TECHNICAL SPECIFICATIONS

EARTHWORK, DRAINAGE, GRASSING, UTILITIES

1. **STANDARD SPECIFICATIONS** - All work shall conform to the "Florida Department of Transportation Standard Specifications for Road and Bridge Construction" (2020 Edition), unless stated otherwise. Any reference in the FDOT Standard Specifications to the ENGINEER or Department shall mean the ENGINEER on this project. Specific references are made to certain portions of the FDOT Standard Specifications to facilitate the CONTRACTOR.

   Any reference to "FDOT Standard Indexes" shall mean the FDOT Design Standards (2020 Edition).

2. **SCOPE OF WORK -** It is the general intent that the CONTRACTOR is responsible for the replacement of the existing A-14 Control Structure located within the E-84 Canal east of Darwin Boulevard. Work effort shall include removal of the existing control structure and placement of a new control structure adjacent to the existing structure, dewatering as required to facilitate the work, and replacement of the existing stormwater culvert and headwall on the north side of the facility. Removal of the existing structure can only take place once the new structure is in place and operational. Normal water levels within the E-84 Canal system will be controlled by the City Public Works Department to the extent possible. Emergency overflow or Coffer Dams may be required for above normal rainfall.

3. **MEASUREMENT AND BASIS OF PAYMENT**

   A. Progress Payments

      1. Measurement of quantities for progress payments shall be made by the CONTRACTOR. Such measurements are subject to the ENGINEER's review and correction.

      2. Measurements for progress payments shall be made on in-place quantities in accordance with the Contract Form General Requirements. Requests for partial payment for materials on order, in warehouse or yard, or stockpiled on the project site will be accepted or denied at the CITY's discretion.

      3. No item will be accepted for progress payment until all required testing has been successfully completed.

   B. Final Payment

      1. Final payment will not be made on any portion of the contract until the entire scope of work under this contract is complete.

4. **UTILITIES -** The CONTRACTOR shall be required to coordinate all work when necessary with the various utility companies in order that utility service may be maintained. The CONTRACTOR shall exercise due caution when working adjacent to such utilities. Any damage to the utilities resulting from the CONTRACTOR's operations shall be repaired at his expense. The ENGINEER has reflected on the plans those utilities he is aware of. The

locations shown are approximate only. Any work involving conflict with utility companies shall be coordinated promptly without any delay to the project.

5. **PROJECT SCHEDULE -** Within twenty-one (21) calendar days after the execution of the Contract, or at the pre-construction meeting whichever is earlier, CONTRACTOR shall submit for approval, three copies of a schedule of work showing in detail satisfactory to the ENGINEER and CITY, the order in which the CONTRACTOR proposes to carry on the work, the interdependence of activities, the date on which it will start the individual activities, including procurement of materials, plans and equipment, submission and receipt of shop drawings, duration, monetary value, resource allocation, earliest and latest starting and completion dates for each operation. The schedule shall be in the form of progress chart of suitable scale to indicate appropriately the percentage of work schedule for completion at any time. All activities are to be described so that the work is readily identifiable and the progress on each activity can be readily measured. The schedule shall be prepared in such a manner that all elements are contained on the schedule diagram (i.e., Early Start, Late Start, Early Finish, Late Finish and Duration). Separate detail sheets containing this information are not acceptable. If CONTRACTOR elects to use a computer generated critical path method schedule (CPM) the selected software and output format (including size, color, order, etc.) is to be approved and accepted by the ENGINEER before CPM preparation. The schedule shall be accompanied by a working plan which is a concise written description of CONTRACTOR's construction plan. This plan shall include but not be limited to the phasing, sequence, identification of work crews and summary of the work. CONTRACTOR shall resubmit revised schedule whenever requested to comply with such comments as may be required by the ENGINEER and CITY.

   CONTRACTOR shall enter on the above-mentioned chart the actual progress accompanied with a written description at monthly intervals and shall immediately deliver to the ENGINEER three copies thereof along with each progress payment request. If CONTRACTOR fails to submit a progress schedule within the time here prescribed, the ENGINEER may withhold approval of progress payment request until such time as CONTRACTOR submits the required progress schedule.

   If a majority of the activities have a float period less than ten (10) days, then the CONTRACTOR must provide complete details on the resource allocation as requested by the ENGINEER.

   The CONTRACTOR must provide letters from his sub-contractors that indicate their acceptance of the proposed schedule.

   The CONTRACTOR shall submit a concise written explanation of the schedule impacts attached to the delay claim and the next schedule update.

   All material, labor and equipment required to perform the work effort for this item shall be carried out by the CONTRACTOR as incidental to the bid price of the various bid items of this contract, with no additional cost to be incurred by the CITY.

