

PART 2 PACKAGE

JEA
JACKSONVILLE, FLORIDA
TECHNICAL SPECIFICATIONS

FOR THE CONSTRUCTION

RIVERTOWN WATER TREATMENT PLANT – RAW WATER PIPING
VOLUME IV-C

JEA PROJECT NO. 8003981

ISSUED FOR BID

CDM Smith, Inc.
Four Waters Engineering, Inc.
Jacksonville, FL
December 2020

JEA

RIVERTOWN WATER TREATMENT PLANT – RAW WATER PIPING

**PROJECT TECHNICAL SPECIFICATIONS
VOLUME IV-C**

ISSUED FOR BID SUBMITTAL

JANUARY 2021

**PROJECT LOCATION:
7612 LONGLEAF PINE PARKWAY
ST. JOHNS, FL 32259**



Angela Bryan, PE Date
Florida Registered P.E. No. 56730
General, Civil
Specifications: 01 55 26, 01 55 29, 31 00 00,
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SECTION 01 55 26
TEMPORARY TRAFFIC CONTROL

PART 1 – GENERAL

1.01 SUMMARY

- A. This work consists of providing temporary traffic control measures - furnishing, installing, moving, operating, maintaining, inspecting, and removing traffic control devices throughout the Project area, in accordance with the approved traffic control plans, these Specifications, or as directed. This Section applies only to the Raw Water Main construction.
- B. All work shall conform to the requirements of St. Johns County Transportation Development Division and the Specifications and Drawings.
- C. Bartram Trail High School is located within the project area. Special consideration shall be taken by the Contractor to ensure all temporary traffic control measures allow for safe passage of pedestrian, bicycle, and vehicular traffic.
- D. The cost for all Temporary Traffic Control measures shall be incorporated into the cost for installation of the raw water main system components located within areas requiring such temporary traffic control. There is no separate pay item for temporary traffic control.

PART 2 – PRODUCTS

2.01 GENERAL

- A. All products utilized for temporary traffic control shall comply the Florida Department of Transportation requirements, as indicated on the Drawings, and with the requirements of St. Johns County Transportation Development Division.

PART 3 – EXECUTION

3.01 GENERAL

- A. Installation and operation of the temporary traffic control measures shall comply with the requirements of the Drawings and St. Johns County Transportation Development Division.
- B. Contractor shall provide a traffic control plan including schedule and hours of operation, and any proposed modifications to the maintenance of traffic and traffic control plans included in the Drawings to JEA, Engineer, and St. Johns County Transportation Development Division

- for review and approval prior to initiating any construction activities on-site which could affect pedestrian, bicycle, or vehicular traffic.
- C. The Contractor shall be fully responsible for furnishing and maintaining the approved traffic control plan.

END OF SECTION

SECTION 01 55 29

STAGING AREAS

PART 1 – GENERAL

1.01 This Section includes all the requirements for the staging areas to be required for the installation of the raw water main system. This Section applies only to the Raw Water Main construction.

1.02 SUMMARY

- A. The staging area(s) for the installation of the raw water main system shall be within the right-of-way of Longleaf Pine Parkway or the Rivertown WTP site or access road, as approved by JEA.
- B. Contractor requests for approval to stage and store materials and equipment must be coordinated by the Contractor with the owner of the property. If approved, Contractor shall provide written notification to JEA and Engineer. Contractor shall be responsible for any additional temporary traffic controls and restoration associated with these staging area(s).
- C. The cost for use and restoration for staging areas shall be incorporated into the various pay items for the raw water main system. There is no separate pay item for staging areas.

1.03 DEFINITIONS

- A. Final Stabilization: A construction site status where all soil disturbing activities at the site have been completed and a uniform (e.g., evenly distributed, without large bare areas) perennial vegetative cover with a density of 70% of the native background vegetative cover for the area has been established on all unpaved areas and areas not covered by permanent structures, or equivalent permanent stabilization measures (such as crushed stone, riprap, gabions, or geotextiles) have been employed.

1.04 SUBMITTALS

- A. Site Plan: The Contractor shall submit a proposed site plan to the owner of the staging area for review and approval. The site plan shall at a minimum, include the following.
 - 1. Proposed location(s) and dimensions of any area to be fenced and used by Contractor for staging. Details of the fence and gate installation and locking mechanism.
 - 2. Location and dimensions of any temporary structures.
 - 3. Avenues of ingress and egress.
 - 4. Methods or devices to be used at exits to prevent the tracking of mud and soil.

