ENGINEERING DESIGN STANDARDS FOR WATER RESOURCE FACILITIES

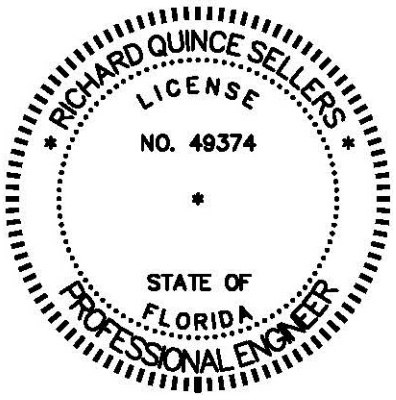
Myakka State Forest

Water Quality and Bank Stabilization

Project ID # 20TW0002953

TECHNICAL SPECIFICATIONS

These Southwest Florida Water Management District Standard Technical Specifications have been reviewed, modified, and found appropriate for use for this project.



Richard Q Sellers

Digitally signed by Richard Q Sellers
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This item has been digitally signed and sealed by Richard Quince Sellers, PE #49374 on the date adjacent to the seal.

Printed copies of this document are not considered signed and sealed and the Signature must be verified on any electronic copies.

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Certificate of Authorization #27013

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END OF DIRECTORY

SECTION 01010 SUMMARY OF WORK

PART 1 - GENERAL

1.1 SUMMARY: This SECTION summarizes the WORK of the Project as covered in detail in the complete Contract Documents. This is a general summary and is not intended to be complete and all-inclusive of the required WORK items.

1.2 PROJECT DESCRIPTION:

Description of Total Project: The Myakka State Forest (the Forest) water quality and bank stabilization project located in Sarasota County, Florida involves approximately 1.5 acres of land clearing, 4,000 cubic yards of earthwork, 80 feet of drainage pipe, wetland plantings, and two earthen water level restoration structures having rubble rip-rap side slope protection and topped with aggregate filled 6" polyethylene geocell containment system on prepared subgrade. Included with this project are pre-construction video, erosion control, survey layout and record drawing survey, maintenance of traffic, and project signage.

A. Access to the site shall be coordinated with the Florida Forestry Service and is through a gated entrance at the west end of Foresman Boulevard off of Jennings Boulevard. The site contains environmentally sensitive lands requiring conformance to Florida Department of Environmental Protections and the U.S. Army Corps of Engineers permits. Visitors to the Forest shall be restricted from designated work areas. The work shall be contained with the Forest boundaries.

1.3 RELATED CONTRACT ACTIVITIES:

A. The CONTRACTOR shall provide adequate bank protection/stabilization to protect the general public as well as the job site. The CONTRACTOR shall revegetate embankments after grading. CONTRACTOR shall submit an embankment protection plan for DISTRICT approval.

B. CONTRACTOR shall not harm wildlife while accessing the project area. The CONTRACTOR shall coordinate with DISTRICT and DISTRICT's Consultant regarding compliance with wildlife issues prior to start of work. The CONTRACTOR shall coordinate with entity in charge of gopher tortoise survey prior to start of work.

C. Temporary staging, laydown, and parking areas to be determined in coordination with and subject to approval by the DISTRICT staff. All areas to be located within the Project site, unless otherwise acceptable to the DISTRICT.

1.4 WORK PERFORMED BY OTHERS:

A. The Florida Forestry Service may have completed some of the work activities due to maintenance and/or repair urgency.

B. A gopher tortoise survey will be conducted prior to start of work by DISTRICT or DISTRICT representative. Burrow locations and setbacks will be flagged and must be avoided.

1.5 CONTRACTOR'S USE OF PREMISES:

A. During construction activities, the CONTRACTOR shall be responsible for maintaining all access roads in good condition, including grading and drainage.

1.6 DISTRICT'S USE OF PREMISES:

A. Partial DISTRICT Occupancy: The DISTRICT reserves the right to occupy and to place and install equipment in areas of the Project, prior to Substantial Completion provided that such occupancy does not interfere with completion of the WORK. Such placing of equipment and

partial occupancy shall not constitute acceptance of the WORK.

1.7 WORK SEQUENCE, COORDINATION ACTIVITIES AND SCHEDULED DATES:

A. General: The CONTRACTOR shall coordinate its WORK with other adjacent contractors, landowners and DISTRICT activities, with specific attention to access and staging areas. Construction sequence shall be determined by CONTRACTOR subject to the following needs for continuous access and operation by others.

B. Suggested Construction Sequence: The CONTRACTOR may suggest a sequence of events with modifications to the sequence provided the access and operation requirements are satisfied and compliance with the overall contract period is achieved.

C. Scheduled Events: Schedule the WORK to conform to the following events and dates, and to provide for coordination with the WORK performed by others.

1. Refer to the Florida Forestry Service events, if any.

D. Bypass Flows: The CONTRACTOR shall maintain a minimum bypass flow of 30 cfs with a maximum velocity of 2.5 fps at all times during construction.

1.8 LIST OF DRAWINGS:

A. Contract Drawings:

1. Cover Sheet
2. Master Plan
3. Flow-way Plan & Profile
4. Flow-way/Low Water Access Crossing Plan & Profile
5. Water Quality Treatment Swale Plan & Profile
6. Foresman Blvd. Plan & Profile
7. Foresman Blvd. Plan & Profile
8. Foresman Blvd. Plan & Profile
9. Water Level Restoration Structure
10. Details
11. Erosion Control Plan
12. General and Construction Notes
13. Planting Plan
14. Planting Plan
15. Jurisdictional Lines / Wetland Impacts
16. Project Aerial

B. Reference Materials:

1. The following reference materials are available: These materials are for reference only, are provided as-is, are not contractual documents, and do not replace the CONTRACTOR's due diligence in bid preparation. These items include environmental reports, pictures, permits, geotechnical reports and soil borings historic aerials.

a. Geotechnical Memorandum on the Myakka State Forest Water Quality and Bank Stabilization, AIM Engineering & Surveying, Inc., September 30, 2017

b. FDEP Permit 0368844-001 EG

c. USACE Permit Number: SAJ-2017-02628 (NW-RGH)

END OF SECTION

SECTION 01050 FIELD ENGINEERING

PART 1 - GENERAL

1.1 SCOPE:

A. Summary of Work:

1. The CONTRACTOR shall engage a Professional Engineer of the discipline required, registered in the State of Florida, to perform engineering services for temporary facilities including the design of shoring systems, shores, earth and water retaining systems, forms, temporary erection supports, and similar items provided by the CONTRACTOR as part of its means and methods of construction.
2. The CONTRACTOR shall engage a Professional Surveyor and Mapper registered in the State of Florida to perform the necessary layout, survey control and monumentation.
3. The CONTRACTOR shall provide one set of As-Built Drawings depicting all elevations in NAVD 88 (North American Vertical Datum 88).

B. Related Work Specified Elsewhere:

1. SECTION 01300 - Submittals
2. SECTION 01700 – Contract Closeout
3. SECTION 02200 – Earthwork

1.2 SUBMITTALS:

A. Submit in accordance with SECTION 01300.

PART 2 - CONTRACTOR CONSTRUCTION STAKING

2.1 DESCRIPTION: In connection with this WORK, CONTRACTOR shall:

A. Perform all construction layout and reference staking necessary for the proper control and satisfactory completion of the WORK.

B. Run a level circuit between vertical control points indicated to check plan benchmarks and establish new benchmarks where necessary.

2.2 CONSTRUCTION REQUIREMENTS:

A. The CONTRACTOR's personnel performing the construction staking shall work under the direct supervision of a Florida licensed Professional Engineer or Florida licensed Professional Surveyor and Mapper. Submit name and address of individual responsible for surveying to the DISTRICT prior to start of survey activities.

B. The CONTRACTOR shall be solely and completely responsible for the accuracy of the line and grade of all features of the WORK. Any errors or apparent discrepancies found in previous surveys, plans, or specifications shall be called to the attention of the DISTRICT by the CONTRACTOR for correction or interpretation prior to proceeding with the WORK.

C. Field notes shall be kept in standard, bound field notebooks in a clear, orderly, and neat manner consistent with standard engineering and/or surveying practices.

D. The CONTRACTOR shall be responsible for the placement and preservation of adequate ties and reference to all control points, whether established by him or found on the Project, necessary for the accurate reestablishment of all base lines or centerlines shown on the Drawings. All land ties (i.e. section corners, fractional section corners, and similar items)

that may be lost or destroyed during construction shall be carefully referenced and replaced.

E. The supervision of the CONTRACTOR's construction engineering personnel shall be the responsibility of the CONTRACTOR; any deficient engineering layout or construction WORK which may be the result of inaccuracies in CONTRACTOR's staking operations or of CONTRACTOR's failure to report inaccuracies found in WORK previously done by the Design Engineer shall be corrected at the expense of the CONTRACTOR.

F. Station Identification: On linear elements of construction (such as levees, canals, and similar items) the CONTRACTOR shall place temporary identifying signs at intervals no greater than 500 feet using four (4) foot sections of one (1) inch by four (4) inches lumber driven into the ground. The signs shall identify the station at that location.

G. In order to expedite the commencement of construction operations, the staking operation may commence prior to the issuance of the Notice to Proceed. The CONTRACTOR shall obtain written approval of the DISTRICT prior to commencing staking.

2.3 SURVEYING STANDARDS for stilling wells and water control structures:

A. A permanent mark shall be established identifying the elevation measuring point on the rim of all stilling wells.

1. All vertical elevations shall commence from a minimum of two (2) National Geodetic Survey (NGS) second order or better published benchmarks.
2. All elevations shall be established to NGS third order standards and certified to those standards by a Professional Surveyor and Mapper registered in the State of Florida.
3. All level runs shall be double run (forward and back) or looped into two (2) NGS second order or better published benchmarks.
4. A Site benchmark shall be set if one does not exist. The benchmark shall consist of a minimum of two (2) 80-pound bags of concrete mix, a ferrous piece of material able to be located with a magnetic locator, and a survey cap (supplied by the DISTRICT) stamped with the Site designation or DISTRICT approved alternative.
5. All elevations shall be established in NAVD 88 with the datum offset for conversion to NGVD 29. Datum offsets shall be made using the CORPSCON 6.0.1 or the most recent version. The datum conversion to NGVD 29 shall be made from the closest benchmark. The NGVD 29 conversions shall be accurate to 0.01 feet.
6. State Plane Coordinates (NAD 83/99) shall be established at all stilling well and benchmark locations with a positional accuracy of +/- three feet.
7. A DISTRICT benchmark description sheet shall be completed for each set benchmark.
8. If there are no second order or better published benchmarks within six miles of the site, contact the DISTRICT Surveying & Mapping Section representative at (561) 682-6688 prior to commencement.
9. Contact the DISTRICT Survey & Mapping Section prior to commencement to check for previously established site benchmarks that may be suitable to use.

B. All structures shall have a permanent benchmark mounted as shown on the Drawings. The marker for the benchmark can be obtained from the DISTRICT Survey & Mapping Section, (352) 796-7211. The CONTRACTOR shall only stamp or engrave the benchmark identification and not the elevation.

C. The CONTRACTOR shall install staff gauge in accordance with SECTION 02781.

2.4 RECORDS AND SUBMITTALS:

A. Submittal:

1. Provide DISTRICT a copy of the designs described in Paragraph 1.01 signed and

sealed by the Florida registered Professional Engineer.

2. Provide DISTRICT the data required for the individual responsible for layout and records as required in Paragraph 2.02 A.

3. Provide DISTRICT one (1) copy of the Preliminary Surveyor's Report (MS Word), and two (2) copies of the final signed, sealed and certified Surveyor's Report to the DISTRICT.

   a. At a minimum, the report shall include: an overall Project description, location sketches, field notes, equipment used, pictures and an NAD 83/99 state plane coordinate (RTK) on each new benchmark (if applicable).

   b. A CD containing: Surveyor's name and logo, Surveyor's Report, digital pictures, benchmark description sheets and any other associated data.

B. Records: At the end of the Project, submit to the DISTRICT a certified Site survey showing coordinates and elevations of the completed WORK. These are part of the record documents required in SECTION 01700.

C. Cross-sections: Canal and Levee cross-sections shall be submitted as specified in SECTION 02200.

END OF SECTION

SECTION 01065 PERMITS AND FEES

PART 1 - GENERAL

1.1 Unless otherwise specified, the CONTRACTOR shall obtain and pay for any permits and licenses related to the work as provided for in the Contract Documents, except as otherwise provided herein.

1.2 The CONTRACTOR will be issued copies of all permits obtained by the DISTRICT at the pre-construction conference. A copy of the permits shall be posted at the site at all times during construction. The CONTRACTOR shall be responsible for familiarizing themself with the permits and shall abide by the permit conditions at all times.

1.3 Work shall be conducted and shall result in construction of the improvements of this project, in full accordance with the conditions of the permits granted for the project.

1.4 The CONTRACTOR is advised that a Florida Department of Environmental Protection NPDES permit for construction sites having over one (1) acre of soil disturbance is required and the permit fee is $250.

END OF SECTION

SECTION 01071 STANDARD REFERENCES

Wherever used in the project manual, the following abbreviations will have the meanings listed:

AA	Aluminum Association Incorporated 818 Connecticut Avenue, NW Washington, DC 20006
AABC	Associated Air Balance Council 1518 K Street NW Washington, DC 20005
AAMA	American Architectural Manufacturers Association 2700 River Road, Suite 118 Des Plaines, IL 60018
AASHTO	American Association of State Highway and Transportation Officials 444 North Capitol Street, NW, Suite 225 Washington, DC 20001
ABMA	American Bearing Manufacturers Association 2025 M Street, NW Suite 800 Washington, DC 20036
ACI	American Concrete Institute 38800 Country Club Drive Farmington Hills, MI, 48331
AEIC	Association of Edison Illuminating Companies 600 18th Street N Birmingham, Al 35203
AFBMA	Anti-Friction Bearing Manufacturers Association
AGA	American Gas Association 400 N. Capital Street, NW Suite 450 Washington, DC 20001
AGMA	American Gear Manufacturer's Association 500 Montgomery Street, Suite 350 Alexandria, VA 22314
AHA	American Hardboard Association 1210 West Northwest Hwy Palatine, IL 60067
AISC	American Institute of Steel Construction One East Wacker Drive, suite 700 Chicago, IL 60601
AISI	American Iron and Steel Institute 1000 16th Street, NW Washington, DC 20036

AITC	American Institute of Timber Construction 333 West Hampden Avenue Englewood, CO 80110
ALSC	American Lumber Standards Committee P. O. Box 210 Germantown, MD 20874
AMCA	Air Movement and Control Association, Inc. 30 West University Drive Arlington Heights, IL 60004
ANSI	American National Standards Institute, Inc. 25 West 43rd Street New York NY 10036
APA	American Plywood Association P.O. Box 11700 Tacoma, WA 98411
API	American Petroleum Institute 1220 L Street, NW Washington, DC 20005
AHRI	Air-Conditioning Heating and Refrigeration Institute 1814 North Fort Myer Drive Arlington, VA 22209
ASCE	American Society of Civil Engineers 345 East 47th Street New York, NY 10017
ASCII	American Standard Code for Information Interchange United States of America Standards Institute 10 East 40th Street New York, NY 10016
ASE	American Standard Safety Code for Elevators, Dumbwaiter and Escalators American National Standards Institute/ASME A17.1/CSA B44 1430 Broadway New York, NY 10018
ASHRAE	American Society of Heating, Refrigeration and Air Conditioning Engineers United Engineering Center 1791 Tullie Circle, N.E. Atlanta, GA 30329
ASME	American Society of Mechanical Engineers Three Park Avenue New York, NY 10016
ASTM	American Society for Testing and Materials 1916 Race Street Philadelphia, PA 19103

AWPA	American Wood Preservers Association P.O. Box 361784 Birmingham, AL 35236
AWPB	American Wood Preservers Bureau 7962 Conell Court P. O. Box 5283 Lorton, VA 22079
AWPI	American Wood Preservers Institute 1945 Old Gallows Road, Suite 150 Vienna, VA22182
AWI	Architectural Woodwork Institute 46179 Westlake Drive, Suite 120 Potomac Falls, VA 20165
AWS	American Welding Society 550 NW Lejune Road Miami, FL 33126
AWWA	American Water Works Association 6666 West Quincy Avenue Denver, CO 80235
BHMA	Builders Hardware Manufacturers Association 355 Lexington Avenue, 17th Floor New York, NY 10017
BOCA	Building Officials and Code Administrators 17926 Halstead Homewood, IL 60430
CBMA	Certified Ballast Manufacturers Association 2120 Keith Building Cleveland, OH 44115
CMAA	Crane Manufacturers Association of America (Formerly called: Overhead Electrical Crane Institute) (OECI) 8720 Reds Oak Bloulevard, Suite 201 Charlotte, NC 28217
CRSI	Concrete Reinforcing Steel Institute 933 North Plum Grove Road Schaumburg, IL 60173
CSA	Canadian Standards Association 155 Queen Street, Suite 1300 Ottawa, Ontario, CA K1P6L1
DEMA	Diesel Engine Manufacturer's Association 122 East 42nd Street New York, NY 10017

DHI	Door Hardware Institute 14150 Newbrook Drive, Suite 200 Chantilly, VA20151
DIS	Division of Industrial Safety California Department of Industrial Relations 2422 Arden Way Sacramento, CA 95825
EEI	Edison Electric Institute 701 Pennsylvania Avenue, NW Washington, DC 20004
EIA	Electronic Industries Alliance 2001 Eye Street, NW Washington, DC 20006
EJMA	Expansion Joint Manufacturer's Association 25 North Broadway Tarrytown, NY 10591
EPA	Environmental Protection Agency Region 4 Sam Nunn Atlanta Federal Center 61 Forsyth Street, SW Atlanta, GA 30303-3104
ESO	Electrical Safety Order, California Administrative Code, Title 8, Chap. 4, Subarticle 5 Office of Procurement, Publications Section P. O. Box 20191 8141 Elder Creek Road Sacramento, CA 95820
FAC	Florida Administrative Code
FDEP	Florida Department of Environmental Protection 3900 Commonwealth Boulevard, M.S. 49 Tallahassee, Florida 32399
FEDSPEC	Federal Specifications General Services Administration Specification and Consumer Information Distribution Branch Washington Navy Yard, Bldg. 197 Washington, DC 20407
FEDSTDS	Federal Standards (see FEDSPECS)
FM	Factory Mutual Research 1151 Boston-Providence Turnpike Norwood, MA 02062
GANA	Glass Association of North America 800 SW Jackson Street, Suite 1500 Topeka, Kansas 66612

HEI	Heat Exchange Institute 1300 Summer Avenue Cleveland, OH 44115
HI	Hydraulic Institute 1230 Keith Building Cleveland, OH 44115
HPVA	Hardwood Plywood and Veneer Association 1825 Michael Faraday Drive Reston, VA 20190
IAPMO	International Association of Plumbing and Mechanical Officials 5001 E. Philadelphia Street Ontario, CA 91761
ICBO	International Conference of Building Officials 5360 South Workman Mill Road Whittier, CA 90601
ICEA	Insulated Cable Engineers Association P. O. Box P South Yarmouth, MA 02664
ICRI	International Concrete Repair Institute 10600 West Higgins Road, Suite 607 Rosemont, IL 60018
IEEE	Institute of Electrical and Electronics Engineers, Inc. 3 Park Avenue, 17th Floor New York, NY 10016-5997
IES	Illuminating Engineering Society c/o United Engineering Center 120 Wall Street Floor 17 New York, NY 10005
ISA	Instrument Society of America 67 Alexander Drive Research triangle Park, NC 27709
ISO	International Organization for Standardization 1, ru de Varembé, Case Postale 56 CH-1211 Genna 20, Switzerland
JIC	Joint Industrial Council 7901 Westpark Drive McLean, VA 22101
MFMA	Metal Framing Manufacturers Association 401 Michigan Avenue Chicago, IL 60611