6. **BORROW & WASTE -** If available, sources of borrow for this project are identified in the Special Conditions. Any borrow needed for this project shall be provided by the

CONTRACTOR at no additional expense to the CITY. Unless specified otherwise by the CITY, waste material shall be disposed of at an appropriate disposal facility.

7. **GEOTECHNICAL/CONCRETE TESTING -** Testing shall be at the expense of the CITY, except that any test not meeting specification requirements shall be charged to the CONTRACTOR. An Independent Testing Laboratory shall be selected by the CITY to provide testing services as directed by the ENGINEER. The testing laboratory shall mail a copy of all test reports directly to the CONTRACTOR with a copy to the ENGINEER. The CONTRACTOR shall forward all sign and sealed test reports for materials and components to the ENGINEER. Test reports shall include the following data:

    A. Project Name and No.
    B. Engineer's Name
    C. CITY's Name
    D. CONTRACTOR's Name
    E. Date of Sampling
    F. Technician Sampling
    G. Date of Testing
    H. Technician Testing
    I. Test Results
    J. Specification Requirements
    K. Whether or Not Test Meets Specification Requirements
    L. Signature of Supervising Professional Engineer

    The CONTRACTOR shall notify the ENGINEER when he has portions of the work ready for testing. The CONTRACTOR shall be responsible for contracting and scheduling all testing through the CITY's selected testing facility.

    The CONTRACTOR shall provide for testing of all work efforts in accordance with the appropriate FDOT Standards.

    The CONTRACTOR shall be responsible for scheduling all testing required through the CITY's independent Geotechnical Engineer and Testing Laboratory. The CONTRACTOR shall give the ENGINEER (CEI) and the Geotechnical Engineer at least one (1) day's prior notice of readiness of the work for all required inspections, tests or approvals. Should standby time occur by the testing field technician, time in excess of one (1) hour waiting for scheduled work to be completed prior to performing any required test per working day will be charged directly to the CONTRACTOR, unless previously approved by CITY. Any test not meeting specification requirements shall be charged directly to the CONTRACTOR.

8. **SURVEY WORK, CONSTRUCTION LAYOUT, AND AS-BUILT DRAWINGS -** Construction layout for horizontal and vertical control shall be performed by the CONTRACTOR. Horizontal and vertical control points are shown on the Construction Plans. CONTRACTOR shall keep one record copy of all specifications, prints, drawings, addenda, modifications and shop drawings at the site in order, and annotated to show all changes made during the construction process. CONTRACTOR shall provide ENGINEER and CITY one (1) digital file in AutoCAD format of the As-Built drawings for the entire project as well as six sets of prints signed and sealed by a licensed surveyor. The ENGINEER will provide a CADD drawing in AutoCAD as a basis for the record drawings. The As-Built

drawings are to be delivered by the CONTRACTOR to the ENGINEER within seven (7) days of Final Completion. This is critical for the certification of the facilities to the CITY and various regulatory agencies. Final payment will not be made until As-Built drawings are received and approved by the CITY.

9. **WATER RESOURCES** - The CONTRACTOR shall not discharge without permit into the waters of lakes, rivers, canals, waterways and ditches, any fuels, oils, bitumen's, garbage, sewage, or other materials which may be harmful to fish, wildlife, or vegetation, or that may be detrimental to outdoor recreation. The CONTRACTOR shall be responsible for investigating and complying with all applicable federal, state and local laws and regulations governing pollution of waters. All work under this contract shall be performed in such a manner that objectionable conditions will not be created in waters through or adjacent to the project areas. If a violation is noted during construction, all construction shall cease until the condition is corrected, at no additional cost to the CITY.

   The CONTRACTOR shall exercise extreme care to minimize degradation of water quality at the site. All necessary provisions shall be taken to ensure compliance with the water quality standards of the State of Florida. Attention is called to Chapter 17-3, Florida Administrative Code. Adequate silt containment procedures and equipment shall be used to control turbidity within state standards.

   When required by any Governmental Agency, the CONTRACTOR shall make water quality measurements and submit to Agency and ENGINEER, in addition to those required herein, assuring construction operations are in compliance with the Standards of 17-3, F.A.C. All water quality measurements shall conform to the test methods specified in Chapter 40, Part 136 of the Code of Federal Regulations.

   If any waste material is dumped in unauthorized areas, the CONTRACTOR shall remove the material and restore the area to the condition of the adjacent undisturbed area. If necessary, contaminated ground shall be excavated, disposed of as directed by the ENGINEER and replaced with suitable fill materials, compacted and finished with topsoil, all at the expense of the CONTRACTOR.