5. Location of material storage areas.
 6. Location of equipment storage, and vehicle parking.
 7. Location of areas for fuel storage, fueling operations.
 8. Location of storm drains and drainage channels that could receive runoff from the staging area.
 9. Identify the Subcontractors or others that will share the staging area.
 10. Location and methods of containment for any flammables, chemicals or hazmat materials that will be stored in the staging area. Include a Material Safety Data Sheet (MSDS) for all such materials.
- B. The Contractor shall obtain the approval of the property owner for the Subcontractors or others that will share the staging area.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.01 STAGING AREA

- A. The entrance to the staging area shall be provided with signs including:
 1. The name of the Contractor.
 2. The Contractor's 24-hour emergency contact number.
- B. Project(s) Identifiers: Project Name, SWPPP and NOI notices.
- C. A copy of the Contractor material and chemicals list shall always be available at the staging area.
- D. Implement erosion control measures in accordance with Section 312500 – Erosion and Sedimentation Controls, Volume 4A Rivertown WTP.
- E. As appropriate or required, enclose the staging area with a security fence.
- F. Establish an all-weather access road to ensure emergency equipment access to structures, and material and equipment storage areas.
- G. Install construction exits in areas of ingress/egress to prevent rutting and the tracking of mud and soils.
- H. Stockpile all materials inside the Contractor staging area.
- I. Park all mobile construction equipment within the staging area at the end of each Working Day.
- J. Store salvageable materials resulting from demolition activities within the staging area.

- K. Stack stored materials and products off the ground within the staging area. Maintain stored materials and products in a neat and orderly method that allows ready access to materials and products.
- L. Follow the appropriate federal, state, or local guidelines when using or storing hazardous, flammable or combustible materials. Properly label all products. Store drums and containers off the ground and on pallets and properly seal containers and label each container. Provide any secondary containment as appropriate.

3.02 MAINTENANCE OF STAGING AREA

The Contractor shall maintain the staging area throughout the Project including, but not limited to the following:

- A. Maintain any perimeter fence in good repair and proper alignment.
- B. Follow general precautions against fire: maintain vegetation, establish designated Smoking Areas, post No Smoking signs, provide orderly storage, and remove construction debris, waste, and packing materials from the staging area before it becomes a nuisance / fire hazard.
- C. Check the staging area daily for spills, standing water, and other sources of contamination. Immediately implement reporting and removal procedures when found.
- D. Properly clean dirt or mud that becomes tracked out of staging area onto paved or surfaced roadways as soon as possible and no later than the same Working Day and eliminate the source of the tracking material.
- E. Maintain all-weather roads to ensure emergency equipment access to structures, equipment, and material storage areas. Repair potholes and ruts as they are identified and no later than eight (8) hours after identification.

3.03 RESTORATION OF STAGING AREA

At the end of the Project, the Contractor shall restore the staging area at Substantial Completion to its pre-existing condition, or as otherwise directed by the owner, by performing the following:

- A. Remove all structures, materials and equipment from within the staging area.
- B. Remove all fencing and fence posts completely or as otherwise directed by the owner.
- C. Fill in all holes and depressions.
- D. Remove any gravel and apply clean top soil and seeding or sod, as required by owner, as needed to restore the site to a stabilized condition or as otherwise directed by the owner.

END OF SECTION

SECTION 31 00 00

EARTHWORK

PART 1 – GENERAL

1.01 THE REQUIREMENT

- A. This Section applies only to the Raw Water Main construction.
- B. Furnish all labor, equipment and materials required to complete all work associated with excavation, including off-site borrow excavation, dewatering, backfill, drainage layers beneath and around structures, foundation and backfill stone, filter fabric, embankments, stockpiling topsoil and any excess suitable material in designated areas, in place compaction of embankments, backfill and subgrades beneath foundations and roadways, excavation support, disposing from the site all unsuitable materials, providing erosion and sedimentation control grading, site grading and preparation of pavement and structure subgrade, and other related and incidental work as required to complete the work shown on the Drawings and specified herein.
- C. All excavations shall be in conformity with the lines, grades, and cross sections shown on the Drawings or established by the Engineer.
- D. It is the intent of this Specification that the Contractor conduct the construction activities in such a manner that erosion of disturbed areas and off-site sedimentation be absolutely minimized.
- E. All work under this Contract shall be done in conformance with and subject to the limitations of the latest edition of the JEA's Water & Wastewater Standards Manual.

1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. Requirements of related work are included in:
 - 1. Division 1 and Division 32 of these Specifications, Volume IV-C.
 - 2. Section 311000 - Site Clearing, Rivertown WTP, Volume IV-A
 - 3. Section 312319 – Dewatering, Rivertown WTP, Volume IV-A
 - 4. Section 321216 – Asphalt Paving, Rivertown WTP, Volume IV-A
 - 5. Section 329200 - Turf and Grasses, Rivertown WTP, Volume IV-A

- B. Recommendations of the geotechnical report for the raw water main piping shall apply and be followed. CSI Geo, Inc. Geotechnical Exploration and Evaluation Report Phase 2, Rivertown Water Treatment Plant, June 2, 2020, CSI Geo Project No. 71-19-127-02.

1.03 REFERENCE SPECIFICATIONS, CODES, AND STANDARDS

- A. Without limiting the generality of the other requirements of the Specifications, all work herein shall conform to the applicable requirements of the following documents. All referenced Specifications, codes, and standards refer to the most current issue available at the time of Bid.

