brass or Copper pipe may be used for pipe 2" in diameter or smaller. Backflow preventers shall be of reduced pressure/double check type with two (2) independently operating check valves, and shall be designed to operate in a horizontal flow mode. An independent relief valve shall be located between the two (2) check valves. Reduced pressure feature shall be included in all commercial applications. Preventers shall be University of Southern California (USC) approved as per the Approved Manufacturers' Products List.

Valve Boxes

All buried valves shall have cast iron two- or three-piece valve boxes with cast iron covers. Valve boxes shall be provided with suitable heavy bonnets and extend to match finished grade surface as directed by the Engineer. The barrel shall be one- or two-piece, screw or slide type, having 5¼" shaft. Covers shall have "WATER" cast into the top for all water mains, "SEWER" cast into the top for all wastewater force mains and "REUSE" cast into the top for all reuse mains. All valves shall have actuating nuts extended to within 24" of the top of the valve box cover. (See Drawing M-5.)

Valve boxes shall be provided with a concrete pad around the top of the box. A nameplate with a suitable anchor for casting in concrete shall be installed in valve pads in unpaved areas. Nameplate shall be 3" diameter brass disk with engraved lettering 1/8" deep, as shown on the Drawing M-6 and manufactured per the Approved Manufacturers' Products List.

A 3" diameter wire port box to house the trace wire shall be installed in valve boxes in unpaved areas.

Valve boxes shall be installed in a concrete pad, as specified in Drawings Detail M-5 & M-6.

Valve boxes shall be manufactured domestically (i.e.: "Made in USA") per the Approved Manufacturer's List.

Water Services

All water service fittings, including saddles, corporation stops, curb stops, and angled meter stops shall be no-lead brass or bronze suitable for 150 psi operating pressure, shall be iron pipe or AWWA tapered thread design, shall be of sizes required and/or noted on the Drawings, and comply with the Approved Manufacturer's Products List.

Saddles shall be no-lead brass/bronze bodies with double stainless-steel strap.

Flexible Couplings

Flexible couplings shall be either split type or the sleeve type.

1. Split type coupling shall be used with all interior piping and with exterior piping as noted. The couplings shall be mechanical type for radius groove piping. The couplings shall mechanically engage and lock grooved pipe ends in a positive couple and allow for angular deflection and contraction and expansion.
2. Couplings shall consist of ductile iron, ASTM Specification A47, Grade 32510 housing clamps in two (2) or more parts, a single chlorinated butyl composition sealing gasket with a "C" shaped cross-section and internal sealing lips projecting diagonally inward, and two (2) or more oval track head type bolts with hexagonal heavy nuts conforming to ASTM Specification A183 and A194 to assemble the housing clamps. Bolts and nuts shall be 316 stainless-steel.
3. Sleeve type couplings shall be used with all buried piping. The couplings shall be of ductile iron and shall be per the Approved Manufacturers' Products List. The coupling shall be provided with 316 stainless-steel bolts and nuts, unless indicated otherwise.
4. All couplings shall be furnished with the pipe stop removed.
5. Couplings shall be provided with gaskets of a composition suitable for exposure to the liquid within the pipe.
6. Ductile iron followers and middle rings conform to ASTM A-536, Grade 65-45-12, NSF-61 fusion bonded powder epoxy coating, testing per AWWA C-219 (ANSI A21-11), rating 200 psi working pressure per AWWA C-219, compounded gaskets conform to compression test ASTM D-395 Method A & B, approved for water application.

Tapping Sleeves and Valves

See Page 03631-1 "Gate Valves" for Tapping (Gate) Valves.

Tapping sleeves shall be fully-passivated stainless steel wraparound type per the Approved Manufacturers' Products List.

All force main taps shall be a minimum of 4" diameter.

All taps shall be performed under supervision of IRCDUS Inspector. A pre-construction meeting may be held on-site at Inspector's discretion.

Tapping contractor MUST be approved by IRCDUS.

Tapping machine shall be disinfected prior to tap per AWWA C651.

No taps will be performed on Fridays or days preceding holidays.

Tapping saddle and valve shall be hydrostatically tested at a minimum 150 psi for 15 minutes duration. Any loss of pressure during the test period shall indicate failure.