MILSPEC	Military Specifications Naval Publications and Forms Center 5801 Tabor Avenue Philadelphia, PA 19120
MSS	Manufacturers Standardization Society of the Valve and Fittings Industry, Inc. 127 Park Avenue, N.E. Vienna, VA 22180
NAAMM	National Association of Architectural Metal Manufacturers 800 Roosevelt rd bldg C, Suite 312 Glen Ellyn, IL 60137
NACE	National Association of Corrosion Engineers P. O. Box 986 Katy, TX 77450
NEC	National Electrical Code National Fire Protection Association 470 Atlantic Avenue Boston, MA 02210
NECA	National Electrical Contractors Association 3 Bethesda Metro Center, Suite 1100 Bethesda, MD 20814
NELMA	Northeastern Lumber Manufacturers Association, Inc. 272 Turtle Road P. O. Box 87A Cumberland Center, ME 04021
NEMA	National Electrical Manufacturer's Association 1300 N. 17th Street, Suite 1752 Rosslyn, VA 22209
NESC	National Electric Safety Code American National Standards Institute 1430 Broadway New York, NY 10018
NETA	InterNational Electrical Testing Association 3050 Old Centre Avenue, Suite 102 Portage, MI 49024
NFP	National Forest Products Association (Formerly National Lumber Manufacturer's Association) 1619 Massachusetts Avenue Washington, DC 20036
NFPA	National Fire Protection Association Batterymarch Park Quincy, MA 02269
NHLA	National Hardwood Lumber Association P. O. Box 34518 Memphis, TN 38184-0518

NIST	National Institute of Standards and Technology 100 Bureau Drive, Suite 1070 Gaithersburg, MD 20899-1070
NSF	National Sanitation Foundation P.O. Box 130140 789 N. Dixoboro Road Ann Arbor, MI 48113
OSHA	Occupational Safety and Health Act U.S. Department of Labor Occupational and Health Administration San Francisco Regional Office 200 Constitution Avenue Washington, DC 20210
PCI	Prestressed Concrete Institute 200 W. Adams Street, Suite 2100 Chicago, IL 60606
PPIC	The Plumbing & Piping Industry Council, Inc. 135 Calle Catalina Place Houston, TX 77007
RIS	Redwood Inspection Service California Redwood Association 818 Grayson Road, Suite 201 Pleasant Hill, CA 94523
RLM	Reflector and Lamp Manufacturers Standard Institute
RMA	Rubber Manufacturers Association 1400 K Street Washington, DC 20005
SAE	Society of Automotive Engineers 400 Commonwealth Drive Warrendale, PA 15096
SBC	Standard Building Code Published by SBCCI
SMC	Standard Mechanical Code Published by SBCCI
SBCCI	Southern Building Code Congress International 1116 Brown-Marx Building Birmingham, AL 35203
SCMA	Southern Cypress Manufacturers Association 805 Sterick Bldg. Memphis, TN 38103

SDI	Steel Door Institute 30200 Detroit road Westlake, OH 44145
SMACNA	Sheet Metal and Air Conditioning Contractors National Association, Inc. 4201 Lafayette Center Drive Chantilly, VA20151
SPC	Society for Protective Coatings 40 24th Street, 6th Floor Pittsburgh, PA 15222
SPI	Society of the Plastics Industry, Inc. 1667 K Street, NW Suite 1000 Washington, DC 20006
SPIB	Southern Pine Inspection Bureau P.O. Box 10915 Pensacola, Fl 32524
SSPC	The Society for Protective Coatings (formerly called: Steel Structures Painting Council) 40 24th Street, 6th Floor Pittsburgh, PA 15222-4656
SSPWC	Standard Specifications for Public Works Construction Building News, Inc. 3055 Overland Avenue Los Angeles, CA 90034
TEMA	Tubular Exchanger Manufacturer's Association 3251 Corte Malpaso, Suite 507 Camarillo, CA 93012
UL	Underwriters Laboratories Inc. 2600 NW Lake Road Camas, WA 98607
USBR	Bureau of Reclamation U.S. Department of Interior Engineering and Research Center Denver Federal Center, Building 67 Denver, CO 80225
USACE	United States Army Corps of Engineers Jacksonville District P. O. Box 4970 Jacksonville, FL 32232-0019
WCLIB	West Coast Lumber Inspection Bureau 6980 SW Varns Street P. O. Box 23145 Tigard, OR 97223

WWPA Western Wood Products Association
(Formerly called: West Coast Lumbermen's Association (WCLA))
522 SW 5th Avenue, Suite 500
Portland, OR 97204

END OF SECTION

SECTION 01150

MEASUREMENT AND PAYMENT

1.1 GENERAL

A. All pay items under this contract shall be paid for in accordance with this section.

B. Contingency Allowance: The Contractor shall not use Contingency Allowance without written approval from the DISTRICT

C. The Contractor shall accept compensation provided under the terms of this Contract as full payment for furnishing all materials and for performing all work contemplated and embraced under this Contract. Such compensation shall also be for any and all loss or damage arising out of the nature of the work, or from the action of the elements, or from any unforeseen difficulties or obstruction encountered during the Contract period until final acceptance by the DISTRICT.

D. The Contractor shall prepare and submit a Schedule of Values and Progress Schedule to the DISTRICT for approval. The Schedule of Values and Progress Schedule shall be the primary means of control of the Work and will be the basis for scheduling all work and for determination of progress payments. The Schedule of Values shall subdivide the work into its component parts for each lump sum pay item below in sufficient detail to serve as the basis for estimating percent complete to support progress payments during construction. An unsupportable or unreasonable allocation of the contract lump sum price to any one of the activities and/or work items shall be justification for the rejection of the Schedule of Values. The total sum of the individual values in the Schedule of Values for each of the activities shall equal the total lump sum contract price minus contingency.

E. Any item not indicated in the Bid Response Form or in this section but shown on the plans, shall be included as part of the lump sum quantity for Mobilization.

F. It is the Contractor's responsibility to perform a detailed quantity take-off from the plans to determine actual quantities for ordering and delivery purposes. The DISTRICT will not be responsible for quantities ordered in excess of those installed and constructed.

G. The DISTRICT shall withhold a retainage on each progress payment in accordance with the contract documents. Retainage shall be released to the Contractor upon satisfaction of all contractual obligations and the final acceptance of the completed work by the DISTRICT.

H. The Contractor shall consider both the construction plan set in conjunction with the technical specifications and contract documents in developing their bid. As specified in 1.1.E above, the cost for any item that is identified on the construction plans, but not included in the Bid Response Form shall be included in the lump sum quantity for Mobilization.

1.2 PAY ITEM DESCRIPTIONS

A. Mobilization

1. General - The work specified under this section shall consist of the preparatory work and operations necessary to mobilize and begin work on the project. This shall include, but is not limited to, those operations necessary for the movement of personnel, equipment, supplies, and incidentals to the project site; the establishment of temporary offices, buildings, safety equipment and first-aid supplies, sanitary and other facilities required by these Contract documents; compliance with all applicable federal, state and local regulations; preparation and implementation of a stormwater pollution prevention plan; and all project documentation, including but not necessarily limited to video photography and aerial photography, specified by these Contract documents. This item also includes installation of project signage.

   The cost of Bonds and any other required insurance, consideration for indemnification to the Owner and the Engineer, and any other pre-construction expenses necessary for the start of the work, excluding the cost of construction materials, shall also be included in this section.

2. Payment: The work specified under this section shall be paid for at the Contract lump sum price for Mobilization and shall be in accordance with the following schedule:

PERCENT OF ORIGINAL CONTRACT AMOUNT EARNED	ALLOWABLE PERCENT OF THE LUMP SUM PRICE FOR MOBILIZATION
5	25
10	50
25	75
50	100

   Partial payment shall be limited to ten percent (10%) of the original Contract amount for the project. Any remaining amount will be paid upon completion of all work on the project, including final punchlist work items. The applicable work specified under this section shall be paid for under the following Pay Item (and/or other similar project specific phasing):

   - Mobilization

B. Erosion Control Devices and Turbidity Barrier

1. General - The work specified under this section shall include furnishing all costs, labor and materials to obtain required Generic Permit for Stormwater Discharge from Large and Small Construction Activities (CGP) authorization, and install, inspect and maintain the erosion control and/or turbidity barriers surrounding project work as shown on the drawings or as required by the Florida Department of Environmental Protection (FDEP) Environmental Resource Permit (ERP) or the Army Corps of Engineers (ACOE) Permit. The work shall include anchoring either the floating or staked barrier by 4-inch posts at all ends.

2. Payment - The pay quantities for the work specified under this section shall be lump sum. The work specified under this section shall be paid for under the

following Pay Items:

- Erosion Control Prog./NPDES Permit/Reporting
- Staked Silt Fence
- Floating Turbidity Barrier

C. Survey

1. General - The work specified under this section consists of construction layout survey, as-built survey, and record drawings in accordance with plans and specifications.

2. Payment - The work specified under this section shall be paid for under the lump sum Pay Item:

- Survey (Const. Staking & As-Built Survey)

D. Clearing and Grubbing

1. General - The work specified under this section shall consist of the removal and disposal of all existing structures and buildings including foundations, utilities and septic tanks, timber and brush except where otherwise indicated, stumps and roots, soil, existing pavement, and all debris in all areas where work on excavations, embankments, pavements and structures (including pipe culverts and other pipelines) is to be done as shown or reasonably implied in the drawings and in accordance with the specifications.

2. Payment - The pay quantity for Clearing and Grubbing shall be lump sum which shall include all work and materials described above. The applicable work specified under this section shall be paid for under the following Pay Item:

- Clearing and Grubbing w/ Exotics Removal

E. Earthwork

1. General - The work specified under this section shall consist of excavating, filling, compacting, and grading all embankments, channels, subgrades, shoulders, and side slopes in accordance with the alignment, grade and cross-sections shown or reasonably implied in the drawings and in accordance with the specifications. Work shall include all compaction testing required by the plans and specifications. Work shall also include furnishing fill (borrow) materials, hauling and disposal of all excess material, and hauling and disposal of all unsuitable materials. Specifically excluded is all earthwork associated with underground utility installations including storm sewers and storm structures with the exception of encountered solid waste.

2. Payment - The pay quantities for work specified under this section shall be lump sum. The applicable work specified under this section shall be paid for under the following Pay Item:

- Earthwork
  No additional payment shall be made for soil testing.
  No additional payment shall be made for dewatering.

F. Storm Drainage Construction

1. General - The work specified under this section shall include all dewatering, sheeting/bracing, excavation, geotextile filter fabric, #67 stone bedding material, #57 stone aggregate, pipe, HDPE geocell cellular confinement system, riprap, backfilling and compacting, stabilized subgrade, removing and replacing existing pavement, masonry plugs, patching, and furnishing and installation of all materials, fittings and appurtenances of the proposed stormwater system and structures and connection to the existing stormwater system and structures.

   The price paid for storm drainage pipes and structures shall include all labor, equipment and materials necessary for construction; dewatering; cleaning; removing and disposing of existing abandoned pipe, structures or obstructions; tie- ins; excavating and backfilling, removing and replacing existing structures or pavement, including any sloping, sheeting, and shielding to comply with OSHA or State Trench Safety Laws; compacting the backfill; materials and compaction testing required by the plans and specifications; and furnishing as-built plans and as-built certification.

   If excavating or construction of new storm drainage facilities requires moving existing structures or replacing existing pipe with new pipe, the cost of such removal, disposal and replacement shall be included in the price quoted for the actual pay item for construction of the new work.

2. Payment - The pay quantities for work specified under this section shall be lump sum. The applicable work specified under this section shall be paid for under the following Pay Item:

   - RCP Pipe 14″ x 23″ (2 runs at 40′)
   - Cellular Confinement System 6″ Deep HDPE Geocell including Geotextile D-1

3. Payment – Payment for Mitered End Section shall be per each. The applicable work specified under this section shall be paid for under the following Pay Item:

   - Mitered End Section for 14″ x 23″ ERCP

4. Payment – Payment for rip rap shall be per square yard of rip rap. The price quoted shall include bedding stone, filter fabric, hauling, placement, and installation. The applicable work specified under this section shall be paid for under the following Pay Item:

   - Riprap Rubble Double Layer (6″ Type A) including Granular Bedding & Geotextile D-1
   - Riprap Rubble Double Layer (12″ Type B) including Granular Bedding & Geotextile D-1
   - Riprap Rubble (24″ Type D) including Granular Bedding & Geotextile D-1

G. Grassing

1. General: The work specified under this section consists of furnishing all labor

and materials to seed and mulch or sod all areas indicated on the plans. This item shall include watering and maintenance until the project is accepted by the Owner.

2. Payment: The pay quantity for the work specified under this section shall be unit price per square yard. The work specified under this section shall be paid for under the Pay Item:

- Grassing – Sodding of Slopes

H. Plants and Installation

1. General - The work included under this section consists of planting and maintenance of the wetland and upland plant species of the type, size, and quantity indicated in the plans, in accordance with the specifications. Planting areas are to be constructed by the Contractor. Bare root plants are not allowed.

2. Payment - Plants and Installation specified under this section shall be unit price by species.

3. Payment - The Planting Allowance is for additional quantity of plants at the Contractor's bid price authorized by the Owner.

4. Pay Items - Applicable work specified under this section shall be paid for under the following Pay Items:

- Pickerelweed (*Pontederia cordata*), minimum 2-inch liners or larger
- Spikerush (*Eleocharis* spp.), minimum 2-inch liners or larger
- Sand cordgrass (*Spartina bakeri*), minimum 2-inch liners or larger

I. Plant Maintenance

1. General - The work included under this section consists of maintenance of native plant species located within the project boundary. Exotic and nuisance vegetation shall be controlled in accordance with the specifications. Plant Maintenance events shall be conducted quarterly for up to three years.

2. Payment - Plant Maintenance shall be paid per quarterly event.

3. Pay Items - Applicable work specified under this section shall be paid for under the following Pay Items:

- Quarterly Plant Maintenance – 3 Years

J. CONTINGENCY ALLOWANCE

1. General - The work specified under this section consists of performing additional

work beyond the original contract scope as directed by the DISTRICT.

2. Payment - Payment for miscellaneous work outside of the original contract scope will be made only for work specifically authorized by the DISTRICT in writing. Prior to beginning the work, the DISTRICT and CONTRACTOR will agree on a unit price or lump sum price for the additional work. The work specified under this section shall be paid for under the Pay Item:

    - Contingency Allowance

END OF SECTION

SECTION 01200 PROJECT MEETINGS AND REPORTS

PART 1 - GENERAL

1.1 SUMMARY: This Section includes the following administrative and procedural requirements:

A. Project Meetings:
   1. Preconstruction conference
   2. Progress meetings

B. Schedules and Reports:
   1. Initial coordination submittals
   2. Construction progress schedule (See SECTION 01310 Construction Schedules)
   3. Special reports

1.2 PROJECT MEETINGS:

A. Pre-construction Conference
   1. The DISTRICT will administer a meeting within 10 days after the Effective Date of the Agreement, to review items stated in the following agenda and to establish a working understanding between the parties as to their relationships during conduct of the Work.
   2. Preconstruction conference shall be attended by:
      a. CONTRACTOR and his superintendent
      b. Representatives of principal Subcontractors and Suppliers
      c. Engineer and his Resident Project Representative if any
      d. DISTRICT or its representative
      e. Other affected parties determined by the DISTRICT
   3. Agenda:
      a. Projected construction schedules
      b. Critical Work sequencing
      c. Designation of responsible personnel
      d. Project coordination
      e. Procedures and Processing of:
         i. Field decisions
         ii. Substitutions
         iii. Submittals
         iv. Change Orders
         v. Applications for payment
      f. Procedures for testing
      g. Procedures for maintaining record documents

h. Use of Premises:

i. Office, work and storage areas

ii. DISTRICT'S requirements

i. Construction facilities, controls, and construction aids

j. Temporary utilities

k. Safety and first aid

l. Security

m. Requirements of any permits obtained by the DISTRICT

4. Location of Meeting: **To be determined**

B. Progress Meetings:

1. The DISTRICT will administer a meeting a minimum of twice each month (every two weeks) and at other times requested by the DISTRICT. CONTRACTOR, Engineer and all Subcontractors active on the site shall be represented at each meeting. CONTRACTOR may request attendance by representatives of his Suppliers and other Subcontractors, or other entities concerned with current program or involved with planning, coordination, or performance of future activities. All participants in the meeting shall be familiar with the Project and authorized to conclude matters relating to the Work.

2. CONTRACTOR and each Subcontractor shall be prepared to discuss the current construction progress report, any anticipated future changes to the schedule, and advise if their current progress or future anticipated schedules are compatible with the Work.

3. If one Subcontractor is delaying another, CONTRACTOR shall direct such changes as are necessary for those involved to mutually agree on schedule changes in the best interest of construction progress.

4. Agenda

a. Review of construction progress since previous meeting

b. Field observations, interface requirements, conflicts

c. Problems which impede construction schedule

d. Off-site fabrication

e. Delivery schedules

f. Submittal schedules and status

g. Site utilization

h. Temporary facilities and services

i. Hours of Work

j. Hazards and risks

k. Housekeeping

l. Quality and Work standards

m. Change orders

n. Documentation of information for payment request

o. Corrective measures and procedures to regain projected schedule if necessary

p. Revisions to construction schedule

q. Progress and schedule during succeeding Work period

r. Review proposed changes for:

i. Effect on construction schedule and on completion date

ii. Effect on other contracts of the Project

s. Other business

5. Location of Meetings: **To be determined**

6. Reporting: After each meeting, minutes of the meeting will be distributed to each party present and to parties who should have been present.

C. Special Reports:

1. When an event of an unusual and significant nature occurs at the site, a special report shall be prepared and submitted. List the chain of events, persons participating, response by CONTRACTOR'S personnel, an evaluation of the results or effects, and similar pertinent information. Advise the DISTRICT in advance when such events are known or predictable.

END OF SECTION

SECTION 01300 SUBMITTALS

PART 1 - GENERAL

1.1 SCOPE:

A. This SECTION includes definitions, descriptions, transmittal, and review of "Compliance" and "Miscellaneous" Submittals.

B. Related Work Specified Elsewhere:

1. **SECTION 01310 –Construction Schedule to be determined**

1.2 GENERAL INFORMATION:

A. Definitions:

1. Compliance Submittals include Shop Drawings, product data, and samples which are prepared by the CONTRACTOR, Subcontractor, MANUFACTURER, or Supplier and submitted by the CONTRACTOR to the DISTRICT as a basis for approval of the use of Equipment and Materials proposed for incorporation in the WORK or needed to describe installation, operation, maintenance, or technical properties.

a. Shop Drawings include custom-prepared data of all types including drawings, diagrams, performance curves, material schedules, templates, instructions, and similar information not in standard printed form applicable to other projects.

b. Product data includes standard printed information on materials, products and systems not custom-prepared for this Project, other than the designation of selections from available choices.

c. Samples include both fabricated and unfabricated physical examples of materials, products, and WORK; both as complete units and as smaller portions of units of WORK; either for limited visual inspection or (where indicated) for more detailed testing and analysis. Mock- ups are a special form of samples which are too large to be handled in the specified manner for transmittal of sample Submittals.