1. JEA's Water & Wastewater Standards Manual, latest edition.
2. Florida Department of Transportation Standard Specifications for Road and Bridges Construction, latest edition.
3. American Society for Testing and Materials (ASTM):
 - a. ASTM C 127 – Test for Specific Gravity and Absorption of Coarse Aggregate.
 - b. ASTM C 136 – Test for Sieve Analysis of Fine and Coarse Aggregates.
 - c. ASTM D 422 – Particle Size Analysis of Soils.
 - d. ASTM D 423 – Test for Liquid Limit of Soils.
 - e. ASTM D 424 – Test for Plastic Limit and Plasticity Index of Soils.
 - f. ASTM C 535 – Test for Resistance to Degradation of Large Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine.
 - g. ASTM D1556 – Test for Density of Soil in Place by the Sand-Cone Method.
 - h. ASTM D1557 – Test for Moisture-Density Relations of Soils and Soil Aggregate Mixtures Using 10-lbs. (4.5 kg) Rammer and 18-inch (457 mm) Drop.
 - i. ASTM D2049 – Test Method for Relative Density of Cohesionless Soils.
 - j. ASTM D2167 – Test for Density of Soil in Place by the Rubber-Balloon Method.
 - k. ASTM D2216 – Test for Laboratory Determination of Water (Moisture) Content of Soil, Rock, and Soil Aggregate Mixtures.
 - l. ASTM D2487 – Test for Classification of Soils for Engineering Purposes.
 - m. ASTM D2922 – Test for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).

1.04 SUBSURFACE CONDITIONS

- A. Information on subsurface conditions is provided in the project geotechnical report reference under 1.02 B of this section.
- B. Attention is directed to the fact that there may be water pipes, storm drains, natural gas, high voltage electric, fiber optic, and other utilities located in the area of proposed excavation. Perform all repairs to same in the event that excavation activities disrupt service.

1.05 SUBMITTALS

- A. In accordance with the procedures and requirements set forth in the contract submittal procedures, the Contractor shall submit the following:
 - 1. Name and location of all material suppliers.
 - 2. Certificate of compliance with the standards specified above for each source of each material.
 - 3. List of disposal sites for waste and unsuitable materials and all required permits for use of those sites.
 - 4. Plans and cross sections of open cut excavations showing side slopes and limits of the excavation at grade.
 - 5. Samples of synthetic filter fabric and reinforced plastic membrane with manufacturer's certificates or catalog cuts stating the mechanical and physical properties. Samples shall be at least one (1) foot wide and four (4) feet long taken across the roll with the warp direction appropriately marked.
 - 6. Construction drawings and structural calculations for any types of excavation support required. Drawings and calculations shall be sealed by a currently registered Professional Engineer in the State of Florida.
 - 7. Monitoring plan and pre-construction condition inspection and documentation of all adjacent structures, utilities, and roadways near proposed installation of excavation support systems and near areas where dewatering is required to facilitate construction.
 - 8. Dewatering procedures.

1.06 PRODUCT HANDLING

- A. Soil and rock material shall be excavated, transported, placed, and stored in a manner so as to prevent contamination, segregation and excessive wetting. Materials which have become contaminated or segregated will not be permitted in the performance of the work and shall be removed from the site.

PART 2 – PRODUCTS

2.01 SELECT FILL

- A. Soils from the excavations meeting requirements stipulated herein with the exceptions of topsoil, organic, and plastic (plastic clayey sands and highly plastic sandy clays) materials may be used as Select Fill for backfilling, constructing embankments, reconstructing existing embankments, and as structural subgrade support.
- B. Select Fill –
 - 1. Consist of mineral soil free of organic material loam, debris, frozen soil or other deleterious material which may be compressible, or which cannot be properly compacted.
 - 2. Consist of non-plastic, granular soils with a Unified Soil Classification System (USCS) designations of SP, SP-SM, or SM in accordance with ASTM D2487.
- C. Regardless of material used as Select Fill, materials shall be compacted at a moisture content satisfactory to the Engineer, which shall be approximately that required to produce the maximum density except that the moisture content shall not be more than 3% below nor more than 3% above the optimum moisture content for the particular material tested in accordance with the ASTM D1557.
- D. Where excavated material does not meet requirements for Select Fill, Contractor shall furnish off-site borrow material meeting the specified requirements herein. Payment for excavated material deemed unsuitable and replacement with off-site select fill borrow material shall be in accordance with the contract documents. The cost of select fill for pipe bedding as required for areas where unsuitable soils are encountered shall be included in the unit price per linear foot of pipe .
- E. When the excavated material from required excavations is suitable for use as Select Fill, backfill, bedding, or embankments, but is replaced with off-site borrow material for the Contractor's convenience, the costs associated with such work and material shall be borne by the Contractor.
- F. Contractor shall stockpile on site in areas designated in the Contract Documents or as approved by the Owner to avoid hauling material offsite unless contaminated. No stockpiling of excavated material would be allowed within 50 feet or in a manner or location that would permit erosion and its subsequent sedimentation into storm drains, streams, ponds, wetlands or other natural areas.
 - 1. Topsoil
 - a. Topsoil shall be considered the surface layer of soil and sod, suitable for use in seeding and planting. It shall contain no mixture of refuse or any material toxic to plant growth.