*** END OF SECTION ***

SECTION 03633 - FIRE HYDRANT ASSEMBLY

GENERAL

Scope

This section consists of specifications for Fire Hydrant Assembly.

Description of Work

Fire Hydrant shall include furnishing and installation of dry-barrel traffic (break-away) type hydrant, 6" diameter gate valve; 6" diameter D.I.P. with integrally cast rotatable gland mechanical specifications and in close conformity to the locations and grades shown on the plans or as directed by the Engineer. Fire hydrant shall be of ample length for 18" clearance above centerline of roadway.

MATERIALS

Fire Hydrant

Fire hydrant shall be of ample length for 18" clearance between the center of all nozzles and finished grade. Hydrant should be set so that the "bury line" on the barrel is set at finished grade. It shall be provided with two (2) 2½" hose nozzles and one 5¼" pumper nozzle, all having National Standard hose threads. Nozzles shall have caps attached by chains. Operating nuts shall be AWWA Standard (pentagonal, measuring 1½" point to flat). Fire hydrants shall be equipped with "O-Ring" packing. Fire hydrant shall be painted "Federal Safety Red".

Main valve seat shall be made of bronze and threaded into a bronze retainer ring.

Hydrant seat ring shall be threaded into a bronze drain ring.

The hydrant shall be so designed to permit the removal of all working parts from the hydrant up through the barrel without disturbing the earth around the hydrant or disassembling the nozzle section. This shall be accomplished by use of a short wrench which will engage the top part of the hydrant rod.

Hydrant barrel shall be of the "breakable type" made in two (2) sections with the flange or break feature located approximately (2") above the ground line. The main valve stem shall be made in two (2) sections with a breakable coupling.

Operating nuts shall be AWWA Standard (pentagonal, measuring 1½" point to flat). The operating threads shall be contained in an operating chamber sealed at the top and bottom with a hold down nut and an "O-Ring" seal. The Chamber shall contain hydrant lubricating oil or contain a ball thrust bearing above thrust collar.

Fire hydrants shall be equipped with "O-Ring" packing.

All fire mains shall be equipped with a double detector check valve assembly as shown in IRCBUS Standards Detail W-10.

A gate valve must be installed on the same water main as the fire hydrant. An additional gate valve is required if the distance between the first gate valve and the hydrant is greater than 5-feet; as shown in IRCDUS Standards Detail W-2.

Fire hydrant shall be painted **Federal Safety Red**.

Before ordering, Contractor shall submit detailed shop drawings showing nuts and threads for hose connections for conformance with IRCDUS fire hydrant standards.

Methods of Construction

Prior to installation, the Contractor shall inspect all hydrants and connecting pipe. Hydrants shall be inspected for direction of opening, nozzle threading, operating nut and cap nut dimensions, tightness of pressure-containing bolting, cleanliness of inlet elbow, handling damage and cracks. Defective hydrants shall be corrected or rejected and removed from the site at the discretion of the Engineer. Hydrants shall be set plumb and shall have their nozzles parallel with or at right angles to the curbs, with the pumper nozzle facing the curb. Each hydrant shall be connected to the main with a (6") branch controlled by an independent (6") gate valve. Hydrants shall be located as shown on the Plans, or as directed by the Engineer, with the centerline of the lowest nozzle at least (12") above the established finished grade or as directed by the Engineer.

It shall be demonstrated that the water distribution system can supply the required demand rate and fire flow prior to acceptance by IRCDUS, and an onsite fire flow test shall be conducted by the Indian River County Fire Department or EMS. Prior to acceptance by IRCDUS, the fire hydrant shall be bagged as "OUT OF SERVICE".

END OF SECTION

**SECTION 03634 - TESTING AND INSPECTION OF
WATER MAINS, RECLAIMED MAINS,
WASTEWATER FORCE MAINS AND GRAVITY SEWER LINES**

Pressure And Leakage Tests Of Underground Pressure Piping

No testing will be permitted until record drawings have been submitted and approved by IRCDUS.