2. Miscellaneous Submittals are those technical reports, administrative Submittals, certificates, and guarantees not defined as Shop Drawings, product data, or samples.

a. Technical reports include laboratory reports, tests, technical procedures, technical records, CONTRACTOR's design analysis and CONTRACTOR's survey field notes for construction staking, before cross-sections and after cross-sections.

b. Administrative Submittals are those nontechnical Submittals required by the Contract Documents or deemed necessary for administrative records. These Submittals include maintenance agreements, workmanship bonds, Project photographs, physical work records, statements of applicability, copies of industry standards, as-constructed data, security/protection/safety data, and similar type Submittals.

c. Certificates and guarantees are those Submittals on Equipment and Materials where a written certificate or guarantee from the MANUFACTURER or Supplier is called for in the Specifications.

d. Reports as required by Contract describing CONTRACTOR's means and methods for items such as dewatering, earth and water retaining, erosion/turbidity control, and safety plans.

3. Refer to ARTICLE 1.3 and 1.4 of this Part for detailed lists of documents and specific requirements.

B. Quality Requirements:

1. The CONTRACTOR shall submit all Project related correspondences including, but not limited to Request for Information (RFI), Submittals, miscellaneous correspondences, etc. in writing and/or in digital PDF format by electronic transmission to the DISTRICT Project Manager. Submittals that require a professional or corporate seal or certification shall provide one signed and sealed original as well as a copy in digital format.

2. Submittals such as Shop Drawings and product data shall be of the quality for legibility and reproduction purposes. Every line, character, and letter shall be clearly legible. Drawings such as reproducibles shall be useable for further reproduction to yield legible hard copy.

3. Documents submitted to the DISTRICT that do not conform to these requirements shall be subject to rejection by the DISTRICT, and upon request by DISTRICT, CONTRACTOR shall resubmit conforming documents. If conforming Submittals cannot be obtained, such documents shall be retraced, redrawn, or photographically restored as may be necessary to meet such requirements. CONTRACTOR's (or his Subcontractor's) failure to initially satisfy the legibility quality requirements will not relieve CONTRACTOR (or his Subcontractors) from meeting the required schedule for Submittal of Shop Drawings and product data.

C. Language and Dimensions:

1. All words and dimensional units shall be in the English language.

2. Metric dimensional unit equivalents may be stated in addition to the English units.

D. Submittal Completeness:

1. Submittals shall be complete with respect to dimensions, design criteria, materials of construction, and other information specified to enable the DISTRICT to review the information effectively.

2. Where standard drawings are furnished which cover a number of variations of the general class of equipment, each such drawing shall be individually annotated to describe exactly which parts of the drawing apply to the equipment being furnished. Use hatch marks to indicate variations that do not apply to the Submittal. The use of "highlighting markers" is not an acceptable means of annotating Submittals. Such annotation shall also include proper identification of the Submittal permanently attached to the drawing.

3. Reproduction or copies of Drawings or portions thereof will not be accepted as complete fabrication or erection drawings. The CONTRACTOR may use a reproduction of the DISTRICT- prepared Contract Drawings for erection drawings such as to indicate information on erection or to identify detail drawing references. Where the Drawings are revised to show this additional CONTRACTOR information, the DISTRICT's title block shall be replaced with a CONTRACTOR's title block and the DISTRICT's professional seal shall be removed from the Drawing. The CONTRACTOR shall revise these erection drawings for subsequent DISTRICT revisions to the Contract Drawings.

1.3 COMPLIANCE SUBMITTALS:

A. Items shall include, but not be limited to, the following:

1. MANUFACTURER's specifications
2. Catalogs, or parts thereof, of manufactured equipment
3. Shop fabrication and erection drawings
4. General outline drawings of equipment showing overall dimensions, location of major components, weights, and location of required building openings and floor plates
5. Detailed equipment installation drawings, showing foundation details, anchor bolt sizes and locations, baseplate sizes, location of DISTRICT's connections, and all clearances required for erection, operation, and disassembly for maintenance.
6. Schematic diagrams for electrical items, showing external connections, terminal block numbers, internal wiring diagrams, and one-line diagrams
7. Bills of material and spare parts list
8. Instruction books and operating manuals
9. Material lists or schedules
10. Performance tests on equipment by MANUFACTURERs
11. Concrete mix design information
12. Samples and color charts
13. All drawings, calculations, catalogs, or parts thereof, MANUFACTURER's specifications and data, samples, instructions, and other information specified or necessary:
    a. For DISTRICT to determine that the Equipment and Materials conform with the design concept and comply with the intent of the Contract Documents.
    b. For the proper erection, installation, operation and maintenance of the Equipment and Materials which the DISTRICT will review for general content but not for substance.
    c. For the DISTRICT to determine what supports, anchorages, structural details, connections, and services are required for the Equipment and Materials, and the effects on contiguous or related structures and Equipment and Materials.

B. Schedule and Log of Compliance Submittals:

1. Prepare for the DISTRICT, a schedule and log for submission of all Compliance Submittals specified or necessary for DISTRICT's review of the use of Equipment and Materials proposed for incorporation in the WORK or needed for proper installation, operation or maintenance. Submit the schedule and log with the procurement schedule and WORK progress schedule. Schedule submission of all Compliance Submittals to permit review, fabrication, and delivery in time so as to not cause a delay in the WORK of CONTRACTOR or his Subcontractors or any other contractors as described herein.
2. In establishing schedule for Compliance Submittals, allow fifteen (15) working days in DISTRICT's office for reviewing original Submittals and ten (10) working days for reviewing resubmittals.
3. The schedule shall indicate the anticipated dates of original submission and shall be prepared in accordance with SECTION 01310.
4. Schedule all Compliance Submittals required prior to fabrication or manufacture for submission within **20** days of the Notice to Proceed. Schedule Compliance Submittals pertaining to storage, installation and operation at the Site for DISTRICT's acceptance prior to delivery of the Equipment and Materials.
5. Resubmit Compliance Submittals the number of times required for DISTRICT's "Submittal

Accepted." However, any need for resubmittals in excess of the number set forth in the accepted schedule, or any other delay in obtaining acceptance of Submittals, will not be grounds for extension of the Contract Time, provided the DISTRICT completes its reviews within the times stated above.

C. Transmittal of Compliance Submittals:

1. All Compliance Submittals and related correspondences shall be submitted to the DISTRICT by CONTRACTOR.

2. All Compliance Submittals of Equipment and Materials furnished by Subcontractors, MANUFACTURERs, and Suppliers shall be submitted to the DISTRICT by CONTRACTOR electronically in PDF format or in written format.

3. After checking and verifying all field measurements, transmit all Compliance Submittals to the DISTRICT for acceptance as follows:

   a. Identify each Compliance Submittal by Submittal Number, Project name and number, Contract title and number, and the Specification SECTION and article number marked thereon or in the letter of transmittal. Unidentifiable Submittals will be returned for proper identification.

   b. Check and stamp Compliance Submittals of Subcontractors, Suppliers, and MANUFACTURERS with CONTRACTOR's approval prior to transmitting them to the DISTRICT. CONTRACTOR's stamp of approval shall constitute a representation to the DISTRICT that CONTRACTOR has either determined and verified all quantities, dimensions, field construction criteria, materials, catalog numbers, and similar data, or he assumes full responsibility for doing so, and that he has coordinated each Compliance Submittal with the requirements of the WORK and the Contract Documents.

   c. At the time of each submission, call to the attention of DISTRICT in the letter of transmittal any deviations from the requirements of the Contract Documents.

   d. Make all modifications noted or indicated by DISTRICT and return revised prints, copies, or samples until accepted. Direct specific attention in writing, or on revised Submittals, to changes other than the modifications called for by the DISTRICT on previous Submittals. After Submittals have been accepted, submit copies thereof for final distribution. Prints of accepted drawings transmitted for final distribution will not be further reviewed and are not to be revised. If errors are discovered during manufacture or fabrication, correct the Submittal and resubmit for review.

   e. Following completion of the WORK and prior to final payment, furnish those drawings necessary to indicate "as constructed" conditions, including field modifications, in the number of copies specified. Furnish additional copies for insertion in equipment instruction books as required. All such copies shall be clearly marked "AS BUILT DRAWING."

   f. WORK requiring a Compliance Submittal shall not be commenced or shipped until the Submittal has been stamped "Submittal Accepted" or "Submittal Accepted as Noted" by the DISTRICT.

   g. Keep a copy or sample of each Compliance Submittal in good order at the Site.

4. Copies of the equipment CONTRACTOR’s erection drawings and other Compliance Submittals required for the installation of equipment furnished by others under separate Contract for installation under this Contract will be transmitted to CONTRACTOR by the DISTRICT in the final distribution of such Submittals.

5. Information to MANUFACTURER's District Office: MANUFACTURERS and Suppliers of Equipment and Materials shall furnish copies of all agreements, drawings, specifications, operating instructions, correspondence, and other matters associated with this Contract to the MANUFACTURER's district office servicing the DISTRICT. Insofar as practicable, all business matters relative to Equipment and Materials included in this Contract shall be conducted through such local district offices.

D. DISTRICT's Review:

1. The DISTRICT will review and return Compliance Submittals to CONTRACTOR with appropriate notations. Instruction books and similar Submittals will be reviewed by the DISTRICT for general content but not for substance.

2. The DISTRICT's acceptance of Compliance Submittals will not relieve CONTRACTOR from his responsibility as stated in the Contract Documents.

E. Compliance Submittal Action Stamp:

1. The DISTRICT's review action stamp or designation, appropriately completed, will appear on all Compliance Submittals of CONTRACTOR when returned by the DISTRICT. Review status designations listed on DISTRICT's action stamp are defined as follows:

a. "ACCEPTED AS SUBMITTED": Signifies Equipment or Material represented by the Submittal conforms with the design concept and complies with the intent of the Contract Documents and is acceptable for incorporation in the WORK. CONTRACTOR is to proceed with fabrication or procurement of the items and with related WORK.

b. "ACCEPTED AS NOTED": Signifies Equipment and Material represented by the Submittal conforms with the design concept and complies with the intent of the Contract Documents and is acceptable for incorporation in the WORK subject to the condition that as constructed it shall be in accordance with all notations and/or corrections indicated. CONTRACTOR is to proceed with fabrication or procurement of the items and with related WORK in accordance with DISTRICT's notations.

c. "RETURNED FOR REVISION": Means that deviations from the requirements of the Contract Documents exist in the submittal. CONTRACTOR is to resubmit revised information responsive to DISTRICT's annotations on the returned Submittal or written in the letter of transmittal. Fabrication or procurement of items represented by the Submittal and related WORK is not to proceed until the Submittal is approved.

d. "NOT ACCEPTABLE (SUBMIT ANEW)": Signifies Equipment and Material represented by the Submittal does not conform with the design concept or comply with the intent of the Contract Documents and is disapproved for use in the WORK. CONTRACTOR is to resubmit Compliance Submittals responsive to the Contract Documents.

e. "PRELIMINARY SUBMITTAL": Signifies Submittals of such preliminary nature that a determination of conformance with the design concept or compliance with the intent of the Contract Documents must be deferred until additional information is furnished. CONTRACTOR is to submit such additional information to permit layout and related activities to proceed.

f. "FOR REFERENCE ONLY": Signifies Submittals which are for supplementary information only; pamphlets, general information sheets, catalog cuts, standard sheets, bulletins and similar data, all of which are useful to the DISTRICT in design, operation, or maintenance, but which by their nature do not constitute a basis for determining that items represented thereby conform with the design concept or

comply with the intent of the Contract Documents. The DISTRICT reviews such Submittals for general content but not for substance.

g. "DISTRIBUTION COPY (PREVIOUSLY ACCEPTED)": Signifies Submittals which have been previously accepted and are being distributed to CONTRACTOR, DISTRICT, Resident Project Representative, and others for coordination and construction purposes.

F. Instruction Books / Operation & Maintenance Manuals:

1. Equipment instruction books and manuals shall be prepared by the MANUFACTURER and shall include the following:

a. Index and tabs

b. Instructions for installation, start-up, operation, inspection, maintenance, parts lists and recommended spare parts, and data sheets showing model numbers

c. Applicable drawings

d. Name of contact person, phone number, and address of the nearest authorized service facility

e. Attached to the above shall be a notice of the exact warranty effective dates, beginning and ending.

f. All additional data specified.

2. Information listed above shall be submitted electronically in a PDF file format and also be bound into hard-back binders of three-ring type. Sheet size shall be 8-1/2 inches x 11 inches. Binder color shall be yellow for Electrical and Electronics and brown for Miscellaneous Equipment. Capacity shall be a minimum of 1-1/2 inches, but sufficient to contain and utilize sheets with ease.

a. Instruction Books/Operation & Maintenance Manuals shall contain the following:

i. Equipment name

ii. MANUFACTURER’s name

iii. Project name

iv. Contract number

v. Reference to applicable Drawing No. & Technical Specifications Section

b. Format: The overall manual should be constructed around certain types of structures or equipment in the Project, and not merely assembled by technical specification section, so that all pertinent data needed by personnel to operate or maintain the equipment or structure is in one (1) manual (as far as is practical). The CONTRACTOR shall coordinate with the DISTRICT as to how the manuals are to be assembled.

G. Samples:

1. Office samples shall be of sufficient size and quantity to clearly illustrate the following:

a. Functional characteristics of the product, with integrally related parts and attachment devices

b. Full range of color, texture, and pattern

1.4 MISCELLANEOUS SUBMITTALS:

A. Miscellaneous Submittals are comprised of technical reports, administrative Submittals, and guarantees which relate to the WORK, but do not require DISTRICT's approval prior to proceeding with the WORK. Miscellaneous Submittals may include but are not limited to (at DISTRICT's discretion):

1. Field test reports
2. Concrete cylinder test reports
3. Certification on Materials:
    a. Steel mill tests
    b. Paint lab tests
    c. Cement tests
4. Soil test reports
5. Temperature records
6. Shipping or packing lists
7. Job progress schedules
8. Equipment and Material delivery schedules
9. Progress photographs
10. Warranties and guarantees
11. Surveying field notes, preliminary and final Surveyor's Reports
12. Pump tests
13. Traffic control plan

B. Transmittal of Miscellaneous Submittals:

1. All Miscellaneous Submittals furnished by Subcontractors, MANUFACTURERS, and Suppliers shall be submitted to DISTRICT by CONTRACTOR electronically in PDF format where practical, unless otherwise specified.
    a. Identify each miscellaneous Submittal by Project name and number, Contract title and number, and the specification section and article number marked thereon or in the letter of transmittal. Unidentifiable Submittals will be returned for proper identification.
    b. Check and stamp Miscellaneous Submittals of Subcontractors, Suppliers, and MANUFACTURERS with CONTRACTOR's approval prior to transmitting them to the DISTRICT. CONTRACTOR's stamp of approval shall constitute a representation to the DISTRICT that CONTRACTOR has either determined and verified all information, or he assumes full responsibility for doing so, and that he has coordinated Miscellaneous Submittal with the requirements of the WORK and the Contract Documents.
    c. At the time of each submission, call to the attention of the DISTRICT in the letter of transmittal any deviations from the requirements of the Contract Documents.
    d. Make all modifications noted or indicated by DISTRICT and return revised prints, or copies until accepted. Direct specific attention in writing, or on revised Submittals, to changes other than the modifications called for by the DISTRICT on previous

Submittals. After Submittals have been accepted, submit copies thereof for final distribution.

2. Test Reports:

   a. Responsibilities of CONTRACTOR and DISTRICT regarding tests and inspections of Equipment and Materials and completed WORK are set forth elsewhere in these Contract Documents.

   b. The party specified responsible for testing or inspection shall in each case, unless otherwise specified, arrange for the testing laboratory or reporting agency to distribute test reports in an electronic PDF file format to the following in addition to submitting test reports electronically to the DISTRICT :

      i. DISTRICT's Consultant

      ii. DISTRICT's Project Manager

      iii. CONTRACTOR

      iv. MANUFACTURER or supplier

C. DISTRICT'S Review:

1. DISTRICT will review Miscellaneous Submittals for indications of WORK or material deficiencies within fifteen (15) working days in DISTRICT's office for original Submittals and ten
(10) working days for reviewing resubmittals.

2. DISTRICT will respond to CONTRACTOR on those Miscellaneous Submittals which indicate WORK or material deficiency.

PART 2 - PRODUCTS (Not applicable)

PART 3 - EXECUTION

3.1 SUBMITTAL LOG:

A. CONTRACTOR shall maintain an accurate Submittal Log and a Distribution List for the duration of the WORK, showing current status of all Submittals and Distributees at all times in a form acceptable

to the DISTRICT. CONTRACTOR shall make the Submittal Log available to the DISTRICT for its review on request and shall bring a copy of the Submittal Log to all Progress Meetings.

END OF SECTION

SECTION 01310 CONSTRUCTION SCHEDULES

PART 1 - GENERAL

1.1 SCOPE:

A. CONSTRUCTION SCHEDULE: The WORK under this Contract shall be planned, scheduled, executed, and reported by the CONTRACTOR. The CONTRACTOR shall adhere to established technical standards for CPM (Critical Path Method) scheduling. The CONTRACTOR is required to provide all Construction Schedules in electronic format.

B. The CONTRACTOR shall submit a detailed Construction Baseline Schedule (Baseline Schedule) showing all WORK required under the Contract and scheduled within the time constraints set forth under the Contract. The DISTRICT will review and comment on the Baseline Schedule submittal as per 2.03. Upon acceptance, the CONTRACTOR shall not change the accepted Baseline Schedule without prior concurrence of the DISTRICT. The Baseline Schedule shall be updated to show actual progress. Any proposed changes in the schedule activities, original duration, logic, activity constraints, other than progress, shall be incorporated into a request for a revision to the accepted Baseline Schedule and submitted for review and acceptance.

C. The CONTRACTOR shall be responsible for coordinating its own schedules (including subcontractors) as well as the construction activities of others as required to fully execute the WORK.

1.2 SOFTWARE/INTERFACE REQUIREMENTS:

A. The CONTRACTOR shall use the latest version of Microsoft Project or approved equivalent for creating and updating all Construction Schedules and reports.

1.3 QUALITY ASSURANCE:

A. The CONTRACTOR shall perform the WORK covered by this SECTION with personnel having substantial experience in the use of the scheduling software on construction projects which required the development and maintenance of the schedule throughout the Project duration.

B. It is the responsibility of the CONTRACTOR to work with each subcontractor and supplier to obtain information pertinent to the planning and updating of their respective activities in the schedules.

1.4 DEALING WITH SUBSTITUTES:

A. All versions of the CONTRACTOR's Construction Schedule shall be based solely on the WORK as awarded, and shall exclude any substitute proposals, even if the CONTRACTOR pursues a substitution in accordance with the provisions of the Contract.

B. The DISTRICT's final determination on any proposed substitutions may not be made until after the CONTRACTOR's Construction Schedule is prepared and accepted. Accepted proposed substitutions shall be identified in the schedule as Change Orders.