2. Geotextiles
 - a. The Contractor shall provide geotextiles as indicated on the Drawings and specified herein.

PART 3 – EXECUTION

3.01 STRIPPING OF TOPSOIL

- A. In all areas to be excavated, filled, paved, or graveled the topsoil shall be stripped to its full depth and shall be deposited in storage piles on the site, at locations designated by the Engineer, for subsequent reuse. Topsoil shall be kept separated from other excavated materials and shall be piled free of roots and other undesirable materials.

3.02 EXCAVATION

- A. All material excavated, regardless of its nature or composition, shall be classified as UNCLASSIFIED EXCAVATION. Excavation shall include the removal of all soil, rock, weathered rock, rocks of all types, boulders, conduits, pipe, and all other obstacles encountered and shown to be removed within the limits of excavation shown on the Drawings or specified herein. The cost of excavation shall be included in the unit price per linear foot of pipe and no additional payment will be made for the removal of obstacles encountered within the excavation limits shown on the Drawings and specified herein.
- B. All suitable material removed in the excavation shall be used as far as practicable for backfill and in the formation of embankments, subgrades, and shoulders, and at such other places as may be indicated on the Drawings or indicated by the Engineer. No excavation shall be wasted except as may be permitted by the Engineer. Refer to the drawings for specific location and placement of suitable excavated materials in the formation of embankments, backfill, and structural and roadway foundations. THE ENGINEER AND/OR MATERIALS TESTING CONSULTANT WILL DESIGNATE MATERIALS THAT ARE UNSUITABLE. The Contractor shall furnish off-site disposal areas for the unsuitable material. Where suitable materials containing excessive moisture are encountered above grade in cuts, the Contractor shall construct above grade ditch drains prior to the excavation of the cut material when, in the opinion of the Engineer and/or materials testing consultant, such measures are necessary to provide proper construction.
 1. In accordance with the geotechnical report for the project, as referenced in 1.02 B:
 - a. Clayey sands (SC) and sandy clays (CL/CH) should be considered as plastic and highly plastic materials, respectively, and should be excavated to a minimum depth of one (1) foot below the design invert elevations and replaced with suitable fill material.
 - b. If encountered, organic soils should be removed in their entirety.

- C. All excavations shall be made in the dry and in such a manner and to such widths as will give ample room for properly constructing and inspecting the structures and/or piping they are to contain and for such excavation support, pumping and drainage as may be required. Excavation shall be made in accordance with the grades and details shown on the Drawings and as specified herein.
- D. Excavation slopes shall be flat enough to avoid slides that will cause disturbance of the subgrade or damage of adjacent areas. Excavation requirements and slopes shall be as indicated in the Drawings. The Contractor shall intercept and collect surface runoff both at the top and bottom of cut slopes. The intersection of slopes with natural ground surfaces, including the beginning and ending of cut slopes, shall be uniformly rounded as shown on the Drawings or as may be indicated by the Engineer. Concurrent with the excavation of cuts, the Contractor shall construct intercepting berm ditches or earth berms along and on top of the cut slopes at locations shown on the Drawings or designated by the Engineer. All slopes shall be finished to reasonably uniform surfaces acceptable for seeding and mulching operations. All protruding roots and other objectionable vegetation shall be removed from slopes. The Contractor shall be required to submit plans of open-cut excavation for review by the Engineer before approval is given to proceed.
- E. Bedding for process piping shall be as specified in Section 33 14 11 Raw Water Main Piping, Volume 4C or as shown on the Drawings.
- F. The bottom of all excavations for structures and pipes shall be examined by the Engineer and/or materials testing consultant for bearing value and the presence of unsuitable material. If, in the opinion of the Engineer and/or materials testing consultant, additional excavation is required due to the low bearing value of the subgrade material, or if the in-place soils are soft, yielding, pumping and wet, the Contractor shall remove such material to the required width and depth and replace it with thoroughly compacted select fill, and/or crushed stone or screened gravel as indicated by the Engineer. Payment for such work and excavated material deemed unsuitable and replacement with off-site select fill borrow material shall be in accordance with the contract documents. The cost of select fill for pipe bedding as required for areas where unsuitable soils are encountered shall be included in the unit price per linear foot of pipe. No payment will be made for subgrade disturbance caused by inadequate dewatering or improper construction methods.
- G. Slides and overbreaks which occur due to negligence, carelessness or improper construction techniques on the part of the Contractor shall be removed and disposed of by the Contractor as indicated by the Engineer at no additional cost to the Owner. If grading operations are suspended for any reason whatsoever, partially completed cut and fill slopes shall be brought to the required slope and the work of seeding and mulching or other required erosion and sedimentation control operations shall be performed.