   All materials, labor and equipment needed to prosecute the work required by this Specification shall be carried out by the CONTRACTOR as incidental to the bid price of the various bid items of this Contract, with no additional cost to be incurred by the CITY.

10. **FISH AND WILDLIFE RESOURCES** - The CONTRACTOR shall at all times perform all work and take such steps required to prevent any interference or disturbance to fish and wildlife. The CONTRACTOR shall not be permitted to alter water flows or otherwise significantly disturb native habitat adjacent to the project area which are critical to fish and wildlife except as may be indicated or specified.

    All materials, labor and equipment needed to prosecute the work required by this Specification shall be carried out by the CONTRACTOR as incidental to the bid price of the various bid items of this Contract, with no additional cost to be incurred by the CITY.

11. EROSION AND SEDIMENT CONTROL MEASURES - Earthwork brought to final grade shall immediately be finished as indicated and specified. All earthworks shall be planned and conducted in such a manner as to minimize the duration of exposure of unprotected soils. Protection to erosion shall be furnished by grassing exposed slopes and unprotected soils.

Such methods as may be necessary shall be utilized on areas to effectively prevent erosion and control sedimentation.

The CONTRACTOR shall employ adequate silt containment measures and/or procedures during construction activities to control turbidity within the limits required by local, state and/or federal law and/or permit requirements.

Separate pay items for some Temporary Erosion control items are included in this Contract. The quantities to be paid under these items will be for the contract Unit Bid price for the specific item. When other items for temporary erosion control are needed, but no provision has been made for separate items in this Contact, all materials, labor and equipment needed to prosecute the work required by this Specification shall be carried out by the CONTRACTOR as incidental to the bid price of the various bid items of this Contract, with no additional cost to be incurred by the CITY.

The CONTRACTOR shall, as "operator of the facility" obtain an NPDES permit through the Florida Department of Environmental Protection for the Project. The ENGINEER'S erosion control plan is an example of items that partially may be needed to prevent erosion. The CONTRACTOR is responsible to enhance these items as needed to comply with the NPDES and State Water Quality Guidelines. Any enhancements are considered incidental to the cost of Erosion / Sediment Control. The CONTRACTOR is responsible for any fees associated with the NPDES permitting process. (The CONTRACTOR shall further; provide, install, maintain, monitor, and remove the required erosion and sediment control measures on and around the project site as needed to prevent pollution of water, detrimental effects to public or private property or damage to the work of the project. CONTRACTOR shall Construct and maintain temporary erosion control features or, where practical, construct and maintain permanent erosion control features as shown in the plans or as may be directed by the ENGINEER). The CONTRACTOR shall use temporary erosion and water pollution control features that consist of, but are not limited to, temporary grassing, temporary sodding, temporary mulching, sandbagging, slope drains, sediment basins, sediment checks, berms, baled hay or straw, floating turbidity barrier, temporary pipe plugs, staked turbidity barrier and silt fence.

All required NPDES monitoring and inspection requirements shall be considered incidental to the cost of construction.

12. ENVIRONMENTAL PROTECTION - In order to prevent and to provide for abatement and control of any environmental pollution arising from the work of the CONTRACTOR and his Subcontractors in the performance of this Contract, the CONTRACTOR shall comply with all applicable federal, state and local laws and regulations concerning environmental pollution control and abatement, and all applicable provisions of the Army Corps of Engineers manual, EM 385-1-1, entitled General Safety Requirements, in effect on the date

of the work, as well as the specifications, including the Corps of Engineers and Florida Department of Environmental Protection permits, if applicable to this project.

The CONTRACTOR shall provide and maintain environmental protection during the term of the Contract. Environmental protection measures shall be provided to control pollution that develops during normal earthwork, dredging and/or construction practices. The CONTRACTOR's operations shall comply with all federal, state, and local regulations pertaining to water, air, solid waste and noise pollution. Compliance with the provisions of this Specification by Subcontractors shall be the responsibility of the CONTRACTOR.

All materials, labor and equipment needed to prosecute the work required by this Specification shall be carried out by the CONTRACTOR as incidental to the bid price of the various bid items of this Contract, with no additional cost to be incurred by the CITY.

13. **CONTROL AND DISPOSAL OF WASTE** - Wastes shall be picked up and placed in containers that are emptied on a regular schedule. All handling and disposal shall be so conducted as to prevent contamination of the site and any other areas. On completion, the areas shall be left clean and natural looking. All sights of temporary construction and activities incidental to construction of the required permanent work in place shall be obliterated. CONTRACTOR shall transport all waste off of CITY's property and dispose of it in a manner that complies with federal, state and local requirements. This item is considered incidental to the work.