Prior to conducting pressure and leakage tests, all new water and reclaimed water pipelines shall be full bore flushed (see Drawing W-9) and all pipelines including wastewater force mains shall be thoroughly cleaned to remove all dirt, stones, pieces of wood, and any other materials that may have entered the pipeline during construction, and all dirty water and/or discolored water from the pipelines. After this cleaning, if any obstructions remain, they shall be removed. All debris cleaned from the pipelines shall be removed from the job site. Hydrostatic pressure and leakage tests shall conform to AWWA Standard Specifications C-605-94, or latest edition, for PVC pipe. Hydrostatic pressure and leakage tests shall conform to AWWA Standard Specifications C-600-99, or latest revision, for DIP. The Contractor shall furnish all gauges, meters, pressure pumps and other equipment needed to test the line. IRCDUS shall be present during all testing, televising, and final inspections.

The pressure required for the field hydrostatic pressure test shall be not less than 150 psi for water mains, reclaimed water mains and for sewer force mains. The Contractor shall provide temporary plugs and blocking necessary to maintain the required test pressure. Corporation cocks at least 1 inch in diameter, pipe riser and angle globe valves shall be provided at each pipe dead-end in order to bleed air from the line. Duration of pressure test shall be at least 2 hours.

Allowable amount of makeup water for expansion during the pressure test of the pipe shall conform to Plastic Pipe Institute (PPI) Handbook of Polyethylene Pipe; Inspection, Tests, and Safety Considerations, unless otherwise approved by IRCDUS. The Operating Safety Considerations, Post Installation, Hydrostatic Testing, Monitored Make-up Water Test, Table III, is on Pages 24 and 25 of the Handbook.

The leakage test may be conducted concurrently with the hydrostatic pressure test and shall be of not less than 2 hours duration. All leaks evident at the surface shall be repaired and leakage eliminated regardless of total leakage as shown by test. Lines that fail to meet tests shall be repaired and re-tested as necessary until satisfactory test requirements are complied. Defective materials, pipes, valves and accessories shall be removed and replaced. The pipelines shall be tested in such sections as may be directed by IRCDUS by shutting valves or installing temporary plugs as required. The line shall be filled with water and all air removed and the test pressure shall be maintained in the pipe for the entire test period by means of a force pump to be furnished by the Contractor. Accurate means shall be provided for measuring the water required to maintain this pressure. The amount of water required is a measure of the leakage. Testing shall be in accordance with the applicable provisions as set forth in Section 13 of AWWA Standard Specification C-600-99, or latest revision. The allowable rate of leakage shall be less than the number of gallons per hour determined by the following formula:

$$L = \frac{ND \times (P)^{1/2}}{7400}$$

L = allowable leakage in gallons per hour

N = number of joints in the section tested

D = nominal diameter of the pipe in inches

P = average test pressure maintained during the leakage test in pounds per square inch gauge

The Contractor shall remove and adequately dispose of all blocking material and equipment after completion and acceptance of the field hydrostatic test, unless otherwise directed by IRCDUS. The Contractor shall repair any damage to the pipe coating. Lines shall be totally free and clean prior to final acceptance.

IRCDUS must be present during testing.

If thrust blocks have been approved for use, thrust blocks shall not be backfilled until inspected by IRCDUS.

At the beginning of the testing period, thoroughly clean all new pipelines by whatever means necessary, including flushing, to remove all dirt, stones, pieces of wood, other material that may have entered during the construction period, and any dirty or discolored water from the lines. If, after this cleaning, any obstructions remain, they shall be removed. All debris cleaned from the lines shall be removed from the job site.

All PE water mains and service lines shall be field-tested. The Contractor shall supply all labor, equipment, material, gauges, pumps, meters and incidentals required for testing. The Contractor shall pressure test each water main upon completion of the pipe laying and backfilling operations, including placement of any required temporary roadway surfacing.

All water mains shall be tested to a minimum of 150 psi. The test pressure shall be measured on site in the presence of IRCDUS personnel during the test period.

Testing shall be conducted after backfilling has been completed and before placement of permanent surface.