3.03 EXCAVATION SUPPORT

- A. The Contractor shall furnish, place, and maintain such excavation support which may be required to support sides of excavation or to protect structures, pipes, and utilities from

possible damage and to provide safe working conditions. The Contractor shall be exclusively responsible for maintaining structure integrity without overstressing and damaging existing structures, pipes, and utilities resulting from the Contractor's desires to temporarily place, move, or remove loads on or adjacent to existing structures, pipes, and utilities. If the Engineer is of the opinion that at any point sufficient or proper supports have not been provided, he may order additional supports put in at the expense of the Contractor. The Contractor shall be responsible for the adequacy of all supports used and for all damage resulting from failure of support system or from placing, maintaining and removing it.

- B. Selection of and design of any proposed excavation support systems is exclusively the responsibility of the Contractor. Contractor shall submit drawings and calculations on proposed systems sealed by a Professional Engineer currently registered in the State of Florida.
- C. The Contractor shall exercise caution in the installation and removal of supports to ensure no excessive or unusual loadings or vibrations are transmitted to any new or existing structure. The Contractor shall promptly repair at his expense any and all damage that can be reasonably attributed to installation or removal of excavation support system.
- D. Contractor shall monitor movement and vibration in the excavation support systems as well as movement and vibration at adjacent structures, utilities and roadways near excavation supports. Contractor shall submit a monitoring plan developed by the excavation support design engineer. All pre-construction condition assessment and documentation of adjacent structures on-site and off-site shall be performed by the Contractor. If any sign of distress such as cracking or movement occurs in any adjacent structure, utility or roadway during installation of supports, subsequent excavation, service period of supports, subsequent backfill and construction, or removal of supports, Engineer shall be notified immediately. Contractor shall be exclusively responsible for repair of any damage to any roadway, structure, utility, pipes, etc. both on-site and off-site, as a result of his operations.
- E. All excavation supports shall be removed upon completion of the work except as indicated herein. The Engineer may permit supports to be left in place at the request and expense of the Contractor. The cost of all excavation supports and sheet piling left in place shall be included in the unit price per foot of pipe. Any excavation supports left in place shall be cut off at least two (2) feet below the finished ground surface or as directed by the Engineer.

3.04 PROTECTION OF SUBGRADE

- A. To minimize the disturbance of bearing materials and provide a firm foundation, the Contractor shall comply with the following requirements:
 - 1. Use of heavy rubber-tired construction equipment shall not be permitted on the final subgrade unless it can be demonstrated that drawdown of groundwater throughout the entire area of the structure is at least 2 feet below the bottom of the excavation (subgrade). Even then, the use of such equipment shall be prohibited should subgrade disturbance result from concentrated wheel loads.

2. Subgrade soils disturbed through the operations of the Contractor shall be excavated and replaced with compacted select fill or crushed stone at the Contractor's expense as indicated by the Engineer.

3.05 PROOFROLLING

- A. The subgrade of all structures and all areas that will support pavements or select fill shall be proofrolled. After stripping of topsoil, excavation to subgrade and prior to placement of fills, the exposed subgrade shall be carefully inspected by probing and testing as needed. Any topsoil or other organic material still in place, frozen, wet, soft, or loose soil, and other undesirable materials shall be removed. The exposed subgrade shall be proofrolled with a heavily loaded tandem-wheeled dump truck to check for pockets of soft material hidden beneath a thin crust of better soil. Any unsuitable materials thus exposed shall be removed and replaced with an approved compacted material.

3.06 DEWATERING

- A. The Contractor shall provide all dewatering as required for the completion of the work. Procedures for dewatering proposed by the Contractor shall be submitted to the Engineer for review prior to any earthwork operations. Selection of and design of any proposed dewatering system is exclusively the responsibility of the Contractor. Contractor shall submit drawings and calculations on proposed dewatering systems sealed by a Professional Engineer currently registered in the State of Florida. All water removed by dewatering operations shall be disposed of in accordance with the Florida Department of Environmental Protection requirements and St. Johns River Water Management District.
- B. The dewatering system shall be of sufficient size and capacity as required to control groundwater or seepage to permit proper excavation operations, embankment construction and reconstruction, subgrade preparation, and to allow concrete to be placed in a dry condition. The system shall include a sump system or other equipment, appurtenances and other related earthwork necessary for the required control of water. The Contractor shall drawdown groundwater to at least two (2) feet below the bottom of excavations (subgrade) at all times in order to maintain a dry and undisturbed condition.
- C. The Contractor shall control, by acceptable means, all water regardless of source. Water shall be controlled and its disposal provided for at each berm, structure, etc. The Contractor shall be fully responsible for disposal of the water and shall provide all necessary means at no additional expense to the Owner. The Contractor shall be solely responsible for proper design, installation, proper operation, maintenance, and any failure of any component of the system.
- D. The Contractor shall be responsible for and shall repair without cost to the Owner, any damage to work in place and the excavation, including damage to the bottom due to heave and including removal of material and pumping out of the excavated area. The Contractor shall be responsible for damages to any other area or structure caused by his failure to maintain and operate the dewatering system proposed and installed by the Contractor.