1.5 USE OF FLOAT:

A. Total Float is the amount of time a scheduled activity can be delayed without delaying the completion of the WORK beyond the contractually required end date. Contract Float is the number of days between the CONTRACTOR's anticipated date for early completion of the WORK, or specified part, and the corresponding Contract Time. Total Float and Contract Float belong to the Project and are not for the exclusive benefit of any party. Contract Float and Total

Float shall be available to the DISTRICT, consultants, or the CONTRACTOR to accommodate changes in the WORK or to mitigate the effect of events which may delay performance or completion. The DISTRICT will monitor and optimize the use of float for the benefit of the Project.

1.6 EARLY COMPLETION:

A. An early completion schedule is one which anticipates completion of all or a specified part of the WORK ahead of the corresponding Contract Time. Since Contract and Total Floats belong to the Project, the CONTRACTOR shall not be entitled to any extension in Contract Time or recovery for any delay incurred because of extensions in an early completion date until all Contract Float is used or consumed and performance or completion of the WORK extends beyond the Contract Time. The accepted Baseline Schedule must have a single longest path with zero Total Float. Multiple longest paths are not acceptable.

1.7 NON-COMPLIANCE:

A. The DISTRICT may refuse to recommend/authorize a progress payment in the event of the CONTRACTOR's failure, refusal or neglect to provide the required schedule information, since this will preclude the proper evaluation of the CONTRACTOR's progress. Remedies for the CONTRACTOR's failure, neglect or refusal to comply with the requirements of this SECTION are in addition, and not limited to, those provided under other sections of the Contract.

PART 2 - PRODUCTS

2.1 GENERAL CRITERIA:

A. All Construction Schedules shall be prepared by the CONTRACTOR and reflect the CONTRACTOR's plans, means and methods, techniques, and sequences for performing of the WORK.

B. The Construction Schedules shall break down the WORK into distinct activities with interdependencies to the extent required to clearly depict the planned approach for completion of the WORK and to effectively manage the execution of the WORK.

1. The Construction Schedules shall divide the WORK into manageable and logical segments and specify the progression from the Notice to Proceed (NTP) to Substantial Completion (SC) to Final Completion (FC) within Contract Time.
2. The Construction Schedule is to include, at minimum, appropriate time allowances for submittals, procurement, coordination with others, construction, start-up/check-out (if applicable), operational and performance testing (if applicable), commissioning (if applicable), and Contract Close-Out.
3. Site-related activities shall not reflect a combination of work located in separate structures, work corresponding to different divisions of the specifications, work performed by first and second tier subcontractors or rough-in and finish work of the same trade.
4. The NTP activity shall be the first activity in the schedule and shall be a Start Milestone, with an assigned 7-day, no holiday calendar. The SC and FC activities shall be Finish Milestones, with assigned "Finish on or Before" constraints, with the Contract SC and FC dates assigned to the constraints, with a 7-day, no holiday calendar.
5. The CONTRACTOR's Construction Schedule shall include preparation, review and acceptance of Shop Drawings, material fabrication and material deliveries. The first submittal review and acceptance activity durations shall be fifteen (15) working days.

Resubmittal review and acceptance cycles shall have activity durations of ten (10) working days. The CONTRACTOR shall include only the first submittal review and acceptance cycle for each submittal in the Construction schedule. If more than one cycle for a submittal occurs, the CONTRACTOR shall add that cycle to the schedule at the time it occurs. Additional submittal, review and acceptance cycles will require a revision to the Baseline Schedule.

C. The CONTRACTOR shall schedule any requirements (such as submittal reviews) of the DISTRICT, the DESIGN CONSULTANT and others (performing WORK for the DISTRICT) indicated in, or required by, the Contract Documents. The Construction Schedule shall incorporate appropriate activities and WORK sequences based upon the Contract Documents.

2.2 CONSTRUCTION SCHEDULE SUBMITTAL:

A. The Construction Schedule submittal, which refers to both the Baseline Schedule and all Schedule Updates, are to consist of the following items:

1. An electronic file containing PDF formats of all required reports and graphics, including a written narrative.
2. An electronic backup of the Construction Schedule in in Microsoft Project format, or approved equal.
3. For Schedule Updates, a copy of the payment application is required. The Period Ending date in the DISTRICT Application for Payment must match the Data Date of the corresponding Schedule Update.

B. The Schedule Narrative Report for the Construction Schedule shall consist of a written description of how the WORK will be accomplished in accordance with the planned Construction Schedule. The Schedule Narrative accompanying each Schedule Update shall, at a minimum, compare current progress and cost performance to the accepted baseline schedule for all milestones and activities, including longest path activities. If there are potential or actual delays, the narrative shall state the cause of the delay and impact to the Construction Schedule and define steps that have been taken or intend to be taken to mitigate delay impacts. The CONTRACTOR shall list any proposed changes in network activities and logic that will need to be incorporated into a revision to the Baseline Schedule. The narrative shall provide sufficient detail to allow the DISTRICT to verify the progress of the WORK, compare actual versus planned activities, and identify assumptions made in scheduling work, including Change Order work. The CONTRACTOR shall direct specific attention, in writing, to adjustments or corrections made, either in response to the DISTRICT's comments on the previous submittal or otherwise. A Schedule Narrative Report must be provided for all Baseline Schedules and Schedule Updates even if there are no detailed comments for each sub-heading.

1. Schedule Narrative Report
    a. The Schedule Narrative Report shall show the following sub-headings with detailed comments:
        i. Progress, issues, delays, and claims
        ii. Schedule changes, including out-of-sequence work
        iii. Milestones
        iv. Critical submittals and Procurement items
        v. Response to DISTRICT Review comments from previous submittal on an item by item basis.
    b. It shall be an electronic color PDF – 8 ½ x 11 portrait format file.

PART 3 - EXECUTION

3.1 MONTHLY UPDATE CYCLE:

A. Schedule Update Submittals are due every 30 days and are to be attached to each Application for Payment. The Schedule Update Total Actual Cost to Date must match the Application for Payment WORK Completed and Stored to Date amount. The DISTRICT will advise the CONTRACTOR of any change to the due dates.

3.2 CHANGES:

A. Within ten (10) days after a schedule problem is identified by either CONTRACTOR or DISTRICT the CONTRACTOR shall submit a Construction Recovery Schedule that identifies the cause of the Change and any actions required by the CONTRACTOR to recover the schedule and complete the WORK within Contract Time. The CONTRACTOR shall promptly undertake appropriate action, at no additional cost to the DISTRICT, to recover the schedule whenever the current schedule shows that the CONTRACTOR did not or cannot achieve a milestone established in the Contract.

B. Appropriate recovery actions include, but are not limited to, assignment of additional labor, subcontractors, equipment, shift or overtime work, expediting of submittal or deliveries, or any combination of thereof. Overlapping of activities or sequencing changes shall be deemed appropriate only if properly substantiated in the submittal. Recovery plans that are accepted by the DISTRICT that add, delete, or change activities, activity relationships, and durations or constraints must be submitted as a Revision to the Baseline Schedule with zero Total Float in accordance with this specification. Once the revised baseline is accepted by the DISTRICT, the CONTRACTOR must prepare a Schedule Update of the Baseline Schedule with all actuals to date and submit it for acceptance

END OF SECTION

SECTION 01320 CONSTRUCTION VIDEO AND PHOTOGRAPHS

PART 1 - GENERAL

1.1 SCOPE:

A. Summary of Work: This SECTION specifies administrative and procedural requirements for construction photographs.

B. Related Work Specified Elsewhere:

1. SECTION 01300 - Submittals

1.2 SUBMITTALS:

A. Submit photographs electronically as specified in SECTION 01300 and in PART 3, this SECTION.

1.3 QUALITY ASSURANCE:

A. Photographs and video shall be clear and sufficient to show significant detail, not blurred, or taken in shadow, nor too distant. The DISTRICT may require that the photographs or video be retaken should the quality be insufficient. Costs for such re-takes are the CONTRACTOR's responsibility at no extra cost to the DISTRICT.

PART 2 - PRODUCTS

2.1 PHOTOGRAPHIC REQUIREMENTS:

A. Specified in PART 3, this SECTION.

PART 3 - EXECUTION

3.1 COLOR AUDIO VIDEO TAPING OF CONSTRUCTION AREA:

A. Prior to beginning any construction, the CONTRACTOR shall prepare a digital color audio video recording of all the areas to be affected by construction**.**

B. The audio video recording shall be done within the two-week period prior to placement of materials or equipment on the construction area and furnished one week prior to the start of construction. Contractor shall provide 48-hour notice prior to recording video.

C. To preclude the possibility of tampering or editing in any manner, all video recordings shall, by electronic means, generate and display continuously and simultaneously on the screen digital information to include the date and time of recording. The time information shall consist of hours, minutes, and seconds, separated by colons (i.e., 10:35:18).

D. The audio video recording shall consist of one video and one audio track which shall be recorded simultaneously. All tracks shall consist of original live recordings and thus shall not be copies of other audio and video recordings. The audio track shall contain the narrative commentary.

E. The rate of speed in the general direction of travel of the conveyance used during recording shall be controlled to provide a usable image. Panning rates and zoom-in, zoom-out rates shall be controlled sufficiently such that playback will produce clarity of the object viewed.

F. All recording shall be done during times of good visibility. No recording shall be done during periods of visible precipitation, unless otherwise authorized by the DISTRICT.

G. The DISTRICT shall have the authority to designate what areas may be omitted or added for audio video coverage.

H. When conventional wheeled vehicles are used, the distance from the camera lens to the ground shall not be less than eight feet to insure perspective.

I. In some instances, audio video coverage will be required in areas not accessible by conventional wheeled vehicles. Such coverage shall be obtained by walking.

J. Areas covered shall include offsite roadways that will be subjected to heavy usage such as for haul routes or delivery of heavy components or equipment. CONTRACTOR shall include all laydown areas, access roads, gates, fences, and project drainage boundaries.

3.2 PROGRESS SITE PHOTOGRAPHS:

A. The CONTRACTOR shall be responsible for photographs of the Site to show the existing and general progress of the WORK. The DISTRICT will advise as to which views are of interest. Photographs shall be taken of the following areas and at the following times.

1. Existing Site conditions before Site WORK is started. Number of views shall be adequate to cover the Site.

2. Progress of the WORK from beginning and throughout construction. Progress photos must be provided with each pay request. Pay requests will not be considered acceptable until photographs are provided. Number of views shall be adequate to cover the Site.

3. Finished Project after completion of WORK. Number of views shall be adequate to show the finished WORK.

4. If Project is not completed during the Contract Time, or authorized extensions, photographs shall continue to be taken at no increase in Contract Price.

B. Photographs shall be taken with five (5) megapixel minimum resolution**.**

C. Provide a CD, DVD, or jump drive medium containing all photographic images in JPG format. Label CD with the name and Contract number of Project, name of CONTRACTOR, description of view, and date photograph was taken.

D. Deliver digital media to DISTRICT with pay applications.

3.3 AERIAL PHOTOGRAPHS:

A. The Contractor shall engage the services of a professional aerial photography company to photograph project phases of construction: pre-, during, and post-construction. The first setof aerial photos shall be taken prior to the commencement of construction activity. Photo orientations shall be discussed and approved by the DISTRICT Representative prior to taking of the photographs, with the intent of replicating the same orientation and altitude for the series of successive photographs.

1. Six (6) aerial photos will be taken prior to commencing work, but not by more than 45 days. These photos include: (1) one vertical aerial of the entire project area and five (5) of project sections. Image orientation shall be approved by the DISTRICT Representative.
2. After initial pre-construction aerial photos, aerial photos will be taken monthly basis and only for the project area(s) actively under construction; for each project phase being photographed, the site will be photographed from two orientations (e.g., vertical and oblique).
3. A last and full set of aerial photos (6 photos) shall be taken after completion and final acceptance of the project by the District.

B. The District Representative shall have the authority to reject all or any portion of the aerial photography not conforming to specifications, and order that it be redone at no additional charge. The Contractor shall reschedule unacceptable coverage within 5 days after being notified. The District Representative shall designate those areas, if any, to be omitted from or added to the aerial photography coverage. All aerial photography becomes property of District.

C. Project photographs shall be submitted in electronic formats. Print photographs shall be 8" X 10" color. Electronic versions of photographs will be on compact disk and in ".jpg" format. Each photograph print shall have the project site, date, and time the photograph was taken electronically superimposed on it or written in the bottom border or on the back of the photograph. Each submittal shall also include rights of reproduction for the District and the Engineer(s) of Record.

D. The aerial photographs shall contain coverage of all surface features located within the construction's zone of influence. The surface features within the construction's zone of influence shall include, but not be limited to, all roadways, pavement, filter marsh, walls, railroad tracks, curbs, driveways, sidewalks, culverts, headwalls, retaining walls, building, landscaping, trees, shrubbery, and fences. Of particular concern shall be the existence or non- existence of any faults, fractures, or defects and private property lines and structures.

E. All photographs shall be performed during times of good visibility. No photography shall be done during periods of significant precipitation, mist, or fog. The photography shall only be done when sufficient sunlight is present to properly illuminate the subject and to produce bright, sharp pictures of those subjects.

END OF SECTION

SECTION 01410 TESTING AND QUALITY CONTROL

PART 1 - GENERAL

1.1 CONTRACTOR QUALITY CONTROL: The CONTRACTOR shall provide and maintain an effective quality control program that fulfills the requirements of the Contract Documents.

A. Establish a quality control system to perform sufficient inspection of all items of Work, including that of Subcontractors, to insure conformance to the Specifications and Drawings with respect to the materials, workmanship, construction, equipment performance, and identification.

B. The CONTRACTOR's job supervisory staff may be used for quality control, supplemented as necessary by additional personnel for surveillance or special technicians to provide capability for the controls required by the Technical Specifications. The CONTRACTOR's quality control plan must clearly identify the quality control leader and personnel organizational system. The leader must have the authority to direct the removal and replacement of work.

C. After the Contract is awarded and before construction begins, the CONTRACTOR shall meet with the DISTRICT or its representative to discuss quality control requirements. The meeting shall develop mutual understanding relative to details of the system, including the CONTRACTOR's forms to be used for recording the quality control operations, inspections, administration of the system, and the interrelationship of CONTRACTOR and DISTRICT inspection.

D. All compliance inspections shall be recorded on appropriate forms, including but not limited to the specific items required in each section of the Technical Specifications. Those forms, including record of corrective actions taken, shall be furnished to the DISTRICT. The DISTRICT's quality control representative shall maintain a check off list of all deficiencies which are not corrected the same day as they are discovered.

E. Should recurring deficiencies in an item or items indicate that the quality control system is not adequate, the CONTRACTOR shall take such corrective actions as may be required to comply with the Contract Documents.

F. CONTRACTOR shall submit his written quality control plan for review, describing the activities and listing those inspection and testing activities that the CONTRACTOR will perform prior to beginning the Work. The CONTRACTOR's Quality Control Plan shall describe how he will communicate timely notification to allow for test and inspection activities performed by the DISTRICT, or its representatives, for on and off-site construction activities.

1.2 TESTING LABORATORY SERVICES: All tests which require the services of a laboratory to determine compliance with the Contract Documents shall be performed by an independent commercial testing laboratory acceptable to DISTRICT. The laboratory shall be staffed with experienced technicians, properly equipped, ACI certified, and fully qualified to perform the tests in accordance with the specified standards.

1.3 TESTING LABORATORY SERVICES FURNISHED BY CONTRACTOR: All testing laboratory services in connection with tests (which are identified as the CONTRACTOR's responsibility in the Contract Documents) shall be performed and paid for by the CONTRACTOR, and a certified copy of the results will be furnished to the DISTRICT within 5 days of the test.

The CONTRACTOR is also responsible for testing and inspection services required to achieve an

effective quality control program, to assure that the work strictly complies with the contract requirements. CONTRACTOR shall pay all costs for such services. CONTRACTOR shall also pay for any tests performed by DISTRICT which do not meet Specifications, as described below.

1.4 TESTING LABORATORY SERVICES FURNISHED BY DISTRICT:

A. The DISTRICT may secure the services of a materials testing company, for field and laboratory tests, for certain items of work for quality assurance.

1. DISTRICT shall be reimbursed by CONTRACTOR for the cost of any tests or inspections, or tests on an item purported to be ready, which fail to meet Specification requirements. DISTRICT may withhold such amounts from payments otherwise due CONTRACTOR.

B. Arrangements for delivery of samples and test specimens to the testing laboratory under this paragraph will be made by the DISTRICT. The testing laboratory shall perform all laboratory tests within a reasonable time consistent with the specified standards and shall furnish a written report of each test.

C. CONTRACTOR shall furnish all sample materials and cooperate in the sampling and field-testing activities, interrupting the Work when necessary.

D. When sampling or testing activities are performed in the field by testing laboratory personnel, CONTRACTOR shall furnish personnel and facilities to assist in the activities.

1.5 TRANSMITTAL OF TEST REPORTS:

A. Written reports of test and engineering data furnished by CONTRACTOR shall be submitted as specified in SECTION 01300.

END OF SECTION

SECTION 01510 TEMPORARY UTILITIES AND FACILITIES

PART 1 - GENERAL

1.1 SUMMARY:

A. This SECTION includes requirements of a temporary nature not normally incorporated into final WORK. It includes the following:

1. Utility services
2. Construction and support facilities
3. Construction aids
4. Fire protection
5. Bypass flow

B. Related Work Specified Elsewhere:

1. SECTION 01300 – Submittals
2. SECTION 01530 – Temporary Barriers and Controls

1.2 APPLICABLE STANDARDS AND PUBLICATIONS:

A. Standards or Codes: The edition of the publications of the organizations listed below in effect at the time of the advertisement for bids form a part of this specification to the extent referenced. See the various paragraphs for the specified standard. In the case of a conflict between the requirements of this SECTION and those of the listed document, the requirements of this SECTION shall prevail.

1. American National Standards Association (ANSI):
   a. A10 Series - Safety Requirements for Construction and Demolition
   b. ANSI/ASME PTC 19.1-1998 Test Uncertainty, Instrument and Apparatus
2. National Electrical Contractors Association (NECA):
   a. Electrical Design Library - Temporary Electrical Facilities
3. National Fire Protection Association (NFPA):
   a. NFPA 10 - Portable Fire Extinguishers
   b. NFPA 70 - National Electrical Code
   c. NFPA 241 - Safeguarding Construction, Alterations, and Demolition Operations
4. National Electrical Manufacturers Association (NEMA)
5. Underwriters Laboratories (UL)
6. Florida Department of Transportation Standard Specifications for Road and Bridge Construction
7. Florida Trench Safety Act (90-96, Laws of Florida)

1.3 SUBMITTALS:

A. Submit in accordance with SECTION 01300.

B. Site Plan: Submit to the DISTRICT a Site Plan indicating CONTRACTOR's facilities including:
   1. Trailers
   2. Equipment Yard
   3. Parking
   4. Traffic Control
   5. Bypass flow

1.4 QUALITY ASSURANCE:

A. Regulations: Comply with industry standards and applicable laws and regulations of authorities having jurisdiction, including but not limited to:
   1. Building Code requirements
   2. Utility company regulations
   3. Police, Fire Department, and rescue squad rules
   4. Environmental protection regulations

B. Standards:
   1. Comply with NFPA 10 and 241, and ANSI A10 Series standards "Temporary Electrical Facilities."
   2. Comply with NEMA, NECA, and UL standards and regulations for temporary electric service. Install service in compliance with NFPA 70.