Allowable amount of makeup water for expansion during the pressure test of the pipe shall conform to Plastic Pipe Institute (PPI) Handbook of Polyethylene Pipe; Inspection, Tests, and Safety Considerations, unless otherwise approved by IRCDUS. The Operating Safety Considerations, Post Installation, Hydrostatic Testing, Monitored Make-up Water Test, Table III, is on Pages 24 and 25 of the Handbook.

In any test of pipe laid, disclosed leakage or significant pressure drop greater than that allowed, the Contractor shall, at its own expense, locate and repair the cause of leakage and retest the line. The amount of leakage that may be permitted shall be in accordance with AWWA Standard Specifications.

All visible leaks are to be repaired regardless of the amount of leakage.

Disinfecting Potable Water Lines

Before being placed in service, all potable water pipelines shall be disinfected in accordance with AWWA Standard Specifications C-651-99, or latest revision. The location of the chlorination and sampling points will be as shown on the drawings. The Contractor shall uncover and backfill taps for chlorination and sampling, as required.

The general procedure for chlorination shall be first to flush all dirty or discolored water from the lines, and then introduce chlorine in approved dosages in accordance with Table 10-1 through a tap at one end, while water is being withdrawn at the other end of the line. The chlorine solutions shall remain in the pipeline for no less than 24 hours.

The use of chlorine tablets is strictly prohibited.

Following the chlorination period, all treated water shall be flushed from the lines at their extremities and replaced with water from the distribution system. The Contractor's lab shall then make bacteriological sampling and analysis of the replacement water in full accordance with AWWA Standard Specifications C-651, or latest revision. The Contractor will be required to re-chlorinate, if necessary. The line shall not be placed in service until all the requirements of the Florida Department of Environmental Protection are met and a letter of clearance issued with a copy provided to IRCDUS.

Special disinfecting procedures shall be used in connections to existing mains where the method outlined above is not practical.

The Contractor shall make all arrangements necessary with an independent commercial laboratory approved by the National Environmental Laboratory Accreditation Program (NELAP) for the collection and examination of samples of water from disinfected water mains. Note: The Contractor may not collect his own samples. These samples shall be examined for compliance with the Florida Department of Environmental Protection's requirements. Sampling shall be made daily and continuously until two successive examinations are found satisfactory. Should one examination be found unsatisfactory, the line shall be flushed and disinfected again. Certified copies of all laboratory analyses shall be provided to the IRCDUS. The cost of all sampling, flushing and disinfecting shall be included in the contract price. IRCDUS shall operate all valves and be present to determine and control the volume of water used for flushing.

TABLE 10-1

**Chlorine Required to Produce a 25-mg/L
 Concentration in 100 feet of Pipe**

Pipe Diameter (inches)	100-percent Chlorine (pounds)	1-percent Chlorine Solution (gallons)
4	0.013	0.16
6	0.030	0.36
8	0.054	0.65
10	0.085	1.02
12	0.120	1.44
16	0.217	2.60
For Pipes larger than 16	See AWWA Standard Specifications C-651-99	

Testing of Gravity Sewers

No testing will be permitted until record drawings have been submitted and approved by IRCDUS.

Leakage test by exfiltration and infiltration, as described below, shall be made on all pipes.

Exfiltration tests shall be made on all pipes after backfilling. All sewers shall be tested such that water is filled to the rim of the lowest manhole being tested within each section being tested, as directed by the IRCDUS. Mechanical plugs shall be used on the gravity sewer system in such a manner that the air can be released from the sewer while it is being filled with water. The test shall be continued for one hour and provisions shall be made for measuring the amount of water required to maintain the water at a constant level during this period. If test results are unsatisfactory, IRCDUS may direct that additional test be made on any section or the entire pipe.

If any joint shows an appreciable amount of leakage, the jointing material shall be removed and joint remade. If any pipe is defective, it shall be removed and replaced. If the quantity of water required to maintain a constant level in the sewer for one hour does not exceed 100 gallons per inch of diameter per day per mile of sewer and if all the leakage is not confined to a few joints, the workmanship shall be considered satisfactory. If the amount of leakage indicates defective joints or broken pipes, the Contractor shall correct them.