- E. The Contractor shall take all the steps that he considers necessary to familiarize himself with the surface and subsurface site conditions, and shall obtain the data that is required to analyze the water and soil environment at the site and to assure that the materials used for the dewatering systems will not erode, deteriorate, or clog to the extent that the dewatering systems will not perform properly during the period of dewatering. Copies of logs of borings and laboratory test results are available to the Contractor. This data is furnished for information only, and it is expressly understood that the Owner and Engineer will not be held responsible for any interpretations or conclusions drawn therefrom by the Contractor.
- F. Prior to the execution of the work, the Contractor, Owner and Engineer shall jointly survey the condition of adjoining structures. Photographs and records shall be made of any prior settlement or cracking of structures, pavements, and the like, that may become the subject of possible damage claims.

3.07 BACKFILLING

- A. All structures and pipes shall be backfilled with the type of materials shown on the Drawings and specified herein. Select fill shall be deposited in successive, uniform, approximately horizontal layers not exceeding the thickness identified in JEA's Water and Wastewater Standards, Section 408, Excavation and Earthwork. Stones or fragmentary rock larger than 4-inches in their greatest dimension will not be allowed within the top 6-inches of the ground nor within 6 inches of pipes. No stone or fragmentary rock larger than 12-inches in their greatest dimension will be allowed for any portion of backfill. Compaction shall be in accordance with the requirements of Paragraph 3.08, COMPACTION.
- B. Where excavation support is used, the Contractor shall take all reasonable measures to prevent loss of support beneath and adjacent to pipes and existing structures when supports are removed. If significant volumes of soil cannot be prevented from clinging to the extracted supports, the voids shall be continuously backfilled as rapidly as possible. The Contractor shall thereafter limit the depth below subgrade that supports will be installed in similar soil conditions or employ other appropriate means to prevent loss of support.

3.08 COMPACTION

- A. The Contractor shall compact embankments, backfill, crushed stone, aggregate base, and in place subgrade in accordance with the requirements of JEA's Water and Wastewater Standards Section 408, Excavation and Earthwork, the Drawings, and recommendations of the project geotechnical report listed in 1.02 B.
- B. Field density tests will be made by the materials testing consultant to determine if the specified densities have been achieved, and these tests shall be the basis for accepting or rejecting the compaction. In-place density tests will be performed in accordance with ASTM D 1556, ASTM D 2167, or ASTM D 2922. The Engineer, in conjunction with the materials testing consultant, will be the judge as to which test method will be the most appropriate. Failure to achieve the specified densities shall require the Contractor to re-compact the material or remove it as required. The Contractor shall, if necessary, increase his compactive effort by increasing the

number of passes, using heavier or more suitable compaction equipment, or by reducing the thickness of the layers. The Contractor shall adjust the moisture contents of the soils to bring them within the optimum range by drying them or adding water as required.

- C. Testing will be performed as frequently as deemed necessary by the Engineer and/or materials testing consultant, but in no case less frequently than required in JEA's Water and Wastewater Standards, Section 408, Excavation and Earthwork.

3.09 REMOVAL OF EXCESS AND UNSUITABLE MATERIALS

- A. The Contractor shall remove and dispose of off-site all unsuitable materials. Within thirty (30) consecutive days after Notice to Proceed, the Contractor shall submit to the Engineer for review all required permits and a list of disposal sites for the unsuitable materials. If the disposal site is located on private property, the submittal shall also include written permission from the owner of record.
- B. All unsuitable materials shall be disposed of in locations and under conditions that comply with federal, state and local laws and regulations. All sites/facilities used for disposal, recycling, reuse, and disposition of unsuitable materials and wastes shall be permitted by the appropriate regulatory agency. Use of unpermitted or non-compliant facilities/sites will not be acceptable.
- C. The Contractor shall obtain an off-site disposal area prior to beginning demolition or excavation operations.
- D. All excess and unsuitable materials shall be hauled in trucks of sufficient capacity and tight construction to prevent spillage. Trucks shall be covered to prevent the propagation of dust.
- E. When all excess and unsuitable material disposal operations are completed, the Contractor shall leave the disposal sites in a condition acceptable to the Owner and Owner(s) of the disposal site(s).

3.10 BORROW EXCAVATION

- A. Description
 - 1. The work covered by this section consists of the excavation of approved material from borrow sources and the hauling and utilization of such material as required on the Drawings or directed by the Engineer. It shall also include the removing, stockpiling, and replacement of topsoil on the borrow source; the satisfactory disposition of material from the borrow source which is not suitable for use; and the satisfactory restoration of the borrow source and haul roads to an acceptable condition upon completion of the work.
 - 2. Borrow excavation shall not be used before all available suitable unclassified excavation has been used for backfill.
- B. Materials

1. All material shall meet the requirements of JEA's Water and Wastewater Standards, Section 408 – Excavation and Earthwork, and
2. The recommendations of the project geotechnical report identified in 1.02 B.