14. **DUST CONTROL -** The CONTRACTOR will be responsible to provide adequate dust control on the project. The CONTRACTOR at a minimum is required to provide watering of the project limits to avoid excessive dust. The CITY requests the use of non-potable water for dust control. The ENGINEER will only notify the CONTRACTOR one time of inadequate dust control. If the CONTRACTOR fails to respond within two (2) hours, then the CITY will provide dust control and back charge the CONTRACTOR. This item is considered incidental to the work.

15. **DEWATERING FOR CONSTRUCTION OPERATIONS –** Dewatering for Construction Operations consists of all materials, equipment and labor to perform the work described in the plans. It shall also include (1) the construction and removal of cofferdams, sheeting, bracing, etc.; (2) pumping or otherwise dewatering foundations, including rock for dewatering; (3) the removal and disposal of any existing structures or portions of structures not covered by other items in the contract, including foundations, abutments, piers, wings, obstructions, etc., found necessary to clear the site for the proposed work which are not otherwise covered under other bid items; (4) backfilling, disposing of surplus material and final cleaning, as may be necessary for the proper execution of the work.

The CONTRACTOR shall provide adequate equipment for the removal of storm or subsurface waters that 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 well point 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.

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 written 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.

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.

It should be anticipated that the water table may need to be drawn-down during excavation & filling. Therefore, the CONTRACTOR may be required to dewater in order to **maintain the water level at or below the required minimum of two (2) feet below the maximum depth at which work will occur**. This dewatering shall be continuous until construction in the subject area is complete.

Dewatering operations are subject to pollution and erosion control specifications contained herein. Pursuant to the Instructions to Bidders, the CONTRACTOR must provide SFWMD all required information to obtain a dewatering permit before these activities commence.

The bid price for this item shall include, but not be limited to, the requirements of Section 455 Structures Foundations, Article D Spread Footings of the Standard Specifications. The required manpower, equipment, material, and any other items necessary to perform these tasks shall also be included in this item. The area of the excavation or sheet pile weir refurbishment shall be maintained in a dry condition at all times, by the use of an adequate dewatering system as described in Section 455-28 Dewatering. Permitting and Water quality monitoring is incidental and included in this bid item.

At the Pre-Construction meeting the CONTRACTOR shall submit a sketch or detailed written description of the proposed dewatering system to the ENGINEER.

The basis of payment for **Dewatering Operations – Complete** shall be paid per LUMP SUM.

16. **FLOATING TURBIDITY AND STAKED SILT BARRIER -** The Unit Price for Floating Turbidity and Staked Silt Barriers shall be full compensation, including but not limited to, the Prime and/or Sub-contractor(s) personnel, equipment, and materials cost(s) required for furnishing, installing, maintaining, ad removing turbidity barriers. Install, maintain, and remove turbidity barriers to contain turbidity that may occur as the result of dredging, filling, or other construction activities which may cause turbidity to occur in the waters of the State. The CONTRACTOR may need to deploy turbidity barriers around isolated areas of concern

such as seagrass beds, coral communities, etc. both within as well as outside the right-of-way limits. The ENGINEER will identify such areas. Place the barriers prior to the commencement of any work that could impact the area of concern.

Install the barriers in accordance with the details shown in the plans or as approved by the ENGINEER. Ensure that the type barrier used and the deployment and maintenance of the barrier will minimize dispersion of turbid waters from the construction site. The ENGINEER may approve alternate methods or materials. Operate turbidity barriers in such a manner to avoid or minimize the degradation of the water quality of the surrounding waters and minimize damage to areas where floating barriers installed.

Inspect all barriers immediately after each rainfall and at least daily during prolonged rainfall. Immediately correct any deficiencies. In addition, make a daily review of the location of barriers in areas where construction activities have changed the natural contour and drainage runoff to ensure that the silt fences are properly located for effectiveness.

Payment of 50% will be made per Linear Foot upon installation and acceptance. The remaining 50% will be paid upon completion of the project.

Payment shall be made under the Bid Item for **Floating Turbidity Barrier and Staked Silt Fence** on a LINEAR FOOT basis.

17. REMOVAL OF EXISTING STRUCTURES/DEMOLITION - The bid price for this item shall include removal and proper disposal of existing structures, steel members, piping, conduits, materials and reinforcing as required to perform the work depicted in the plans. Remove the materials in such a way as to leave no obstructions to any proposed new structures, or materials.

For all demolition methods, submit for review and approval of the ENGINEER, a demolition plan that describes the method of removal and equipment to be used. In addition, for hydro-demolition, describe the method for control of water or slurry runoff and measures for safe containment of concrete fragments that are thrown out by the hydro-demolition machine.