C. Inspections: Arrange for authorities having jurisdiction to inspect and test each temporary utility before use. Obtain required certifications and permits.

PART 2 - PRODUCTS

2.1 MATERIALS AND EQUIPMENT:

A. Provide new materials and equipment. If acceptable to the DISTRICT, undamaged previously used materials and equipment in serviceable condition may be used. Provide materials and equipment suitable for the use intended, of capacity for required usage, and meeting applicable codes and standards. Comply with requirements of DIVISIONS 2 through 16.

B. Water: Provide potable water approved by local health authorities.

C. Water Hoses: Provide 3/4-inch (19-mm), heavy-duty, abrasion-resistant, flexible rubber hoses 100 feet (30 m) long, with pressure rating greater than the maximum pressure of the water distribution system. Provide adjustable shutoff nozzles at hose discharge.

D. Electrical Outlets: Provide properly configured, NEMA-polarized outlets to prevent insertion of 110- to 120V plugs into higher voltage outlets. Provide receptacle outlets equipped with

ground-fault circuit interrupters, reset button, and pilot light for connection of power tools and equipment.

E. Electrical Power Cords: Provide grounded extension cords. Use hard-service cords where exposed to abrasion and traffic. Provide waterproof connectors to connect separate lengths of electric cords if single lengths will not reach areas where construction activities are in progress. Do not exceed safe length-voltage ratio.

F. Lamps and Light Fixtures: Provide general service incandescent lamps of wattage required for adequate illumination. Provide guard cages or tempered-glass enclosures where exposed to breakage. Provide exterior fixtures where exposed to moisture.

G. Fire Extinguishers: Provide hand-carried, portable, UL-rated, Class A fire extinguishers for temporary offices and similar spaces. In other locations, provide hand-carried, portable, UL-rated, Class ABC, dry-chemical extinguishers, or a combination of extinguishers of NFPA-recommended classes for the exposures. Comply with NFPA 10 and NFPA 241 for classification, extinguishing agent, and size required by location and class of fire exposure.

H. Bypass Flows System: The CONTRACTOR shall provide bypass flow system as specified in SECTION 02402.

PART 3 - EXECUTION

3.1 TEMPORARY UTILITIES:

A. General:

1. Engage the appropriate local utility company to extend temporary electric and phone service to the Project area from nearby existing utilities. Where utility company provides only part of the service, provide the remainder with matching, compatible materials and equipment. Comply with utility company recommendations.

2. Provide adequate utility capacity at each stage of construction. Prior to availability of temporary utilities at the Site, or in remote areas without services, provide trucked-in services as required for start-up and construction operations.

3. Furnish, install and maintain temporary utilities required for adequate construction, safety and security. Modify, relocate and extend systems as WORK progresses. Repair damage caused by installation or use of temporary facilities. Grade the areas of Site affected by temporary installations to required elevations and grades, and clean the area. Remove on completion of WORK or until service or facilities are no longer needed or are replaced by authorized use of completed permanent facilities.

4. The types of temporary construction utilities and facilities required include, but are not limited to, potable drinking water, wastewater, drainage, dewatering equipment, enclosure of WORK, ventilation, electrical power, lighting, hoisting facilities, stairs, ladders, and roads.

5. Inspect and test each service before placing temporary utilities in use. Arrange for required inspections and tests by governing authorities and obtain required certifications and permits for use.

6. Materials used for temporary service shall not be used in the permanent system unless so specified or acceptable to the DISTRICT.

3.2 TEMPORARY ELECTRICITY AND LIGHTING:

A. New Service:

1. Arrange with utility company to extend existing electric service to temporary office trailers.

2. Connect temporary service in a manner directed by utility company officials. Provide separate meter for metering of power used by all entities authorized to be at or perform WORK at the Project Site.

3. The electric service shall be of sufficient capacity and characteristics for the various construction tools, machinery, lights, heating and air conditioning, pumps, and other tools required by CONTRACTOR and his Subcontractors. In areas of the Project where permanent or temporary power service from the local utility is not available, the CONTRACTOR shall supply and maintain engine-driven, power-generator sets.

4. Provide weatherproof, grounded, power distribution system sufficient to accommodate construction operations requiring power, use of power tools, electrical heating and lighting.

5. Provide overload protection. Supply power for electric welding, if any, from engine-driven, power-generator sets.

6. Provide adequate artificial lighting for all areas of WORK when natural light is not adequate for WORK.

7. Sufficient light shall be provided for general construction areas, with additional sufficient lighting for specific tasks and to meet safety requirements.

B. Use of Permanent System:

1. Prior to use of permanent system to be installed by the power company for construction purposes, obtain written permission of the DISTRICT.

2. Maintain permanent system as specified for temporary facilities.

C. Costs of Installation and Operation:

1. Pay fees and charges for permits and applications.

2. Pay costs of installation, maintenance, removal of temporary services, and restoration of any permanent facilities used.

3. Pay costs of electrical power used (if applicable).

4. Pay costs of furnishing, operating, and maintaining engine-driven power-generator sets, where applicable.

3.3 TEMPORARY HEAT AND VENTILATION:

A. General:

1. Provide temporary heat, ventilation and cooling as required to maintain adequate environmental conditions in temporary office trailers and storage sheds and to facilitate progress of the WORK, to meet specified minimum conditions for the installation of materials, and to protect materials and finishes from damage. Protect from adverse effects of low temperatures or high humidity, and to prevent hazardous accumulations

of dust, fumes, vapors, or gases.

2. Methods of heating and fuel shall be suitable for particular purposes. Portable heaters shall be standard approved units with controls.

B. Costs of Installation and Operation:

1. Pay fees and charges for applications, permits, and inspections.

2. Pay costs of installation, operation, maintenance, removal of equipment, and restoration of existing or permanent facilities if used.

3. Pay cost of power and fuel used.

3.4 TEMPORARY TELEPHONE SERVICE: NOT USED

3.5 TEMPORARY SANITARY FACILITIES:

A. CONTRACTOR-Furnished Facilities:

1. Furnish, install, and maintain temporary sanitary facilities for use through construction period. Remove on completion of WORK.

2. Provide for all construction workers under this Contract and representatives at the Site.

3. Toilet facilities shall be of the chemical-aerated recirculation or combustion type, properly vented and fully enclosed with a glass- fiber-reinforced polyester shell or similar nonabsorbent material.

3.6 TEMPORARY CONSTRUCTION AIDS:

A. General:

1. Provide construction aids and equipment required by personnel, available for DISTRICT observers' use, and to facilitate the execution of the WORK; scaffolds, staging, ladders, stairs, ramps, runways, platforms, railings, hoists, cranes, chutes, and other such facilities and equipment.

2. Materials may be new or used, must be suitable for the intended purpose and meet the requirements of applicable codes, regulations, and standards.

3. When platform stair framing is in place, provide temporary treads, platforms, and railings for use by construction personnel.

3.7 INSTALLATION AND REMOVAL:

A. Relocation: Relocate construction aids as required by progress of construction, by storage or WORK requirements, and to accommodate requirements of DISTRICT and other CONTRACTORs at the Site.

B. Removal: Remove temporary materials, equipment and services when construction needs can be met and allowed by use of permanent construction, or at completion of the Project.

C. Repair: Clean and repair damage caused by installation or by use of temporary facilities.

1. Remove foundations and underground installations for construction aids.

2. Grade the areas of the Site affected by temporary installations to required elevations and clean the area.

END OF SECTION

SECTION 01530 TEMPORARY BARRIERS AND CONTROLS

PART 1 - GENERAL

1.1 SUMMARY:

A. This Section includes General Requirements for:

1. Protection of Work
2. Protection of existing property
3. Barriers
4. Security
5. Environmental controls
6. Access roads and parking areas
7. Traffic control and use of roadways

B. Related Work Specified Elsewhere:

1. SECTION 02435 Turbidity Control and Monitoring

1.2 REFERENCES:

A. Florida Department of Transportation Standard Specifications for Road and Bridge Construction (FDOT)

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 SAFETY AND PROTECTION OF WORK AND PROPERTY:

A. General:

1. Provide for the protection of the Work as set forth in the Contract Documents. Provide protection at all times against rain, wind, storms, frost, freezing, condensation, or heat so as to maintain all Work and Equipment and Materials free from injury or damage. At the end of each day all new Work likely to be damaged shall be appropriately protected.
2. Notify DISTRICT immediately at any time operations are stopped due to conditions which make it impossible to continue operations or to obtain proper results.
3. Construct and maintain all necessary temporary drainage and do all pumping necessary to keep excavations, pits, and trenches dewatered sufficiently to permit continuous construction.
4. Protect floors from damage by proper covering and care when handling heavy equipment, painting, or handling mortar or other such materials. Use proper cribbing and shoring to prevent overloading of floors while moving heavy equipment. Provide metal pans under pipe- threading machines and other machines that may leak oil and clean such pans daily, keeping oil off floors. Restore floors to former condition where damaged or stained.

5. Concrete floors less than 28-days old shall not be loaded without written permission from DISTRICT.

6. Restrict access to roofs except as required by the Work. Where access is required, provide protection with plywood, boards, or other suitable materials.

B. Property Other than DISTRICT's:

1. Provide for the protection of property as set forth in the Contract Documents. Report immediately to the owners thereof and promptly repair damage to existing facilities resulting from construction operations.

2. Names and telephone numbers of representatives of the power company having jurisdiction over power lines in the Work area can be obtained from the DISTRICT. CONTRACTOR shall contact the power company a minimum of 7 calendar days prior to performing Work within 500' of power transmission line property, right-of-way, or easement lines.

3. The applicable requirements specified for protection of the Work shall also apply to the protection of existing property of others.

4. Restore all property affected by CONTRACTOR's operations to the original or better condition.

3.2 BARRIERS:

A. General:

1. Furnish, install, and maintain suitable barriers as required to prevent public entry, protect the public, and to protect the Work, existing facilities, trees, and plants from construction operations. Remove when no longer needed or at completion of Work.

2. Materials may be new or used, suitable for the intended purpose, but must not violate requirements of applicable codes and standards or regulatory agencies.

3. Barriers shall be of a neat and reasonable uniform appearance, structurally adequate for the required purposes.

4. Maintain barriers in good repair and clean condition for adequate visibility.

5. Relocate barriers as required by progress of Work.

6. Repair damage caused by installation and restore area to original or better condition.

7. Clean the area.

3.3 ENVIRONMENTAL CONTROLS:

A. Dust Control:

1. If appropriate to the site location, and at the discretion of the DISTRICT, provide positive methods and apply dust control materials to minimize raising dust from construction operations.

2. Clean interior spaces prior to the start of finish painting and continue cleaning on an as-needed basis until painting is finished.

3. Schedule operations so that dust and other contaminants will not fall on wet or newly-coated surfaces.

4. Cover materials transported to and from site as necessary to prevent depositing material on offsite roadways or creating dust.

B. Water and Erosion Control:

1. Provide methods to control surface water to prevent damage to the Project, the site, or adjoining properties as specified in SECTION 02435. Coordinate with on-site farming operations.

2. Plan and execute construction and earthwork by methods to control surface drainage from cuts and fills, and from borrow and waste disposal areas, to prevent erosion and sedimentation.

   a. Hold the areas of bare soil exposed at one time to a minimum.

   b. Provide temporary control measures such as berms, dikes, and drains.

3. Control fill, grading, and ditching to direct surface drainage away from excavations and other construction areas, and to direct drainage to proper runoff.

4. Provide, operate, and maintain hydraulic equipment of adequate capacity to control surface and ground water.

5. Dispose of drainage water in a manner to prevent flooding, erosion, or other damage to any portion of the site or to adjoining areas.

C. Debris Control and Clean-Up:

1. Keep the premises free at all times from accumulations of debris, waste materials, and rubbish caused by construction operations and employees. Responsibilities shall include:

   a. Adequate trash receptacles about the site, emptied promptly when filled.

   b. Periodic cleanup to avoid hazards or interference with operations at the site and to maintain the site in a reasonably neat condition.

   c. The keeping of construction materials such as forms and scaffolding neatly stacked.

   d. Immediate cleanup to protect the Work by removing splattered concrete, oil, paint, corrosive liquids, and cleaning solutions from walls, floors, and metal surfaces before surfaces are marred.

2. Prohibit overloading of trucks to prevent spillages on access and haul routes. Provide periodic inspection of traffic areas to enforce requirements.

3. Final cleanup is specified in SECTION 01700 Contract Closeout.

D. Pollution Control:

1. Provide methods, means, and facilities required to prevent contamination of soil, water, or atmosphere by the discharge of hazardous or toxic substances from construction operations.

2. Provide equipment and personnel and perform emergency measures required to contain any spillages, and to remove contaminated soils or liquids. Excavate and dispose of any contaminated earth off-site in approved locations, and replace with suitable compacted fill and topsoil.

3. Take special measures to prevent harmful substances from entering public waters, sanitary, or storm sewers.

4. If hazardous materials are discharged, report to authorities as required by Law or Regulations and notify DISTRICT.

3.4 TRAFFIC CONTROL AND USE OF ROADWAYS:

A. Traffic Control:

1. Provide, operate, and maintain equipment, services, and personnel, with traffic control and protective devices, as required to expedite vehicular traffic flow on haul routes, at site entrances, on-site access roads, and parking areas. This includes barricades and other devices or personnel as necessary to adequately protect the public. Prepare and submit Traffic Control Plan to DISTRICT for acceptance.

2. Remove temporary equipment and facilities when no longer required. Restore grounds to original, better, or specified conditions.

3. Provide and maintain suitable detours or other temporary expedients if necessary.

4. Bridge over open trenches where necessary to maintain traffic.

5. Consult with governing authorities to establish public thoroughfares which will be used for site access. All operations shall meet the approval of owners or agencies having jurisdiction.

B. Maintenance of Roadways:

1. Repair off-site roads, water control and DISTRICT levees damaged by operations. Keep traffic areas as free as possible of excavated materials and maintain in a manner to eliminate dust, mud, and hazardous conditions.

2. All operations and repairs shall meet the approval of owners or agencies having jurisdiction.

3.5 SECURITY:

A. The CONTRACTOR is solely responsible for initiating and maintaining security at the construction site. CONTRACTOR shall take all necessary precautions for the security of, and shall provide the necessary protection to:

1. Materials and equipment incorporated into the work, or stored on-site prior to incorporation into the work.

2. Temporary field offices and sheds, and their contents including those listed in SECTION 01590.

3. Plant and equipment including any equipment furnished for use by the DISTRICT.

B. The CONTRACTOR shall replace, in kind, any materials or equipment lost, damaged, or destroyed at its own expense.

END OF SECTION

SECTION 01580 PROJECT IDENTIFICATION AND SIGNS

PART 1 - GENERAL

1.1 SUMMARY:

A. This Section includes basic requirements for temporary Project identification and informational signs required during construction.

B. Related Work Specified Elsewhere:

1. SECTION 1300 Submittals.

1.2 QUALITY ASSURANCE:

A. Design sign and structure to withstand wind and environmental conditions of locality. Provide with finish adequate to withstand weathering, fading, chipping, and peeling for duration of construction.

1.3 SUBMITTALS:

A. Submit as specified in SECTION 01300.

B. Includes, but not limited to, the following:

1. Shop Drawings and product data as applicable.

2. Show content, layout, lettering, colors, structure, and foundation.

PART 2 - PRODUCTS

2.1 IDENTIFICATION SIGNS:

A. Project Identification:

1. Construct structure and framing of wood or metal, structurally adequate to resist design requirements of locality.

2. Construct sign surface of minimum 3/4-inch thickness exterior grade plywood with medium density overlay. Panels shall be of size to minimize joints. Overall size shall be 48 inches by 96 inches.

3. Rough hardware shall be galvanized or aluminum.

4. Coating: Paint shall be suitable for outdoor applications and shall be resistant to weathering, peeling, chipping and fading. Sign colors shall be approved by the DISTRICT.

5. Information Content:

a. Project title, logo, and name of DISTRICT as shown on Contract Documents

b. Names and titles of authorities

c. Name and title of Design Engineer

d. Name of prime CONTRACTOR and major Subcontractors

B. CONTRACTOR Identification: If not part of Project identification sign, provide and install CONTRACTOR's standard sign.

C. Design Engineer Identification: Design Engineer will provide, install and maintain his own signs.

2.2 INFORMATIONAL SIGNS:

A. Construction:

1. This includes signs for traffic, construction workers, and general public in regards to directions, warnings, hazards, locations of areas, facilities, equipment, and others of a similar nature.

2. Provide signs of design, size, color, and lettering as required by regulatory agencies. Signs shall be painted metal, wood, plastic, or fiberglass and of materials suitable for the conditions in which it is placed, such as weathering and fading.

3. Construct structure and framing of wood or metal, structurally adequate to resist design requirements of area of Project.

PART 3 - EXECUTION

3.1 INSTALLATION:

A. Project and Contractor Identification Sign:

1. Install in a location acceptable to the DISTRICT. Install so as not to obstruct traffic or construction operations.

2. Erect on framing or foundation, and rigidly brace.

3. Maintain sign in good repair, in a clean and neat condition.

4. Remove upon completion of Project.

B. Informational Signs:

1. Install at appropriate locations and in sufficient quantities to assure visibility. Relocate as required by progress of Work.

2. Maintain signs in good repair, in a neat, clean, readable condition.

3. Remove all signs, framing, supports, and foundations upon completion of Project.

END OF SECTION

SECTION 01600 EQUIPMENT AND MATERIALS

PART 1 - GENERAL

1.1 SUMMARY: This section includes general requirements for Equipment and Material transportation and handling, delivery, storage, and protection of CONTRACTOR and DISTRICT - furnished Equipment and Materials.

A. Related Work:

1. SECTION 01630 Product Options and Substitutions
2. SECTION 01300 Submittals

1.2 DEFINITIONS: Definitions used in this paragraph are not intended to negate the meaning of other terms used in the Contract Documents, including such terms as "systems," "structure," "finishes," "accessories," "furnishings," "special construction," and similar terms. Such terms are self-explanatory and have recognized meanings in the construction industry.

A. Products: Items purchased for incorporation in the Work, regardless of whether they were specifically purchased for the Project or taken from the previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and other terms of similar intent.

B. Equipment: A product with operational or non-operational parts, regardless of whether motorized, manually operated, or fixed. Equipment may require service connections such as wiring or piping.

C. Materials: Products that must be substantially cut, shaped, worked, mixed, finished, refined or otherwise fabricated, processed, or installed to form parts of Work.

1.3 QUALITY ASSURANCE:

A. Equipment and Material Incorporated into the Work: Provide products that comply with the requirements of the Contract Documents, are undamaged, and unless otherwise indicated, are unused at the time of installation. The CONTRACTOR shall provide products that are complete with all accessories, trim, finish, safety guards, and other devices and details needed for a complete installation and for the intended use and effect.

B. Standard Products: Where they are available and comply with Specifications, provide standard products of types that have been produced and used successfully in similar situations on other projects.

C. Continued Availability: Where, because of the nature of its application, the DISTRICT is likely to need replacement parts or additional amounts of a product at a later date, either for maintenance and repair or replacement, provide standard products for which the manufacturer has published assurances that the products and its parts are likely to be available to the DISTRICT at a later date.