C. Construction Methods

1. General

- a. The surface of the borrow area shall be thoroughly cleared and grubbed and cleaned of all unsuitable material including all organics, topsoil, etc., before beginning the excavation. Disposal of material resulting from clearing and grubbing shall be in accordance with Section 311000 – Site Clearing, Rivertown WTP, Volume 4A.
- b. Each borrow operation shall not be allowed to accumulate exposed, erodible slope area in excess of 1 acre at any one given time without the Contractor's beginning permanent seeding and mulching of the borrow source or other erosion control measures as may be approved by the Engineer.
- c. The topsoil shall be removed and stockpiled at locations that will not interfere with the borrow operations and that meet the approval of the Engineer. Temporary erosion control measures shall be installed as may be necessary to prevent the erosion of the stockpile material. Once all borrow has been removed from the source or portion thereof, the stockpiled topsoil shall be spread uniformly over the source.
- d. Where it is necessary to haul borrow material over existing roads, the Contractor shall use all necessary precautions to prevent damage to the existing roads. The Contractor shall also conduct his hauling operations in such a manner as to not interfere with the normal flow of traffic and shall keep the traffic lanes free from spillage at all times.

2. Contractor Furnished Sources

- a. The approval of borrow sources furnished by the Contractor shall be subject to the following conditions:
 - 1) The Contractor shall be responsible for acquiring the right to take the material and any rights of access that may be necessary; for locating and developing the source; and any clearing and grubbing and drainage ditches necessary.
 - a) Such right shall be in writing and shall include an agreement with the Owner that the borrow source may be dressed, shaped, seeded, mulched, and drained as required by these Specifications after all borrow has been removed.

- 2) Except where borrow is to be obtained from a commercial source, the Contractor and the property owner shall jointly submit a borrow source development, use, and reclamation plan to the Engineer for his approval prior to engaging in any land disturbing activity on the proposed source other than material sampling that may be necessary. The Contractor's plan shall address the following:
 - a) Drainage: The source shall be graded to drain such that no water will collect or stand and a functioning drainage system shall be provided. If drainage is not practical, and the source is to serve as a pond, the minimum average depth below the water table shall be 4 feet or the source graded so as to create wetlands as appropriate.
 - b) Slopes: The source shall be dressed and shaped in a continuous manner to contours which are comparable to and blend in with the adjacent topography, but in no case will slopes steeper than 3:1 be permitted.
 - c) Erosion Control: The plan shall address the temporary and permanent measures that the Contractor intends to employ during use of the source and as a part of the reclamation. The Contractor's plan shall provide for the use of staged permanent seeding and mulching on a continual basis while the source is in use and the immediate total reclamation of the source when no longer needed. The Contractor shall be responsible for obtaining a Sediment and Erosion Control Permit from FDEP as necessary.

3. Maintenance
 - a. During construction and until final acceptance the Contractor shall use any methods approved by the Engineer which are necessary to maintain the work covered by this section so that the work will not contribute to excessive soil erosion.

END OF SECTION

SECTION 32 16 15

CURBS, GUTTERS, SIDEWALKS, AND DRIVEWAYS

PART 1 – GENERAL

1.01 SUMMARY

- A. This Section applies only to the Raw Water Main construction. This work consists of cutting, removing, protecting and restoring all curbs, gutters, sidewalks, and driveway areas removed for construction or damaged by construction activities.
- B. Protection of Existing Improvements: The Contractor shall be responsible for the protection of all curbs, gutters, sidewalks, driveways and other improvements within the work area. All damage to such improvements, as a result of the Contractor's operations, beyond the limits of the work shall be repaired by the Contractor at his expense.
- C. All work shall conform to the requirements of St. Johns County Transportation Development Division, the St. Johns County Engineering Division, the St. Johns County Standards and Details, and these Specifications and Drawings, and the project permits.
- D. All materials, equipment and workmanship shall be subject to inspection by the St. Johns County Road & Bridge Department.
- E. All St. Johns County rights-of-ways shall be restored to original or better condition, in accordance with the St. Johns County specifications and in a manner satisfactory to the Engineering Operations, Public Works Division and/or Development Services Division.
- F. This project will not require a separate Right of Way permit as the raw water main piping installation has been included in the construction plans approved by the St. Johns County Growth Management, Development Review Committee.

PART 2 – PRODUCTS

2.01 GENERAL

- A. All materials used for curbs, gutters, sidewalks, and driveways shall meet the requirements of:
 - 1. The St. Johns County Standards and Details,
 - 2. Material specifications and Construction procedures shall comply to the FDOT "Standard Specifications for Road and Bridge Construction",
 - 3. and these Specifications and Drawings.