The basis of payment for **Removal of Existing Structures/Demolition** shall be paid per LUMP SUM.

18. PIPE CULVERTS

The work specified under this section shall be in accordance with section 430 and 948-2 of the FDOT Standard Specifications.

Method of Measurement and Basis of Payment: The quantities to be paid under this section shall include all materials, labor and equipment needed to prosecute the work required by this specification and will be paid for at the contract unit bid price for the specific item with no additional cost to be incurred by the CITY.

The basis of payment for **Pipe Culvert, CAP, Elliptical 38" x 60"** shall be paid per LINEAR FOOT.

19. PERFORMANCE TURF (SOD)

All sodding work on this project shall be provided in accordance with Section 570 of the FDOT Standard Specification unless otherwise specified in the Plans, all sodding shall consist of Bahia and Saint Augustine grass sodding as per the Contract Plans. The CONTRACTOR is solely responsible for final acceptability of all sodded areas. All associated costs are included in the unit price of the sod. For issues not discussed in these specifications the CONTRACTOR is referred to Sections 570, 981, 982 and 983 of the FDOT Standard specification for Road and Bridge Construction.

The quantities to be paid under this paragraph shall include all materials, labor, and equipment needed to prosecute the work required by this specification and will be paid for at the contract unit bid price for the specific item with no additional cost to be incurred by the CITY. For the purposes of this specification, additional items for fertilizer, watering, and mowing shall be considered incidental to the provisions of the sodding.

Type: Sod shall be locally grown unless otherwise specified to conform to surrounding existing turf and shall be; healthy, with well-matted roots, be free of weeds and be supplier certified to be free of Tropical Soda Apple (solanum viarum). The CONTRACTOR will replace turf with the same type Sod removed from any areas or as specified in the plans. If no sod is specified or exists, then Bahia Type sod should be used.

Dimensions: Sod pieces shall be 1 ft x 2 ft and a minimum of 1 ¼ inches thick. ¾ inch of the sod thickness shall be roots and topsoil

Placement:

a. Sod shall be laid with the long side parallel to contours (perpendicular to the slope with the ends of the pieces butted together. Placement of sod shall proceed in this manner up the slope and end butts shall be staggered with adjoining rows.
b. The combined number of overlaps and 1 inch or greater gaps between pieces shall not exceed 5 per 100 square feet.
c. The combined number of 2 inch or greater overlaps and 2 inch or greater gaps between pieces shall not exceed 1 per 100 square feet.
d. For final acceptance no more than 10% of the sodded area may consist of dead spots of greater than ½ foot square and no more than 5% of the sodded area shall consist of dead spots of greater than 1 foot square.

Watering:

a. Sod shall be watered with ½ inch of water immediately upon placement. All sodded areas shall be maintained by watering for a minimum of two weeks (5 times per week minimum). The cost of this item shall be considered incidental to sod and plantings and is included in that line item.

Lime and Fertilizer: To assure rapid establishment of sod the CONTRACTOR is urged to apply fertilizer and lime as follows or as determined by soil testing.

a. Fertilizer: 16-4-8 – 50% of Nitrogen to be slow release
    i. 265 lb/ac as placement
    ii. 135 lb/ac at 60 days after placement

Maintenance:

a. Mowing – Grass is to be mowed to 6-inch height for final acceptance.

i. Mowing shall not remove any more than 1/3 of the grass leaves and be done with sharp blade mowers.

ii. Mowing shall not occur for 3 weeks after planting.

b.Filling, leveling, repairing washouts or erosion – CONTRACTOR shall replace patches of dead sod and repair disturbed and damaged sod immediately upon being made aware of the condition.

Payment shall be made under Item **Performance Turf (Sod) (Type)** – per SQUARE YARD.

20. PERFOMACE TURF (HYDROSEED)

1. THE REQUIREMENT

CONTRACTOR shall establish a growing, healthy turf over all areas designated on the plans. Use hydroseed on all disturbed areas. Maintain turf areas until final acceptance of all contract work in accordance with the Specifications.

2. MATERIALS

Meet the following requirements:

Turf Materials .....Section 981-FDOT Specifications
Fertilizer .....Section 982-FDOT Specifications
Water .....Section 983-FDOT Specifications

3. CONSTRUCTION METHODS

1. GENERAL

Incorporate turf installation into the project at the earliest practical time. Shape the areas to be hydroseeded to the plan typical sections and lines and grade shown in the Contract Documents. Use the methods and materials necessary to establish and maintain the initial grassing until acceptance of the Contract work. All of the permanent grassing material shall be in place prior to final acceptance.