1. Conform to applicable Specifications, codes, standards, and regulatory agencies.
2. Comply with size, make, type, and quality specified, or as specifically approved in writing by the DISTRICT.
3. Manufactured and Fabricated Products:

a. Design, fabricate, and assemble in accordance with the best engineering and shop practices.

b. Manufacture like parts of duplicate units to standard sizes and gauges, to be interchangeable.

c. Equipment and Materials shall be suitable for service conditions intended.

d. Equipment capacities, sizes, and dimensions indicated or specified shall be adhered to unless variations are specifically approved in writing.

e. Provide labels and nameplates where required by regulatory agencies or to state identification and essential operating data.

f. Two or more items of the same kind shall be identical, supplied by the same manufacturer.

4. Do not use equipment and material for any purpose other than that for which it is designed or is specified.

D. Source Limitations: To the fullest extent possible, provide products of the same kind from a single source.

E. Identification: Each item of equipment shall have permanently affixed to it a label or tag with its equipment number designated in this contract. Marker shall be stainless steel and shall be located so as to be easily visible.

1.4 TRANSPORTATION AND SHIPMENT:

A. Shipment Preparation: CONTRACTOR shall require manufacturers and suppliers to prepare Equipment and Materials for shipment in a manner to facilitate unloading and handling, and to protect against damage or unnecessary exposure in transit and storage, for CONTRACTOR supplied equipment. Provisions for protection shall include the following:

1. Crates or other suitable packaging materials

2. Covers and other means to prevent corrosion, moisture damage, mechanical injury, and accumulation of dirt in motors, electrical equipment, and machinery

3. Suitable rust-preventive compound on exposed machined surfaces and unpainted iron and steel

4. Grease packing or oil lubrication in all bearings and similar items

5. Precast concrete components shall be transported, lifted, and stored as specified by the precast supplier. Precast supplier shall provide written instructions to the CONTRACTOR as to the above. CONTRACTOR shall provide a copy to DISTRICT.

B. Marking: Each item of Equipment and Material shall be tagged or marked as identified in the delivery schedule or on Submittals. Complete packing lists and bills of material shall be included with each shipment. Each piece of every item need not be marked separately, provided that all pieces of each item are packed or bundled together, and the packages or bundles are properly tagged or marked.

1.5 DELIVERY, STORAGE AND HANDLING:

A. Delivery – The CONTRACTOR shall:

1. Arrange deliveries of Equipment and Materials in accordance with construction

schedules, in ample time to facilitate inspection prior to installation, and to avoid delay of the Work.

2. Deliver, store and handle Equipment and Materials in accordance with manufacturer's recommendations using means and methods that will prevent damage, deterioration, and loss, including theft.

3. Control delivery schedules to minimize long term storage at the site and to prevent overcrowding of construction spaces. In particular, coordinate delivery and installation to ensure minimum holding or storage times for items known or recognized to be flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other sources of loss.

4. Avoid conflict with Work of DISTRICT or other contractors.

5. Deliver Equipment and Materials to the site in manufacturer's sealed containers or other packaging system with identifying labels and instructions for handling, storing, unpacking, protecting, and installing.

6. Mark deliveries of component parts of equipment to identify the equipment, to permit easy accumulation of parts, and to facilitate inspection and measurement of quantity or counting of units.

7. Immediately on delivery, inspect shipment to assure:

   a. Product complies with requirements of Contract Documents and reviewed Submittals.

   b. Quantities are correct.

   c. Containers and packages are intact, labels are legible.

   d. Equipment and Materials are properly protected and undamaged.

B. Storage – The CONTRACTOR shall:

1. Store Equipment and Materials immediately on delivery and protect until completion of the Work. Store in accordance with manufacturer's instructions with seals and labels intact and legible.

2. Store Equipment and Materials in a manner that will not endanger the supporting construction.

3. Store Equipment and Materials that are subject to damage by elements in weathertight enclosures.

4. Maintain temperature and humidity within ranges required by manufacturer.

5. Protect motors, electrical equipment, plumbing fixtures, and machinery of all kinds against corrosion, moisture deteriorations, mechanical injury, and accumulation of dirt or other foreign matter.

6. Protect exposed-machined surfaces and unpainted iron and steel as necessary with suitable rust- preventive compounds.

7. Protect bearings and similar items with grease packing or oil lubrication.

8. Handle and store steel plate, sheet metal, and similar items in a manner to prevent deformation.

9. Exterior Storage:

   a. Provide substantial platforms, blocking, or skids to support fabricated products aboveground; and to prevent soiling or staining. Cover products subject to

discoloration or deterioration from exposure to the elements, with impervious sheet coverings. Provide adequate ventilation to avoid condensation.

b. Store loose granular materials on solid surface areas to prevent mixing with foreign matter.

c. Provide surface drainage to prevent flow or ponding of rainwater.

10. Equipment and Materials shall not show any pitting, rust, decay, or other deleterious effects of storage prior to final acceptance of Work.

11. Arrange storage in a manner to provide easy access for inspection. Make periodic inspections of stored products to assure that products are maintained under specified conditions, and free from damage or deterioration.

C. Handling – The CONTRACTOR shall:

1. Provide equipment and personnel necessary, to unload and handle Equipment and Materials, by methods to prevent damage or soiling to Equipment and Materials, or packaging.

2. Handle by methods to prevent bending or overstressing. Where lifting points are designated, lift components only at those points.

3. Provide additional protection to surrounding surfaces as necessary to prevent damage.

D. Maintenance of Storage – The CONRACTOR shall:

1. Inspect stored Equipment and Materials on a scheduled basis.

2. Verify that storage facilities comply with manufacturer's product storage requirements, including environmental conditions continually maintained.

3. Verify that surfaces of products exposed to elements are not adversely affected; that any weathering of finishes is acceptable under requirements of Contract Documents.

4. For mechanical and electrical equipment in long-term storage, provide manufacturer's service instructions to accompany each item, with notice of enclosed instructions on exterior of package. Service Equipment on a regularly scheduled basis.

E. Protection after installation – The CONTRACTOR shall: Provide substantial coverings as necessary to protect installed Equipment and Materials from damage from subsequent construction operations. Remove when no longer needed or as specified.

PART 2 - PRODUCTS

2.1 PRODUCTS AND MANUFACTURERS:

A. Specified in each applicable Section of Specifications

2.2 PRODUCT SELECTION AND SUBSTITUTIONS:

A. Specified in Instructions to Bidders and General Terms & Conditions

PART 3 - EXECUTION

3.1 MANUFACTURER'S INSTRUCTIONS:

A. Installation:

1. When Contract Documents require that installation of work shall comply with manufacturer's printed instructions, obtain and distribute copies of such instructions if not a part of Submittals, containers, or packaging to parties involved in the installation, including a copy to the DISTRICT.

2. Maintain one complete set of instructions at the job site during installation and until completion.

3. Handle, install, connect, clean, condition, and adjust products in accordance with such instructions and in conformance with specified requirements. Should job conditions or specified requirements conflict with manufacturer's instructions, consult with DISTRICT for further instructions.

4. Do not omit any preparatory step or installation procedure unless specifically modified or exempted by Contract Documents, or approved in writing by manufacturer and the DISTRICT.

5. Accurately locate and align with other Work, and anchor Equipment and Materials securely in place except as required for proper movement and performance.

6. Clean and protect exposed surfaces as necessary to ensure freedom from damage and deterioration at time of acceptance.

END OF SECTION

SECTION 01630 PRODUCT OPTIONS AND SUBSTITUTIONS

PART 1 - GENERAL

1.1 SUMMARY: This SECTION covers the DISTRICT's review procedures for CONTRACTOR's requests of acceptable substitute items of material and equipment. All requests for substitution shall be made no earlier than the Effective Date of the Contract.

Requests received prior to the date established above will not be considered. Substitutions may be approved at the DISTRICT's sole discretion where one or more of the following conditions apply:

A. The substitution must be required for compliance with final interpretation of code requirements or regulations.

B. The substitution must be due to the unavailability of the specified products, through no fault of the CONTRACTOR.

C. The substitution may be requested when subsequent information discloses the inability of the specified products to perform properly or to fit in the designated space.

D. The substitution may be requested when in the judgment of the DISTRICT a substitution would be substantially to the DISTRICT's best interests in terms of cost, time or other considerations.

1.2 SUBSTITUTION REQUEST:

A. Submit as required in SECTION 01300 - Submittals:

1. Complete data substantiating compliance of the proposed substitution with the Contract Document
    a. Product identification including MANUFACTURER's name and address
    b. MANUFACTURER's literature including product description, performance and test data, and reference standards
    c. Name and address of similar projects on which product was used and dates of installation
2. Itemized comparison of proposed substitution with product or method specified
3. Data relating to changes in the construction schedule
4. Accurate cost data on proposed substitution in comparison with product or method specified

B. In submitting the request for substitution, the CONTRACTOR makes the following representations:

1. The CONTRACTOR has investigated the proposed product and has determined that it is equal or superior in all respects to that specified.
2. The CONTRACTOR will provide the same warranty or guarantee for the substitution as for the product specified.
3. The CONTRACTOR will coordinate installation of the accepted substitution into the WORK, making such changes as may be required for the WORK to be completed in all respects.
4. The CONTRACTOR waives all claims for additional costs related to substitution that subsequently becomes apparent.
5. Cost data is complete and includes all related costs under the Contract.

1.3 DISTRICT ENGINEER'S REVIEW: The DISTRICT, in evaluating the request for substitution, will consider all variations of the proposed substitute from that specified to determine the

acceptability of the proposal. The DISTRICT may require the CONTRACTOR to furnish additional data about the proposed substitute necessary to make such a determination. The DISTRICT will be the sole judge of acceptability, and no substitute will be ordered or installed without the DISTRICT's prior written acceptance. The DISTRICT may require the CONTRACTOR to furnish, at the CONTRACTOR's expense, a special performance guarantee or other surety with respect to any substitute. Substitutions will not be considered if:

A. Substitutions are indicated or implied on Shop Drawings or product data submittals without a request submitted in accordance with this SECTION.

B. Acceptance will require substantial revision to the Contract Documents.

END OF
SECTION

SECTION 01700 CONTRACT CLOSEOUT

PART 1 - GENERAL

1.1 SCOPE:

A. Summary of Work: This SECTION includes administrative and procedural requirements for Contract Closeout including, but not limited to, the following:

a. Inspection procedures

b. Project record document submittal

c. Operation and maintenance manual submittal

d. Submittal of warranties

e. Final cleaning

f. CONTRACTOR's Certification

B. Closeout requirements for specific construction activities are included in the appropriate SECTIONs in DIVISIONS 1 through 16.

C. Related Work Specified Elsewhere:

1. SECTION 01300 - Submittals
2. SECTION 01050 - Field Engineering
3. SECTION 01530 – Temporary Barriers and Controls

1.2 SUBSTANTIAL COMPLETION:

A. Preliminary Procedures: Before requesting inspection for certification of Substantial Completion, the CONTRACTOR shall satisfy the following:

1. Submit specific warranties, workmanship bonds, maintenance agreements, final certifications, and similar documents. Submit in accordance with SECTION 01300.
2. Obtain and submit releases enabling the DISTRICT unrestricted use of the WORK and access to services and utilities. Include Certificates of Occupancy (C.O.), operating certificates, and similar releases, as required.
3. Submit Record Documents, maintenance manuals, Project photographs, damage or settlement surveys, property surveys, and similar record information as specified in Paragraph 1.04. All drawings shall be scanned and submitted in accordance with SECTION 01300 and in hard copy form, 24 inch by 36 inch plan size. All other documents shall also be scanned and submitted in accordance with SECTION 01300.
4. Complete final cleanup requirements.

B. Inspection Procedures: On receipt of a request for inspection, the DISTRICT will either proceed with inspection or advise the CONTRACTOR of unfilled requirements. The DISTRICT will prepare the Certificate of Substantial Completion following inspection or advise the CONTRACTOR of WORK that must be completed or corrected before the certificate will be issued.

1. The DISTRICT will reschedule the inspection when in its opinion, the WORK is substantially complete.

1.3 FINAL ACCEPTANCE:

A. Preliminary Procedures: Submit notification by CONTRACTOR that WORK has been completed in accordance with the Contract Documents to the knowledge of the

CONTRACTOR. Before requesting final inspection, complete the following:

1. Submit the final payment request with releases and supporting documentation. Include insurance certificates for products and completed operations where required.
2. Submit a certified copy of the DISTRICT's inspection list of items to be completed or corrected. The certified copy of the list shall state that each item has been completed.
3. Submit consent of surety to final payment.
4. Submit evidence of final, continuing insurance coverage complying with insurance requirements.
5. Submit Release of Liens (from the Prime, and all Subcontractors, Vendors and Suppliers).
6. The above shall be submitted in accordance with SECTION 01300.

B. Reinspection Procedure: The DISTRICT will reinspect the WORK upon receipt of notice that the WORK, including inspection list items from earlier inspections, has been completed.

1. Upon completion of reinspection, the DISTRICT will advise the CONTRACTOR of WORK that is incomplete or of obligations that have not been fulfilled but are required for final acceptance.
2. If necessary, reinspection will be repeated.

C. Return all keys furnished by the DISTRICT.

1.4 RECORD DOCUMENT SUBMITTALS:

A. General: Do not use record documents for construction purposes. Protect record documents from deterioration and loss in a secure, fire-resistant location. Provide access to record documents for the DISTRICT's reference during normal working hours.

B. As-Built Drawings: Maintain a clean, undamaged set of blue or black line white-prints of Drawings and Shop Drawings. Bind sets with durable-paper cover sheets; print suitable titles, dates, and other identification on the cover of each set. Mark the set to show the actual installation where the installation varies substantially from the WORK as originally shown. Mark which drawing is most capable of showing conditions fully and accurately. Where Shop Drawings are used, record a cross- reference at the corresponding location on the Drawings. Give particular attention to concealed elements that would be difficult to measure and record at a later date. Call attention to each entry by drawing a "cloud" around the areas affected.

C. The DISTRICT will make electronic copies of whatever electronic versions of the Drawings exist, available to the CONTRACTOR for As-Built purposes. The CONTRACTOR must obtain concurrence of the DISTRICT as to form and content of record information provided in electronic format prior to proceeding, but in general, information similar to that shown below needs to be similarly provided.

1. Record information concurrently with construction progress.
2. Mark record sets with red erasable pencil. Use other colors to distinguish between variations in separate categories of the WORK. Mark each document "AS-BUILT DRAWINGS" in neat, large, printed letters.
3. Mark as-built invert elevations for all water control structures, culverts, etc. Refer to SECTION 01050 for structures which require a permanent benchmark.
4. Mark new information that is important to the DISTRICT that is not shown on Drawings or Shop Drawings.
5. Note related change-order numbers where applicable.
6. Include the following:

a. Where Submittals (like Shop Drawings) are used for mark-up, record a cross-reference at corresponding location on Drawings.

b. Field changes of dimension and detail.

c. Changes made by Change Order or other Modifications.

d. Details not on original Contract Drawings.

e. As-Built shall include a plot of the actual excavation cross-sections plotted at the same station as and on top of the design cross-sections.

f. As-Built shall include a plot of the actual levee and embankment cross-sections plotted at the same station as and on top of the design cross-sections.

g. Give particular attention to concealed elements that would be difficult or expensive to locate at a later date.

h. GPS (global positioning system) coordinates of major structures using the format lat/long DD (decimal/degree) NAD83/2007 (North American Datum).

7. Record Specifications: Maintain one (1) complete copy of the Contract Documents including addenda. Include with the Contract Documents one (1) copy of other written construction documents, such as Change Orders and modifications issued in printed form during construction.

8. Mark these documents to show substantial variations in actual WORK performed in comparison with the text of the Specifications and modifications.

9. Give particular attention to substitutions and selection of options and information on concealed construction that cannot otherwise be readily discerned later by direct observation.

10. Note related As-Built information and Product Data.

11. Upon completion of the WORK, submit record Specifications to the DISTRICT for the DISTRICT's records on CD in PDF format.

12. Include the following:

a. MANUFACTURER, trade name, catalog number, and Supplier of each product and item of equipment actually installed, including optional and substitute items

b. Changes made by Addendum, Change Order, or other Modifications

c. Related Submittals

13. Affix the CONTRACTOR’s corporate seal on the cover sheet indicating the documents within are representative of the as-built condition of the Project. The seal shall be signed by an officer of the company.

D. Record Product Data: Provide one (1) copy of each Product Data submittal. Note related Change Orders and markup of Record Documents.

1. Mark these documents to show significant variations in actual WORK performed in comparison with information submitted. Include variations in products delivered to the Site and from the MANUFACTURER’s installation instructions and recommendations.

2. Give particular attention to concealed products and portions of the WORK that cannot otherwise be readily discerned later by direct observation.

E. Record Sample Submitted: Immediately prior to Substantial Completion, the CONTRACTOR shall meet with the DISTRICT's personnel at the Project Site to determine which Samples are to be transmitted to the DISTRICT for record purposes. Comply with the DISTRICT’s instructions regarding packaging, identification, and delivery to the DISTRICT.

F. Miscellaneous Record Submittals: Refer to other Specification SECTIONs for requirements of miscellaneous record keeping and submittals in connection with actual performance of the

WORK Immediately prior to the date or dates of Substantial Completion (unless otherwise specified), complete miscellaneous records and place in good order. Identify miscellaneous records properly, bind or file, and submit to the DISTRICT for the DISTRICT's records.

G. Warranties and Bonds: Submit original documents as specified in Section 00700 - General Terms & Conditions, Supplemental Conditions, SECTION 01300, and technical specifications.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 FINAL CLEANING:

A. General: Regular Site cleaning is included in SECTION 01530.

B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to the condition expected in a normal, commercial building cleaning and maintenance program. Comply with MANUFACTURER's instructions.

1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion.

a. Clean the Site of rubbish, litter, and other foreign substances. Rake grounds that are neither paved nor planted to a smooth, even-textured surface.

b. Remove temporary structures, tools, equipment, supplies, and surplus materials.

c. Remove temporary protection devices and facilities which were installed to protect previously completed WORK.

C. Removal of Protection: Remove temporary protection and facilities installed for protection of the WORK during construction.

D. Compliance: Comply with regulations of authorities having jurisdiction and safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on the DISTRICT's property. Do not discharge volatile, harmful, or dangerous materials into drainage systems. Remove waste materials from the Site and dispose of lawfully.

1. Where extra materials of value remain after completion of associated WORK, they become the DISTRICT's property. Dispose of these materials of no value to the DISTRICT as directed by the DISTRICT.

E. Repairs:

1. Repair damaged protective coated surfaces.

2. Repair roads and other items damaged or deteriorated because of construction operations, including those which have been damaged, but are not located within the Project limits.

3. Restore all ground areas affected by construction operations.

END OF SECTION

SECTION 02100 SITE PREPARATION

PART 1 - GENERAL

1.1 SCOPE:

A. Summary of Work: The CONTRACTOR shall furnish all labor, materials, and equipment necessary for complete and proper site preparation within the areas shown on the Drawings and specified herein and observe permit conditions.