- B. Concrete shall be Class I, 3000 pounds per square inch (psi).

PART 3 – EXECUTION

3.01 GENERAL

- A. All curbs, gutters, sidewalks, and driveways excavations, restoration, and testing shall be in compliance with the St. Johns County Standards and Details and Specifications and will require the approval of St. Johns County Road & Bridge Department.
- B. All sidewalk restoration shall be from nearest construction joint to joint.
- C. All driveway restoration shall be full width from edge of pavement to right-of-way/property line.

END OF SECTION

SECTION 33 14 11
RAW WATER MAIN PIPING

PART 1 – GENERAL

1.01 SUMMARY

- A. This Section applies only to the Raw Water Main construction. The Contractor shall furnish and install a raw water piping system, complete, tested and ready for operation. The work consists of furnishing all labor, equipment and materials for the raw water main system. The work shall also include such connections, reconnections, temporary service, and all other provisions in regard to the existing operation and modification as is required to perform the new work.
- B. The raw water piping system materials and installation and any modifications to or repurposing of the existing 20-inch water main system shall conform to the requirements of the JEA Water and Wastewater Standards, Section 350 – Potable Water Piping.
- C. The portion of the raw water piping system to be installed by Horizontal Directional Drilling shall conform to the requirements of the JEA Water and Wastewater Standards, Section 755 – Horizontal Directional Drilling (Large Diameter Pipe 12 Inches and Greater).

PART 2 – PRODUCTS

2.01 GENERAL

- A. All references to Industry Standards (ASTM, ANSI, AWWA, etc.) shall be to the latest revision unless otherwise stated.
- B. Only those materials included in the JEA Water and Wastewater Standards Manual shall be installed.
- C. All materials shall be new unless specifically called for otherwise and shall adhere to the 2014 EPA standards for lead free brass.

PART 3 – EXECUTION

3.01 GENERAL

- A. The raw water main system and any modifications to or repurposing of the existing 20-inch water main system shall be installed and tested in accordance with the requirements of JEA

- Water and Wastewater Standards, Section 350 – Potable Water Piping and Section 755 – Horizontal Directional Drilling (Large Diameter Pipe 12 Inches and Greater).
1. Installation requirements include establishing reference points and layout, handling and cutting pipe, pipe installation, appropriate water main and non-water main separation, system connections.
 2. Field testing includes swabbing (as required), flushing, disinfection and sampling and analysis, pressure and leakage testing, and locate wire testing.
- B. As-built surveys and documents shall be provided and approved by JEA and Engineer for the raw water main system and any modifications to or repurposing of the existing 20-inch water main system in accordance with JEA Water and Wastewater Standards, Section 501 – As-Built Drawings and Section 755 - Horizontal Directional Drilling (Large Diameter Pipe 12 Inches and Greater).

END OF SECTION

SECTION 33 14 19

VALVES AND APPURTENANCES FOR RAW WATER MAIN SYSTEM

PART 1 – GENERAL

1.01 SUMMARY

- A. This Section applies only to the Raw Water Main construction. The Contractor shall furnish and install all required gate valves and other appurtenances for the raw water piping system, complete, tested and ready for operation as specified on the Drawings and herein. The work consists of furnishing all labor, equipment and materials for the installation of the gate valves and other appurtenances on the raw water main system.
- B. The materials and installation for the raw water main system gate valves and other required appurtenances shall conform to the requirements of the JEA Water and Wastewater Standards, Section 351 – Water Meters, Valves, Hydrants and Appurtenances.
- C. The portion of the raw water piping system to be installed by Horizontal Directional Drilling and associated appurtenances shall conform to the requirements of the JEA Water and Wastewater Standards, Section 755 – Horizontal Directional Drilling (Large Diameter Pipe 12 Inches and Greater).

PART 2 – PRODUCTS

2.01 GENERAL

- A. All references to Industry Standards (ASTM, ANSI, AWWA, etc.) shall be to the latest revision unless otherwise stated.
- B. Only those materials included in the JEA Water and Wastewater Standards Manual shall be installed.
- C. All materials shall be new unless specifically called for otherwise and shall adhere to the 2014 EPA standards for lead free brass.

PART 3 – EXECUTION

3.01 GENERAL

- A. The raw water main system shall be installed and tested in accordance with the requirements of JEA Water and Wastewater Standards, Section 350 – Potable Water Piping and Section 755 – Horizontal Directional Drilling (Large Diameter Pipe 12 Inches and Greater).

- B. The gate valves and other appurtenances for the raw water main system shall be inspected in accordance with the requirements of JEA Water and Wastewater Standards, Section 351 – Water Meters, Valves, Hydrants and Appurtenances.
- C. As-built surveys and documents shall be provided and approved by JEA and Engineer for the raw water main system in accordance with JEA Water and Wastewater Standards, Section 501 – As-Built Drawings and Section 755 - Horizontal Directional Drilling (Large Diameter Pipe 12 Inches and Greater).

END OF SECTION