2. SEEDING

Use of compost meeting the requirements of Section 987 as mulch is acceptable unless otherwise specified. If pest plants and/or noxious weeds manifest themselves within 30 days of placement of the hydroseed during the months April through October, within 60 days of placement of the hydroseed during the months of November through March treat affected areas by means acceptable to the CITY at no expense to the CITY.

3. HYDROSEEDING

Use equipment specifically designed for mixing the mulch, seed, fertilizer, tackifier and dye, and applying the slurry uniformly over the areas to be hydroseeded. Use mulch that does not contain reprocessed wood or paper fibers. Ensure that 50% of the fibers will be retained on a twenty-five mesh screen. Mix fertilizer as required into the hydroseeding slurry. Ensure that the dye does not contain growth or germination inhibiting chemicals. When polyacrylamide is used as part of hydroseeding mix, only anionic polymer formulation with free acrylamide monomer residual content of less than 0.05% is allowed. Cationic polyacrylamide shall not be used in any concentration. Do not spray

polyacrylamide containing mixtures onto pavement. These may include tackifiers, flocculants or moisture-holding compounds.

4. BONDED FIBER MATRIX (BFM)

Meet the minimum physical and performance criteria of this Specification for use of BFM in hydroseeding operations or temporary non-vegetative erosion and sediment control methods. Provide evidence of product performance testing, manufacturer's certification of training and material samples to the ENGINEER at least seven calendar days prior to installation. Provide documentation to the ENGINEER of manufacturer's testing at an independent laboratory; demonstrating superior performance of BFM as measured by reduced water runoff, reduced soil loss and faster seed germination in comparison to erosion control blankets. Use only BFMs that contain all components pre-packaged by the manufacturer to assure material performance. Deliver materials in UV and weather resistant factory labeled packaging. Store and handle products in strict compliance with the manufacturer's directions. When polyacrylamide is used as part of hydroseeding mix, only anionic polymer formulation with free acrylamide monomer residual content of less than 0.05% is allowed. Cationic polyacrylamide shall not be used in any concentration. Do not spray polyacrylamide containing mixtures onto pavement. These may include tackifiers, flocculants or moisture-holding compounds. Meet the following requirements after application of the formed matrix: Ensure that the tackifier does not dissolve or disperse upon rewetting. Ensure that the matrix has no gaps between the product and the soil and that it provides 100% coverage of all disturbed soil areas after application. Ensure that the matrix has no germination or growth inhibiting properties and does not form a water-repelling crust. Ensure that the matrix is comprised of materials which are 100% biodegradable and 100% beneficial to plant growth. Mix and apply the BFM in strict compliance with the manufacturer's recommendations. Apply the BFM to geotechnically stable slopes at the manufacturer's recommended rates. Degradation of BFM will occur naturally as a result of chemical and biological hydrolysis, UV exposure and temperature fluctuations. Re-application, as determined by the ENGINEER, will be required if BFM-treated soils are disturbed or water quality or turbidity tests show the need for an additional application. The work and materials for re-application, will be paid for as Unforeseeable Work.

5. WATERING

Water all areas as necessary to produce a healthy and vigorous stand of turf.

6. FERTILIZING

Fertilize as necessary to produce a healthy and vigorous stand of turf. Refer to Section 982 of the FDOT Specifications for fertilizer rates.

7. TURF ESTABLISHMENT

Perform all work necessary, including watering and fertilizing, to sustain an established turf until final acceptance, at no additional expense to the CITY. Provide the filling, leveling, and repairing of any washed or eroded areas, as may be necessary. Established turf is defined as follows: Established root system (leaf blades break before seedlings or sod can be pulled from the soil by hand). No bare spots larger than one square foot. No continuous streaks running perpendicular to the face of the slope. No bare areas comprising more than 1% of any given 1,000 square foot area. No deformation of the turf areas caused by mowing or other CONTRACTOR equipment. Monitor turf areas and

remove all competing vegetation, pest plants, and noxious weeds (as listed by the Florida Exotic Pest Plant Council, Category I "List of Invasive Species", Current Edition, www.fleppc.org). Remove such vegetation regularly by manual, mechanical, or chemical control means, as necessary. When selecting herbicides, pay particular attention to ensure use of chemicals that will not harm desired turf. Use herbicides in accordance with FDOT Specification Section 7-1.7. If at the time that all other work on the project is completed, but all turf areas have not met the requirements for established turf set forth in 39.04, continuously maintain all turf areas until the requirements for established turf set forth in 39.04 have been met. During the entire establishment period and until turf is established in accordance with this specification, continue inspection and maintenance of erosion and sedimentation control items in accordance with FDOT Specification Section 104. Take responsibility for the proper removal and disposal of all erosion and sedimentation control items after turf has been established. Determination of an established turf will be based on the entire project and not in sections. Upon the determination by the ENGINEER that the requirements of "Turf Establishment" have been met and an established turf has been achieved and all erosion and sedimentation control items have been removed, the ENGINEER will release the CONTRACTOR from any further responsibility provided for in this Specification. The CONTRACTOR's establishment obligations of this specification will not apply to deficiencies due to the following factors, if found by the ENGINEER to be beyond the control of the CONTRACTOR, his Subcontractors, Vendors or Suppliers:

a. Determination that the deficiency was due to the failure of other features of the Contract.