Pipe shall be tested for infiltration after the backfill has been placed. Infiltration tests shall be made under the supervision IRCDUS. The length of line to be tested shall be as directed by IRCDUS. The allowable infiltration shall be 100 gallons per inch of diameter per day per mile of sewer.

Rate of infiltration shall be determined by means of V-notch weirs, pipe spigot or by plugs in the end of the pipe, to be provided and installed by the Contractor in an approved manner and at such times and locations as may be directed by IRCDUS.

In an inspection of the completed sewer or any part thereof shows any manholes, pipes or joints that allow the infiltration of water in a noticeable stream or jet, the defective work or material shall be replaced or repaired, as directed by IRCDUS.

Leakage between two adjacent manholes may be double the amount above stated, provided the average leakage for a total length of any size does not exceed the amount first stated and provided there are not gushing or spurting leaks.

All water used in testing and flushing shall be furnished at the Contractor's expense. The minimum amount of water to be used is two times the volume of the pipe.

The Contractor may use an air test in lieu of the exfiltration test as described above. If he elects to do this, he shall submit his proposed method to the IRCDUS for approval.

If the results of the air test are unsatisfactory, as determined by IRCDUS, the Contractor shall be required to perform the exfiltration test as outlined above.

At the conclusion of the work, the Contractor shall thoroughly clean the entire inside of the pipe by flushing with water or other means to remove all dirt, stones, and pieces of wood or other material that may have entered during the construction period. Debris cleaned from the lines shall be removed from the lowest outlet. If, after this outlet cleaning, obstructions remain, they shall be removed. After the pipe is cleaned and if the groundwater level is above the pipe, or following a

heavy rain, the IRCDUS will examine the pipe for leaks. If defective pipes or joints are discovered at this time, the Contractor shall repair them at no expense to IRCDUS.

Upon completion of the work, the sewer system or selected sections therein shall be subjected to a final test and inspection. All work in the system or sections therein being tested shall be complete, cleaned and ready for use. Tests shall be as specified herein and shall meet all requirements as to line, grade, clean lines, infiltration, exfiltration and workmanship.

Inspection of mains shall be by use of a self-contained television system and lamping upon satisfactory completion and acceptance of final road base material. The facilities shall be provided and operated by the Contractor as specified below:

The Contractor shall provide IRCDUS with a video record, on CD, DVD or USB-Flash-Drive format, of the interior of all main line gravity sewers and the interior of all sewer laterals. All formats shall be contained in a proper container to prevent damage. The video shall be obtained by pulling a television camera through the line along the axis of the pipe. The television equipment shall consist of a self-contained camera and a monitoring unit connected by a coaxial cable. These videos shall be done during the inspection of the mains. Monitors shall be available to IRCDUS during these inspections. Monitors shall also be provided with a stop action camera, so that as may be requested by IRCDUS. Photographs shall be made of a particular portion of the main being viewed. The video shall be properly exposed and the camera shall be in proper focus so that good, clear recordings showing detail are produced. The visual recordings shall be identified by audio recordings noting the manhole numbers, distances to service lateral connections, direction of lateral connection and any leaks, cracks or pipe defects. Each CD/DVD/USB shall be clearly marked as to the contents and number, with an index of all CD/DVD/USBs. The CD/DVD/USB of the completed mains shall be delivered to IRCDUS. The Contractor shall provide any assistance required by the IRCDUS.

A maximum tolerance of 1/2" dip will be accepted in gravity sewer construction.

END OF SECTION

SECTION 03640 - TURF MATERIAL & PERFORMANCE

Scope

This section consists of Turf Material and Performance

General

The work specified in this item shall conform to Section 570 of the Florida Department of Transportation Standard Specifications for Road and Bridge Construction (Latest Edition), except as modified herein.

Description

Sod for the project shall be of the variety that is common to the area and of a variety approved by the Engineer. This work shall also include mowing, to be mowed at maximum 6" height with a mulching mower.

Scope of Work

The work specified in this section consists of the establishing of a stand of grass, within the project, right-of-way, easements, and other areas indicated on the Drawings, by furnishing and placing grass sod. Also included are fertilizing, watering and maintenance as required to assure a healthy stand of grass. Two (2) applications of fertilizer will be required with the initial application being fertilizer and the second application being "weed and feed".