1.2 APPLICABLE PUBLICATIONS:

A. Applicable Standards:

1. Florida Department of Transportation Standard Specifications for Road and Bridge Construction, latest edition (FDOT)

1.03 DEFINITIONS: (Not Applicable)

1.04 SUBMITTALS: (Not Applicable)

1.05 QUALIFICATIONS: (Not Applicable)

1.06 RESPONSIBILITIES:

A. The CONTRACTOR shall make all excavations for piping and appurtenant structures in any material encountered to the depth and grades required, shall backfill such excavations and dispose of excess or unsuitable materials from excavation, and shall provide and place necessary borrow material to properly backfill excavations, all as indicated on the drawings, specified herein, or as directed by the DISTRICT.

B. Excavation, dewatering, sheeting and bracing required shall be carried out so as to prevent any possibility of undermining or disturbing the foundations of any existing structure or work, and so that all work may be accomplished and inspected in the dry, except as directed by the DISTRICT. Aqueous construction may be performed only with prior approval of the

1.07 CERTIFICATIONS AND TESTINGS: (Not Applicable)

1.08 INSPECTION COORDINATION: (Not Applicable)

1.09 WARRANTY: (Not Applicable)

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 TRAFFIC CONTROL: The CONTRACTOR shall provide proper warning devices and barriers for protection of the public and workmen in accordance with FDOT Specification Section 102-3 Traffic Control and local regulations.

3.2 STANDARD CLEARING AND GRUBBING: Standard site clearing and grubbing, in accordance with FDOT Specification Section 110.2, shall be performed within the areas shown on the Drawings or otherwise noted in the above referenced specification.

3.3 EROSION CONTROL: The CONTRACTOR shall prevent and control erosion and water pollution as per FDOT Specification Sections 104-1, 2, 3, 4, 6 and 7 and Florida Department of Environmental Protection (FDEP) regulations and permit conditions including the permitted plan set attached to the FDEP Permit.

3.4 PROTECTION AND/OR RELOCATION OF EXISTING FACILITIES: Existing facilities such as storm drains, roadways, water lines, light poles, conduits, fences, utility, and telephone lines, etc. are to be carefully protected from damage during all phases of the construction. The CONTRACTOR shall make all necessary arrangements with the owner of the facility and be responsible for all costs involved in the proper protection, relocation, or other work that such DISTRICT deems necessary. See General Terms & Conditions.

3.5 UNDERGROUND UTILITIES: The CONTRACTOR shall provide all necessary liaisons with other utilities (underground) by notification, 48 hours in advance, of any digging by telephoning the appropriate Utility Notification Center and local utilities.

END OF SECTION

SECTION 02110 CLEARING AND LAND PREPARATION

PART 1 - GENERAL

1.1 SCOPE:

A. Summary of Work: The CONTRACTOR shall include the removal of trees and other vegetation from areas where earthwork or other construction operations specified herein are to be performed. This section also includes land preparation activities for excavation and fill areas.

1. SECTION 1300 - Submittals
2. SECTION 02050 - Demolition
3. SECTION 02200 - Earthwork
4. SECTION 02221 - Trenching, Backfilling and Compacting]

1.2 APPLICABLE PUBLICATIONS:

A. Florida Department of Transportation (FDOT)

1. 104 – Specification Prevention, Control, and Abatement of Erosion and Water Pollution

1.3 DEFINITIONS: (Not Applicable)

1.4 SUBMITTALS:

A. Prior to beginning the WORK, CONTRACTOR shall submit a detailed plan for clearing and land preparation in conformance with SECTION 01300. The plan shall detail the sequence of WORK and describe the CONTRACTOR's planned method of clearing and land preparation activities.

1.5 QUALIFICATIONS: (Not Applicable)

1.6 RESPONSIBILITIES:

A. The CONTRACTOR shall ensure the safe passage of persons around areas of clearing and land preparation. The CONTRACTOR shall conduct its operations to prevent injury to adjacent structures, vegetation designated to remain, other facilities and persons.

B. Traffic:

1. The CONTRACTOR shall conduct its operations and the removal of cleared materials to ensure minimum interference with existing access roads and other adjacent occupied or used facilities.
2. The CONTRACTOR shall not block or otherwise obstruct access roads or other occupied or used facilities without permission from the DISTRICT. Where blockage is allowed, the CONTRACTOR shall provide alternate routes around closed or obstructed traffic ways.

C. The CONTRACTOR may commence clearing or land preparation within portions of the

project falling within the limits of temporary construction easements or utility Right-of-Way only with specific permission from the DISTRICT for each activity and location. All requirements under A and B above apply within these limits.

D. CONTRACTOR is advised that Site access on the slopes will require caution due to the possible presence of a soft compressible layer of organic fibrous and non-fibrous peats and marls on the surface. These surface soils may be unstable under heavy and/or repeated traffic loads especially when in a saturated condition. The CONTRACTOR shall visit site and become acquainted with ground conditions to be encountered prior to bidding the WORK.

1.7 CERTIFICATIONS AND TESTING: (Not Applicable)

1.8 INSPECTION COORDINATION: The CONTRACTOR shall provide access to the WORK for the DISTRICT as requested for inspection. The CONTRACTOR shall provide 48 advance hours' notice of its intention to begin new WORK activities.

1.9 WARRANTY: (Not Applicable)

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 GENERAL CLEARING:

A. The CONTRACTOR shall remove the majority of the above grade non-native vegetative matter in the areas indicated on the plans. The CONTRACTOR shall complete the work of Clearing and Land Preparation as outlined below.

1. Mowing or the use of a bush-hog may be required in areas of heavy grass, weeds, or woody- stalked vegetation.
2. Completely remove all designated exotic/hazardous trees within the designated project boundaries.
3. All woody debris that measures over three-quarters inch in diameter and longer than 18-inches shall be removed.
4. All stumps shall be ground level to six inches below the surrounding ground level. Stumps on the slopes shall be cut flush with the natural angle of the existing grade and treated immediately with a herbicide approved by the DISTRICT. All seedlings within the project site shall be treated with the herbicide.
5. All plant material (whole or chipped) will be removed from the project area and stockpiled at a location authorized by the DISTRICT. Disposal of the stockpile shall be accomplished at a maximum of every fifteen (15) workdays.
6. Remove any garbage or other waste debris recovered during clearing.
7. On completion of the clearing, remove all sticks, rubbish and other extraneous material and rake the ground surface in order to leave a smooth and clean appearance.
8. Clearing and land preparation shall proceed sufficiently ahead of earthwork activities to minimize disruption and allow time for determination of the adequacy of the c l e a r i n g procedure.
9. All WORK shall be performed in accordance with approved principles of modern arboricultural methods.

10. All trees to remain in the project area, as designated by the DISTRICT, shall be protected from damage by tree barricades.

11. All WORK shall be performed without damage to existing amenities, including trees and shrubs. The CONTRACTOR shall be responsible for repair and replacement of existing amenities to the satisfaction of the DISTRICT. The CONTRACTOR shall protect all vegetation, habitats, or amenities on the project location as indicated on the plans.

B. The CONTRACTOR shall clear adjacent to cut or fill sections to a minimum distance of ten (10) feet outside of slope lines unless lesser distances are specified. Clearing in areas of native vegetation for levee construction or removal and canal excavation shall be limited to a distance of 10 feet outside of slope lines.

C. The CONTRACTOR may burn combustible products of the clearing operation on the site with the written approval of the DISTRICT and with permission of the local authorities. The CONTRACTOR shall comply with all local ordinances or regulations for burn locations and methods, including methods for preventing uncontrolled spread of the burn. The CONTRACTOR shall provide the DISTRICT with copies of permits prior to burning.

D. The CONTRACTOR may not burn cleared materials within the limits of any utility Right-of-Way without written permission of the controlling agency. The CONTRACTOR will be required to collect and haul all cleared materials to an approved site for burning and disposal.

E. The CONTRACTOR shall limit burning to days when groundwater levels are adequate to prevent ignition of peat soils located throughout the project areas.

F. The CONTRACTOR shall haul all organic materials and residues left from burning operations to an approved landfill or disposal site.

3.2 CLEARING WITHIN AREAS OF NATIVE VEGETATION:

A. The CONTRACTOR shall remove exotic trees/plants, hazardous material, trash, and debris and leave the site clean with a smoothly raked finish grade. Every reasonable effort shall be made to protect native vegetation designated to remain**.** Areas disturbed by work operations, such as, but not limited to, access points beyond the limits of the right-of way, shall be restored to original or better condition, including, but not limited to, filling, grading, sodding, and seeding/mulching as direct by the DISTRICT.

3.3 EROSION CONTROL:

A. The CONTRACTOR shall prevent and control erosion and water pollution as per FDOT Specification Sections 104 -1, 2, 3, 4, 6 and 7 and Florida Department of Environmental Protection (FDEP) regulations and permit conditions including the permitted plan set attached to the FDEP Permit.

END OF SECTION

SECTION 02114 TREE REMOVAL

PART 1 - GENERAL

1.1 SCOPE:

A. Summary of Work: The CONTRACTOR shall furnish all labor, material, equipment and perform all work in strict accordance with the Specifications, Contract, and applicable requirements for the removal and disposal of trees and heavy brush.

SECTION 01300 - Submittals

1. SECTION 02110 - Clearing and Land Preparation

B. The CONTRACTOR shall accomplish the complete removal of designated trees, the disposal of resulting waste and debris, as well as any other rubbish, solid waste or debris existing and exposed during the execution of the WORK in those areas described. The CONTRACTOR shall perform the WORK in accordance with recognized and approved principles of modern arboricultural methods. The CONTRACTOR shall perform all WORK without damage to trees, shrubs, and/or facilities that are intended to remain in the work area.

C. The CONTRACTOR shall perform the WORK which involves the following procedures:

1. Removal of designated trees
2. Exotic vegetation removal
3. Pruning of native vegetation to facilitate removal of exotic vegetation
4. Preservation and protection of native vegetation
5. Minimizing disturbance of the canal banks and other facilities
6. Debris/rubbish/solid waste removal and disposal, site cleanup, and finish grading to leave a clean and smoothly graded appearance

1.2 APPLICABLE PUBLICATIONS:

A. American National Standards Institute (ANSI)

1. (ANSI) Z133.1a: "Safety Requirements for Tree Care Operations - Pruning, Trimming, Repairing, Maintaining and Removing Trees, and for Cutting Brush"
2. (ANSI) Z133.1: "Tree Care Operations - Pruning, Trimming, Repairing, Maintaining and Removing Trees, and for Cutting Brush"
3. (ANSI) A300: "Tree Care Operations B Tree, Shrub and Other Woody Plant Maintenance"

B. Florida Department of Agriculture & Consumer Services, Division of Forestry, "Tree Protection Manual for Builders and Developers"

C. Florida Statute Chapter 487, "Florida Pesticide Laws"

D. Occupational Safety and Health Regulations "29 CFR 1910," Florida Statute 442 Occupational Safety and Health and other applicable federal, state and local regulations

E. Florida Department of Transportation (FDOT)

1. Index No. 544 – Landscape Installations
2. Manual on Uniform Traffic Control Devices for Streets and Highways

1.3 DEFINITIONS: (Not Applicable)

1.4 SUBMITTALS:

A. The CONTRACTOR shall submit as specified in SECTION 01300 the proposed methods and materials for clearing of invasive exotic plant material and trees, including a schedule indicating specific timeframes per sections/phases of the project and methods to protect trees to remain.

B. The CONTRACTOR shall obtain all necessary permits to accomplish all of the WORK.

C. The CONTRACTOR is responsible for performing all WORK in accordance with all applicable regulations, ordinances and code requirements from the appropriate city, county, state and/or federal jurisdiction the Project is located in.

1.5 QUALIFICATIONS: (Not Applicable)

1.6 RESPONSIBILITIES: (Not Applicable)

1.7 CERTIFICATIONS AND TESTING: (Not Applicable)

1.8 INSPECTION COORDINATION: The CONTRACTOR shall provide access to the WORK for the DISTRICT as requested for inspection. The CONTRACTOR shall provide 48 hours' notice of its intention to begin new WORK activities.

1.9 WARRANTY: (Not Applicable)

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 TREE REMOVAL:

A. The CONTRACTOR shall accomplish the removal of trees and or all exotic plant material in a safe and acceptable manner by means of equipment designed for this purpose in conformance with ANSI Standards, A300, Z133.1 and Z133.1a. All other debris, trees and wood growth shall be removed. The CONTRACTOR shall accomplish the WORK of Tree Removal as outlined below.

B. Remove exotic vegetation from all areas outside of sensitive areas using mechanical equipment for clearing and grubbing. Sensitive areas are defined as areas dominated by native vegetation, canal bank slopes, canal bank areas to be preserved at existing grade, and wetlands.

1. Only handwork and hand tool work will be permitted within the sensitive areas. No mechanical equipment will be allowed within the sensitive areas. Existing native flora and fauna shall be protected from harm during the process. Treat exotic stumps with herbicide mixture approved by the DISTRICT. Herbicide shall be used in combination

with flush cut tree stumps where necessary to protect native vegetation from damage by mechanical equipment.

2. Where exotic trees are removed in sensitive areas, they shall be cut as low as possible (within 4 inches of surrounding natural grade).

3. In tree trimming, any cut of at least two (2) inches in diameter shall be cut flush to the main limb or trunk. All limbs shall be undercut to prevent bark teardown. All pruning shall be in conformance with ANSI A300 Pruning Standards.

4. In the event that the removal of exotic plant materials could damage any native trees or listed species, the CONTRACTOR shall notify the DISTRICT before proceeding further.

3.2 CLEARING AND BRUSH REMOVAL:

A. The CONTRACTOR, where necessary or required, shall implement selective clearing methods conforming to the applicable requirements of ANSI Standards Z133.1, Z133.1a and A300.

B. The CONTRACTOR may burn combustible products of the clearing operation on the site with the written approved of the DISTRICT and with permission of the local authorities. The CONTRACTOR shall comply with all local ordinances or regulations for burn locations and methods, including methods for preventing uncontrolled spread of the burn. The CONTRACTOR shall provide the DISTRICT with copies of permits prior to burning.

C. The CONTRACTOR may not burn cleared materials within the limits of any utility Right-of-Way without written permission of the controlling agency. The CONTRACTOR will be required to collect and haul all cleared materials to an approved site for burning and disposal.

D. The CONTRACTOR shall limit burning to days when groundwater levels are adequate to prevent ignition of peat soils located throughout the project areas.

3.3 REMOVAL AND DISPOSAL:

A. It shall be the CONTRACTOR's responsibility to remove and dispose of (in a legal manner) all mulch, cut branches, tree trunks and any other debris or solid waste at an approved disposal site. Limbs and any other debris/solid waste shall be disposed of by the CONTRACTOR and shall not be deposited into any trash container. Wood chips/mulch may be disposed of on DISTRICT property if directed by the DISTRICT.

B. The CONTRACTOR shall perform all work in conformance with all applicable regulations, ordinances and code requirements of the appropriate city, county, state and/or federal jurisdiction. Exotic/invasive plants are defined as Brazilian Pepper, Australian Pine, Melaleuca, or as directed by the DISTRICT, and Contract Specifications.

C. The CONTRACTOR shall haul all organic materials and residues left from burning operations to an approved landfill or disposal site.

3.4 TREE AND SHRUB PROTECTION:

A. The CONTRACTOR shall exercise care to protect all trees and shrubs designated to remain. The CONTRACTOR shall install tree protection barricade in accordance with FDOT Index No. 544. Where trees and shrubs are adjacent to construction, they shall be protected - where damaged, restored or replaced to original conditions. Trees or existing grade damaged on the construction site shall be restored to original condition. Tree limbs, which interfere with

equipment operation and are approved for pruning, shall be neatly trimmed in accordance with NAA/ANSI standards. The CONTRACTOR shall be responsible for damages, maintenance, and protection of trees and shrubs to be protected.

3.5 GRADES:

A. It shall be the responsibility of the CONTRACTOR to provide the final grading to conform to surrounding grades and to be at the proper elevation with relation to walks, paving, drainage structures and other site conditions, unless indicated otherwise.

3.6 HERBICIDE TREATMENT:

A. The CONTRACTOR shall provide herbicide for stump eradication as approved by the DISTRICT. Use of herbicides shall be in accordance with the MANUFACTURER's printed label instructions and applicable federal, state and local laws. Application of herbicides shall be by appropriately licensed personnel.

B. The CONTRACTOR shall exercise extreme care to prevent damage to desirable existing growth. If necessary, the CONTRACTOR shall conduct a test to establish suitability of product and applicator that will be used on this project prior to execution of the full application.

3.7 QUALITY ASSURANCE:

A. The WORK Site shall be clean and free of trimmings, stumps, roots, logs, or any other debris resulting from the WORK, and trash, litter or rubbish exposed during the CONTRACTOR's tree removal services. Stumps and roots may remain in sensitive areas (as referenced in 3.01.B.1 of this SECTION) in accordance with the Contract Document.

3.8 EQUIPMENT:

A. The CONTRACTOR shall provide equipment in good repair and operating condition at all times. Only equipment designed for performance of WORK described herein will be acceptable for operation. All equipment shall meet all safety requirements as established for this type of WORK. Equipment shall be operated and maintained in accordance with MANUFACTURER's recommendations. Equipment shall have the appropriate safety guards, which shall not be removed (e.g., chain saws, chippers, etc.).

B. The CONTRACTOR will be required to have available on site and in good working condition a minimum of the following:

1. Sufficient traffic control devices to safely control traffic through WORK areas in accordance with the "Manual on Uniform Traffic Control Devices for Streets and Highways" and Florida Department of Transportation requirements

2. Three navigational buoys and advance warning signs, if applicable

C. It shall be the responsibility of the CONTRACTOR to verify the location of all utilities, structures, etc., by hand excavation or other appropriate measures before performing any work that could result in damage or injury to persons, utilities, structures or property. The CONTRACTOR shall make a thorough search of the site for utilities, structures, etc., before work is commenced in any particular location.

D. The CONTRACTOR shall not purposefully disrupt or disconnect any type of utility, electric

or irrigation service without first obtaining the written permission of the DISTRICT. Requests for disconnection must be in writing and received by the DISTRICT at least seven calendar days prior to the time of the requested interruption.

E. The CONTRACTOR shall take within two hours and complete within 48 hours the necessary steps to repair, replace, or restore all services to any utilities or other facilities, which are disrupted due to his or her operations.

F. Should utilities, structures, etc., be encountered that interfere with the work and are not shown on the Drawings; the CONTRACTOR shall notify the DISTRICT immediately.

END OF SECTION

PART 1 - GENERAL

1.1 SCOPE:

A. Summary of Work: The CONTRACTOR shall furnish all labor, equipment, and materials for all excavating, trenching, filling, construction of embankment, backfilling, compacting, grading, and all related items of earthwork necessary to complete the WORK indicated or specified.