b. Determination that the deficiency was the responsibility of a third party performing work not included in the Contract or its actions. The CITY will only pay for replanting as necessary due to factors determined by the CITY to be beyond the control of the CONTRACTOR.

8. RESPONSIBLE PARTY

For the purposes of this Specification, the CONTRACTOR shall be the responsible party throughout construction and establishment periods. Upon final acceptance of the Contract in accordance with FDOT Specification Section 5-11, the CONTRACTOR's responsibility for maintenance of all the work or facilities within the project limits of the Contract will terminate in accordance with FDOT Specification Section 5-11; with the sole exception that the facilities damaged due to lack of established turf and the obligations set forth in this Specification for hydroseed shall continue thereafter to be responsibility of the CONTRACTOR as otherwise provided in this Section.

9. METHOD OF MEASUREMENT

The quantities to be paid for will be plan quantity in square yards based on the area shown in the plans, completed and accepted.

10. BASIS OF PAYMENT

Prices and payments will be full compensation for all work and materials specified in this specification. Payment will be made under the SQUARE YARD bid item for **Performance Turf (Hydroseed)**.

21. **CONCRETE CLASS II, ENDWALLS** - The work specified shall consist of the construction of the concrete endwall using Class II Concrete. The work effort shall be in accordance with Section 400 of the FDOT Standard Specifications.

    The quantities to be paid under this paragraph shall include all materials, labor, and equipment needed to prosecute the work required by this specification and will be paid for at the contract unit bid price for the specific item with no additional cost to be incurred by the CITY. Price and payment will be full compensation for all work specified in this Section, including all materials, hauling, excavation, and backfill.

    Payment shall be made under **Concrete Class II, Endwalls** - per CUBIC YARD of Concrete.

22. **CONCRETE CLASS IV, BULKHEAD** - The work specified shall consist of the construction of the bulkhead wall cap on top of the sheet piling. The work effort shall be in accordance with Section 400 of the FDOT Standard Specifications and the Construction Plans.

    The quantities to be paid under this paragraph shall include all materials, labor, and equipment needed to prosecute the work required by this specification and will be paid for at the contract unit bid price for the specific item with no additional cost to be incurred by the CITY. Price and payment will be full compensation for all work specified in this Section, including all materials, transporting, formwork, work required to obtain the required concrete finish, pumping or other methods to place concrete.

    Payment shall be made under **Concrete Class IV, Bulkhead** - per CUBIC YARD of concrete.

23. **REINFORCING STEEL, BULKHEAD** - The work specified shall consist of the construction of the reinforcing steel to be placed within the bulkhead wall cap on top of the sheet piling. The work effort shall be in accordance with Section 415 and 931 of the FDOT Standard Specifications.

    The quantities to be paid under this paragraph shall include all materials, labor, and equipment needed to prosecute the work required by this specification and will be paid for at the contract unit bid price for the specific item with no additional cost to be incurred by the CITY. Price and payment will be full compensation for all work specified in this Section, including all materials, hauling, all welding, all clips, spacers, ties, mechanical couplers, etc., and wire or other material used for fastening the reinforcement in place. If spliced bars are used when full length bars might reasonably be required, the quantity paid for will be only that which would be obtained if full length bars were used, with no allowance for lap.

    Payment shall be made under **Reinforcing Steel , Bulkhead** - per POUND of steel.

24. **SHEET PILING STEEL -** The work specified shall consist of the construction of the sheet piling weir for the control structure. The work effort shall be in accordance with Section 455 B. Piling of the FDOT Standard Specifications and the Construction Plans.

The quantities to be paid under this paragraph shall include all materials, labor, and equipment needed to prosecute the work required by this specification and will be paid for at the contract unit bid price for the specific item with no additional cost to be incurred by the CITY. Price and payment will be full compensation for all work specified in this Section, including furnishing and installing steel sheet piling including preformed holes and coating, but will not include furnishing and placing anchors when an anchored wall system is designed and detailed in the Plans. In such cases, furnishing and installing anchors will be paid separately..

Payment shall be made under **Sheet Piling Steel,** - per SQUARE FOOT of piling.