Guarantee

All sodded areas shall be guaranteed for one year after date of final acceptance.

Replacement of Defective Sod: Any dead sod or sod showing (less than 95% of a square) indication of probable non survival or lack of health and vigor, or which do not exhibit the characteristics to meet specifications, shall be replaced within two weeks of notice from Owner or Engineer. All replacement sod shall be furnished/installed at no additional cost to the Owner and shall be guaranteed for three months. All replacement shall meet original specifications.

The Contractor shall notify the IRCDUS and Engineer ten (10) days prior to the end of the guarantee period and such guarantee shall be extended until notification is received.

At the end of the guarantee period, all sod that is dead or in unsatisfactory growth shall be replaced within two (2) weeks.

Fertilizer

Commercial fertilizers shall comply with the Indian River County Fertilizer Ordinance 2013-012 and Supplement Ordinance 2013-014.

Water for Grassing

Contractor shall provide the water used in the sodding operations as necessary to meet the requirements of Article 570-3.6.

Preparation of Ground

The area over which the sod is to be placed shall be scarified or loosened to a depth and then raked smooth and free from debris. Where the soil is sufficiently loose and clean, the Owner, at his discretion, may authorize the elimination of ground preparation.

Application of Fertilizer

Before applying fertilizer, the soil pH shall be brought to a range of 6.0 - 7.0.

Contractor shall apply two (2) applications. The initial shall be fertilizer and the second application shall be "weed and feed".

The fertilizer shall be spread uniformly over the sodded area at the rate of 436 pounds per acre, or 10 pounds per 1,000 square feet, by a spreading device capable of uniformly distributing the material at the specified rate.

Contractor shall apply applications as per manufacturer's specification. All tickets from bags shall be handed over to the County Inspector.

On steep slopes, where the use of a machine for spreading or mixing is not practicable, the fertilizer shall be spread by hand and raked in and thoroughly mixed with the soil to a depth of approximately 2 inches.

Placing Sod

The sod shall be placed on the prepared surface, with edges in close contact and shall be firmly and smoothly embedded by light tamping with appropriate tools.

Where sodding is used in drainage ditches, the setting of the pieces shall be staggered so as to avoid a continuous seam along the line of flow. Along the edges of such staggered areas, the offsets of individual strips shall not exceed 6 inches. In order to prevent erosion caused by vertical edges at the outer limits, the outer pieces of sod shall be tamped so as to produce a featheredge effect.

Where sodding is placed abutting paved shoulder, the contractor is to ensure that the finished sod elevation is 1½" below paved shoulder.

On slopes greater than 3:1, the Contractor shall prevent the sod from sliding by means of wooden pegs driven through the sod blocks into firm earth, at suitable intervals.

Sodding shall not be performed when weather and soil conditions are, in the Engineer's opinion, unsuitable for proper results.

Sod shall be placed around all structures, equipment pads, etc.

Watering

The areas on which the sod is to be placed shall contain sufficient moisture, as determined by the Engineer, for optimum results. After being placed, the sod shall be kept in a moist condition to the full depth of the rooting zone for at least 2 weeks. Thereafter, the Contractor shall apply water as needed until the sod roots and starts to grow for a minimum of 60 days (or until final acceptance, whichever is latest).

Maintenance

The Contractor shall, at his expense, maintain the sodded areas in a satisfactory condition until final acceptance of the project. Such maintenance shall include repairing of any damaged areas and replacing areas in which the establishment of the grass stand does not appear to be developing satisfactorily.

Replanting or repair necessary due to the Contractor's negligence, carelessness or failure to provide routine maintenance shall be at the Contractor's expense.

The Contractor shall maintain the sodded area up to the final acceptance date as directed by the Engineer. Grass height shall not exceed 6" without mowing. Clippings shall be removed from sidewalk.

Article 570-9

The first two paragraphs under this Article are deleted and the following is added:

The contract unit price for performance turf shall include the costs of sod, fertilizer (2 applications), sidewalk sweeping after mowing, mowing, pegging disposal of clippings, water, tools, equipment, labor and all other incidentals necessary.

END OF SECTION