25. PIPE GUIDERAIL - ALUMINUM - The work specified shall consist of the construction of the pipe guiderail to be placed in the bulkhead of the control structure. The work effort shall be in accordance with Section 515 of the FDOT Standard Specifications and the Construction Plans.

The quantities to be paid under this paragraph shall include all materials, labor, and equipment needed to prosecute the work required by this specification and will be paid for at the contract unit bid price for the specific item with no additional cost to be incurred by the CITY. Price and payment will be full compensation for all work specified in this Section, including all materials, mounting brackets, anchors, and connections to the bulkhead/Wall Cap.

Payment shall be made under **Pipe Guiderail - Aluminum,** - per LINEAR FOOT of railing.

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TECHNICAL SPECIFICATIONS

SPECIAL CONDITIONS

1. **CITY FURNISHED ITEMS -** The CONTRACTOR shall bid all items for the project listed in the "Bid Form" based upon the material, labor, etc. necessary to complete each of the items.

2. **SURVEY CONTROL -** The bench marks for survey control for the project have been indicated in the construction plans. The location of these control points may at times be located within the construction area. It is the responsibility of the CONTRACTOR to locate, preserve, or offset these points as required to maintain proper survey control for the project for the duration of the construction efforts. Control points shall be re-established upon completion of construction at the expense of the CONTRACTOR.

Grades shown are finished grades, and B.M. Datum is North American Vertical Datum 1988 (NAVD-1988) as noted in the plans.

3. **CONSTRUCTION ITEMS IN THE BID FORM** - Construction items in the Bid Form may be increased, decreased or deleted at the direction of the ENGINEER & CITY with no unit price adjustment.

4. **EXISTING SIGNS** - Existing Signs are to be relocated shall not be damaged during removal and prior to or during installation. If damage occurs, it shall be the CONTRACTOR's responsibility to repair or replace the signage at no additional cost to the CITY.

5. **REMOVAL OF EXISTING UNDERGROUND PIPE** - This shall be performed in accordance with the EPA guidelines found in 40 CFR Section 61.141.

6. **SEQUENCE OF CONSTRUCTION** - The construction sequence shall be established by the CONTRACTOR and forwarded to the CITY and ENGINEER for approval through the Project Schedule. The Schedule shall be prepared using a Critical Path Method or other approved project-scheduling tool.

7. **CONTRACT SUPERVISOR -** The Contract Supervisor for the CITY is John Dunton of the City of Port St. Lucie Engineering Department and he may be reached at (772) 344-4035.

8. **ENGINEER** - The "Engineer of Record" for the project is Mr. Stefan K. Matthes, P.E., Culpepper & Terpening, Inc. and can be reached at (772) 464-3537, a Professional Engineer duly licensed and registered in the State of Florida and designated by the CITY as Design Engineer.

9. PRIVATE PROPERTY NOTICES - The CITY, will distribute notices (door hanger) to residents/occupants, 30 days in advance of construction. The notice will provide general information and allow the resident/occupant the opportunity of removing any items within the construction area they specifically desire to remove.

10. PROJECT PROGRESS MEETINGS - Project progress meetings will be held weekly at the CITY Engineering Department, or other mutually convenient location as designated by the ENGINEER. Representatives of CITY, ENGINEER, and CONTRACTOR are required to attend. Other representatives, such as utility company personnel may attend as necessary.

11. PROTECTION OF GOPHER TORTOISES - Should the CONTRACTOR discover any tortoises on the site, the CONTRACTOR shall notify the CITY and the CITY will take the measures necessary to relocate the tortoise(s). No extras or additional payments will be made to the CONTRACTOR for the protection of Gopher Tortoises. Prior to construction the CITY will have all known gopher tortoises relocated from the project site.

12. DEBRIS LOCATED WITHIN PROJECT LIMITS - The CONTRACTOR is advised that any existing construction and demolition debris located within the project limits should be removed and the costs to be included in the price of clearing and grubbing. The material shall be disposed in accordance with these specifications.

13. RETESTS AND STANDBY TIME FOR SOILS TESTING COMPANY – The costs for all retests and standby time for the testing companies will be paid by the CONTRACTOR.

14. VIDEO TAPE/DVD - The CONTRACTOR is required to videotape the project area prior to construction commencement. CONTRACTOR shall provide a copy of the videotape/DVD of the Project site to CITY for approval once complete and prior to issuance of Notice to Proceed. The cost of this shall be included in the Lump Sum item for Mobilization.

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ATTACHMENT A

Construction Plans for

City of Port St. Lucie
A14 Drainage Control Structure Replacement
City of Port St. Lucie, Florida

Prepared by CULPEPPER & TERPENING, Inc.

(12 pages follow as a separate attachment)

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