1. SECTION 02110 Clearing and Land Preparation
2. SECTION 02220 Excavation and Backfilling
3. SECTION 02221 Trenching, Backfilling and Compacting
4. SECTION 02230 Roadway Excavation, Backfill, and Compaction

1.2 APPLICABLE PUBLICATIONS:

A. American Society of Testing Materials (ASTM):

1. D698 – Standard Test Methods for Laboratory Compaction Characteristics of Soil Using the Standard Effort (12,400 ft-lbf/ ft3 (600 kN-m/m3)).
2. D1556 – Standard Test Method for Density and Unit Weight of Soil in Place by Sand-Cone Method.
3. D1557 – Standard Test Methods for Laboratory Compaction Characteristics of Soil Using the Modified Effort (56,000 ft-lbf/ ft3 (2,700 kN-m/m3)).
4. D2487 – Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System).
5. D2937 – Standard Test Method for Density of Soil in Place by the Drive-Cylinder Method.
6. D3740 – Standard Practice for Minimum Requirements for Agencies Engaged in Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction.
7. D4253 – Standard Test Methods for Maximum Index Density and Unit Weight of Soils Using a Vibratory Table.
8. D4254 – Standard Test Methods for Minimum Index Density and Unit Weight of Soils and Calculation of Relative Density.
9. D4564 – Standard Test Method for Density and Unit Weight of Soil in Place by the Sleeve Method.
10. D4914 – Standard Test Methods for Density and Unit Weight of Soil and Rock in Place by the Sand Replacement Method in a Test Pit.
11. D5030 – Standard Test Method for Density of Soil and Rock in Place by the Water Replacement Method in a Test Pit.
12. D6938 – Standard Test Method for In-place Density and Water Content of Soil and Soil- Aggregate by Nuclear Method Shallow Depth.
13. E329 – Standard Specification for Agencies Engaged in Construction Inspection and/or Testing.

B. Florida Department of Transportation (FDOT):

1. Standard Specifications for Road and Bridge Construction (latest edition).

C. American Association of State Highway Transportation Officials (AASHTO):

1. AASHTO T 27 – Sieve Analysis of Fine and Coarse Aggregates.

2. AASHTO T 99 - Standard Method of Test for Moisture-Density Relations of Soils Using a 2.5- kg (5.5-lb) Rammer and a 305-mm (12-in.) Drop.

D. Florida Method (FM) of Test:

1. FM T-1 011 – Florida Method of Test for Sampling Aggregates.

E. Miscellaneous Project Data:

1. Subsurface soil data logs are provided for the CONTRACTOR'S reference prepared by AIM Engineering & Surveying, Inc. in September 2017.

DEFINITIONS [if applicable]:

F. Select Backfill: Select backfill shall be clean, well-graded material free from debris, peat, roots, seeds of nuisance or exotic species, organic material, clods, and stones with a diameter greater than 3 inches (76 mm) in any direction. Select backfill shall have an average organic content of not more than 2%. Select backfill shall be placed where indicated on the Drawings. Select backfill is required where higher control of materials and placement is needed such as water retaining embankment cores, roadway embankments, and adjacent to structures.

Select backfill may be material excavated for the WORK (native) or may be imported. The CONTRACTOR may blend native materials to achieve a material that meets the requirements for select backfill. Select backfill shall meet the following Unified Soil Classification System (ASTM D2487) designations:

1. Levee and Water Retaining Embankments: CL, ML (These are fine-grained soils with - 50-75% by dry weight passing through a No. 200 sieve; CL and ML are inorganic clay and silt, respectively, with a liquid limit less than 50%.) Levee fill material shall not contain any particles larger than 3 inches (76 mm) in diameter, and the upper 1-foot of the levee shall not contain particle sizes larger than 2 inches (51 mm) in diameter.

2. Structure Backfill: SW, SP, SC (These are coarse-grained soils with greater than 50% by dry weight retained on a No. 200 sieve; SP and SW have less than 5% finer than a No. 200 sieve; SC has 12-50% finer than a No. 200 sieve.)

The following table displays select backfill maximum lift thickness and maximum particle size.

SELECT BACKFILL		
STRUCTURE TYPE	**MAXIMUM PARTICLE SIZE**	**MAXIMUM LOOSE LIFT THICKNESS**
Water Bearing Levee	3 inches	6 inches
Non-Water Bearing Levee	3 inches	12 inches
Dam/Embankment	3 inches	12 inches

Select Backfill shall meet the following FDOT gradation limits (AASHTO T27 and FM 1-T 011):

BACKFILL GRADATION LIMITS	
SIEVE SIZE	**PERCENT PASSING (%)**
3 ½ inches [90 mm]	90-100
¾ inch [19 mm]	70-100
No. 4 [4.75 mm]	30-100
No. 40 [425 µm]	15-100
No. 100 [150 µm]	5-65
No. 200 [75 µm]	0-15

G. Random Backfill: Random backfill shall be clean, well-graded material, that is thoroughly mixed and free from debris, clods, seeds of nuisance or exotic species, and stones with a diameter in any direction greater than those specified in the below table. Random backfill shall have an organic content of less than 5% by weight. Tighter restrictions on stone size are considered in the top layer of fill, as per subsection 3.03 F. Final Dressing of Slopes, if the area is to be seeded, sodded, or landscaped. Random backfill shall be placed where indicated on the Drawings. Random backfill is required where stable backfill is needed to maintain slopes and grades, but shall not retain water or be adjacent to structures.

Random backfill may be material excavated for the WORK (native) or may be imported. The CONTRACTOR may blend native materials to achieve a material that meets the requirements for random backfill. Random backfill shall meet the CH (inorganic clays of high plasticity) Unified Soil Classification System (ASTM D2487) designation in addition to the classifications identified for select backfill.

Random backfill shall meet the below requirements with the largest particle diameter not exceeding 0.9 of the compacted layer thickness.

RANDOM BACKFILL		
MAXIMUM PARTICLE SIZE	**SURFACE DEPTH**	**MAXIMUM COMPACTED LIFT THICKNESS**
3 ½ inches	< 12 inches	6 inches
6 inches	12-24 inches	12 inches
12 inches	> 24 inches	12 inches

H. Unclassified Fill: Unclassified Fill may be material used to bring areas to grade where there is no potential for slope erosion and the fill will not support a structure of critical function. Unclassified backfill shall be placed where neither select backfill nor random backfill are shown on the Drawing. Unclassified Backfill shall be free from seeds of nuisance or exotic species and will be composed of material excavated for the WORK or imported material that can be compacted to the required density.

I. Levee Fill Material: Levee fill material shall consist of clean, granular materials that are free

of debris, cinders, combustibles, roots, sod, wood, cellulose, organic material and materials subject to termite attack. Levee fill shall not have more than 12% passing the U.S. Standard Number 200 sieve (dry weight basis). The maximum particle size shall be 12 inches (305 mm) in any direction. Particles between 8 inches (203 mm) and 12 inches (305 mm) in diameter are considered "oversized materials" and shall not exceed 10% by volume of the levee fill material.

J. Drain/Filter Sand: Drain/Filter sand shall be imported silica sand to be used in the construction of the horizontal blanket drain and the diaphragm filter/drain around the discharge structure box culverts penetrating the reservoir embankment, and filter material beneath the GC (gravel, sand, and clay mixtures) and/or GM (gravel and silt mixtures) material in the perimeter canal.

K. Unified Soil Classification System (USCS): USCS is a two-letter classification system used to describe the texture and grain size of a soil. In the USCS system, letters are representative as follows: G stands for gravel, S stands for sand, M stands for silt, C stands for clay, O stands for organic, P stands for poorly graded, W stands for well graded, H stands for high plasticity, and L stands for low plasticity.

L. Chimney Drain: A vertically inclined drain within the downstream portion of the embankment extending from the interior edge of the horizontal blanket drain to the normal full storage level. This drain will consist of GC and/or GM materials.

M. Blanket Drain: A horizontally inclined drain installed at the construction phase to aid in embankment stabilization. The blanket drain can be used against various types of slopes and is composed of GC and/or GM materials. A blanket drain is used to disperse low-velocity flows rather than concentrating them.

N. Core: A core is composed of select fill and relatively impervious material, located in the center of the embankment, and defined by a 1H:2V slope. The minimum top width of the core shall not be less than 10 feet. For dams, the coefficient of permeability of the core material shall be 10^{-4} cm/sec or less. More permeable core material may be accepted if seepage is adequately controlled and appropriate factors of safety are met. A series of graded material transition zones, consisting of random fill, shall abut the core on all sides.

O. Excavation: Excavation shall be the removal of all materials within the defined configuration to the limits of excavation shown on the Project Drawings, excluding stripping material.

P. Unsuitable Fill: Soil that does not meet the requirements for fill (or backfill) addressed thus far in this SECTION shall be considered unsuitable fill soil.

Q. Cohesionless materials: These materials include gravels, gravel-sand mixtures, sands, and gravelly sands and are generally exclusive of clayey and silty materials (clayey and silty materials are free- draining, so impact compaction does not produce a well-defined moisture-density relationship curve).

R. Cohesive materials: These materials include silts and clays and are generally exclusive of sands and gravel (sands and gravel are materials for which impact compaction produces a well-defined moisture- density relationship curve).

1.3 SUBMITTALS: The CONTRACTOR shall submit field measured cross-sections at each design cross-section for record purposes for canal excavations and levee embankments as described in this SECTION. The submittal of the field measured cross-sections shall be signed and sealed by a State of Florida licensed land surveyor. The CONTRACTOR shall submit to the DISTRICT detailed Work Plans for all work indicated or specified in this SECTION at least 14 days before the work is scheduled to begin.

1.4 QUALIFICATIONS:

A. Geotechnical Testing Agency Qualifications: The CONTRACTOR will engage and pay for an independent testing agency qualified according to ASTM E 329 to perform Quality Control. This Quality Control involves conducting soil materials and rock-definition testing during earthwork operations, as documented according to ASTM D 3740.

B. Earthwork Contractor Qualifications: The CONTRACTOR shall use an adequate number of skilled laborers and installers who are thoroughly trained and have a minimum of 5 years of successful experience in the necessary crafts and are completely familiar with the code requirements, the contract provisions, and the methods needed for the proper performance of the WORK of this SECTION. The CONTRACTOR shall employ the adequate resources and equipment necessary to successfully perform the WORK of this SECTION on schedule.

1.5 RESPONSIBILITIES:

A. The CONTRACTOR shall excavate any material encountered to the depth and grades required, shall backfill such excavations as required, and shall dispose of excess or unsuitable materials from excavation as approved by the DISTRICT. The CONTRACTOR shall provide and place necessary borrow material to properly backfill excavations as indicated on the Drawings, specified herein, or as directed by the DISTRICT.

B. Excavation, dewatering, sheeting, and bracing required shall be carried out so as to prevent any possibility of undermining or disturbing the foundations of any existing structure or WORK, and so that all WORK may be accomplished and inspected in the dry, except as directed by the DISTRICT. Aqueous construction may be performed only with prior written approval of the DISTRICT. Excavation and backfilling shall be in accordance with SECTION 02200 - Excavation and Backfilling.

C. The CONTRACTOR shall furnish the services of a State of Florida licensed land surveyor for the field layout of all work indicated or specified in this section. The CONTRACTOR'S licensed land surveyor shall perform all initial site layout and shall provide follow-up verification of all work underway at a frequency of no less than once a week.

1.6 CERTIFICATIONS AND TESTING: CONTRACTOR shall furnish, at his own expense, all field density testing required to establish and maintain individual Quality Control (QC) processes required or specified in this SECTION. Field density tests shall be in accordance with ASTM Standards (some referenced herein) appropriate to each type of material used in backfilling. Failure to meet the specified density will require the CONTRACTOR to recompact and retest, at his own expense, those areas directed by the DISTRICT.

1.7 INSPECTION COORDINATION: The CONTRACTOR shall provide access to the WORK for the DISTRICT as requested for inspection. The CONTRACTOR shall provide 48 hours advanced notice of its his intention to begin new WORK activities.

1.8 WARRANTY:

A. The MANUFACTURER shall warrant the EQUIPMENT, MATERIALS and PRODUCTS specified in this SECTION against defective materials and workmanship with the MANUFACTURER'S standard warranty, but for no less than one year from the date of Substantial Completion.

B. The CONTRACTOR shall warrant the WORK against defects for one year from the date of

Substantial Completion.

PART 2 - PRODUCTS

2.1 MATERIALS ENCOUNTERED:

A. The CONTRACTOR shall excavate materials to include sand, organics and clayey sand.

B. The CONTRACTOR shall consider all materials encountered in excavations as suitable for use in random fill, provided that they consist of two or more well-graded soils and achieve the required compaction as specified in this SECTION.

C. The CONTRACTOR shall consider all materials encountered, regardless of type, character, composition, and condition thereof unclassified other than as indicated in Article 1.3 Definitions. The CONTRACTOR shall estimate the quantity of various materials included prior to submitting the Bid Form. Rock encountered shall be handled by the CONTRACTOR at no additional cost to DISTRICT.

PART 3 - EXECUTION:

3.1 SITE PREPARATION:

A. Clearing and Demolition: The CONTRACTOR shall perform clearing and demolition as specified in SECTION 02110 - Clearing and Land Preparation and SECTION 02050 - Demolition.

B. Levee Roads: The CONTRACTOR shall place and compact a 6-inch-thick by 14 foot wide layer of lime rock or shell rock gravel along the entire top length of the perimeter and intermediate levees to create the levee road and meet the design grade.

3.2 EXCAVATION AND TRENCHING:

A. Trenching for Pipes: The CONTRACTOR shall perform trenching for pipes as shown, required, and specified in accordance with SECTION 02221 - Trenching, Backfilling and Compacting,

B. Sheeting and Bracing: The CONTRACTOR shall provide sheeting and bracing as required or shown in accordance with the following provisions.

1. Use when required by the specifications or Drawings and where resulting slopes from excavation or trenching might endanger the structural integrity of in-place or proposed structures.

2. Provide materials on site prior to start of excavation. Adjust spacing and arrangement as required by conditions encountered.

3. Remove sheeting and bracing as backfill progresses. Fill voids left after withdrawal with sand or other approved material.

4. In-place structures damaged by sheeting and bracing activities shall be repaired by the CONTRACTOR at no additional cost to the District.

5. Comply with all applicable sections of OSHA.

6. Comply with all requirements of the Florida Trench Safety Law as specified in the GENERAL TERMS & CONDITIONS.

C. Blasting: (Not Included).

D. Excavation for Structures: The CONTRACTOR shall perform excavation for structures as shown, required, and specified below:

1. Excavate area adequate to permit efficient erection and removal of forms.
2. Trim to neat lines where details call for concrete to be deposited against earth.
3. Excavate by hand in areas where confined space and access restricts the use of machines.
4. Notify the DISTRICT immediately when excavation has reached the depth indicated on plans.
5. Restore bottom of excavation to proper elevation with concrete in areas that are over excavated.
6. Conform to the requirements of SECTION 02221 – Trenching, Backfilling, and Compacting.

E. Canal Excavation: The CONTRACTOR shall perform canal excavation by any method meeting the requirements of these specifications and the Drawings. Transitions in bottom width and elevation shall be uniform. The excavated slopes and bottom of the canals shall be left as smooth as skilled use of the excavating equipment will permit.

1. A construction tolerance of 0.25 foot above or below the lines and grades indicated shall be permitted; however, the canal cross sectional area shall not be less than designed.
    a. The CONTRACTOR shall provide field measured cross-sections of the "As-Built" conditions to the DISTRICT, plotted at the same stations as the detailed cross-sections shown on the plans to show the above specified tolerance has been met.
2. Where select fill is specified, the CONTRACTOR shall exercise care in excavation to avoid, to the maximum practicable extent, mixing of peat with materials suitable for use in select fill.
3. Materials suitable for use in select fill shall be deposited along the levee foundation in quantities sufficient for subsequent construction of the select fill. Random fill materials shall be deposited along each side of the central portion of the levee.
4. Sufficient quantities of peat or topsoil may be placed near the limits of fill (levees) for use in final dressing of fill side slopes.

F. Canal Cleaning: The CONTRACTOR shall clean existing canals to the lines and grades shown on the Drawings. All deposited sand, silt, and organic matter shall be removed and stockpiled or disposed of as directed by the DISTRICT.

G. Demucking: The CONTRACTOR shall remove all organic soils from areas below structures, piping, and road subgrades to the lines and grades as shown in the Drawings. Materials excavated shall not be used for backfill of structures or pipes and shall be placed in random fill zones only. Organic soils (including peat) shall be used in random fill in the top layer of the final dressing of the levee.

H. Excavation of Existing Levees and Embankments: The CONTRACTOR shall perform excavation by any method acceptable to the DISTRICT and by meeting the requirements of these specifications and the Drawings. All materials removed from levees and embankments

shall be suitable for reuse as random fill. Excavation limits shall be clearly identified and approved by the DISTRICT prior to initiation of the WORK.

I. Cross-Sections: For pay quantity and record purposes, the Contractor shall submit field measured cross-sections as required by the DISTRICT.

3.3 EMBANKMENT:

A. Levee Embankment:

1. Levee embankment shall consist of a select backfill core and random backfill side slopes (unless otherwise indicated) and shall be placed to the lines and grades as shown on the Drawings. At no location shall the completed top elevation be lower than indicated. Levee side slopes indicated are nominal and may be varied. Completed side slopes shall be uniform from top to toe of the levee and shall be smoothly transitioned. The CONTRACTOR shall perform embankment WORK as shown on the Drawings, required and in accordance with these specifications.

   a. Materials suitable for select fill shall be placed in the central core of the levee in horizontal layers not exceeding 12 inches in loose thickness and compacted as indicated.

   b. Random fill shall be placed to its final position on each side of the select fill concurrent with select fill placement.

   c. Rocks exceeding the acceptable size shall be either stockpiled or crushed to the acceptable size for use. The acceptable sizes of rocks are shown in the Definitions Section of this specification.

2. Material deposited during canal excavation will have a high moisture content, and shall therefore be dried prior to final incorporation in the levee embankment to obtain suitable moisture content (within plus or minus two percent of optimum moisture density) to permit placement and compaction. Drying may consist of allowing the material to drain for a sufficient period to achieve the necessary moisture content or by mechanical means. Following the drying period, organic and non-organic materials shall be completely mixed.

3. Following mixing, materials shall be placed in the levee above existing grade in horizontal layers not exceeding 12 inches in loose thickness and compacted as shown on the Drawings.

4. Cohesive soils shall be compacted to not less than 95% of the maximum density at optimum moisture content determined by accordance with ASTM D698. Cohesionless materials shall be compacted to not less than 80% relative density determined in accordance with ASTM D4253 and D4254.

B. Dam Embankment: The CONTRACTOR shall construct either an earth-filled or rock-filled dam (though both materials can be incorporated into one dam) as determined by various foundation conditions. The CONTRACTOR shall comply with the following:

1. The stability of the upstream and downstream slopes of the dam embankment shall be analyzed for steady-state seepage, pore pressure development during construction, and other critical or severe loading conditions, such as severe weather or rapid drawdown that may occur during the life of the dam.

2. Field Testing, Laboratory Testing, and Shear Strength tests shall be conducted.

C. Roadway and Access Berm Embankment: The CONTRACTOR shall construct embankments for roadways and access berms in accordance with the requirements of SECTION 120 of the latest edition of the FDOT Standard Specifications for Road and Bridge Construction.

D. Non-Water Bearing Embankments: The CONTRACTOR shall construct non-water bearing embankments in accordance with provisions for Levee Embankments except as modified below.

1. Unless required for roadway or access berm embankment, the cohesive material shall be compacted to 85% of the maximum density at optimum moisture content determined by accordance with ASTM D698. Cohesionless materials shall be compacted to not less than 75% relative density determined in accordance with ASTM D4253 and ASTM D4254.

2. Rock diameter for select fill shall not be more than 3 inches (76 mm) in any direction. The rocks shall be evenly distributed in the embankment and placed to minimize rock to rock contact. This even distribution will permit placement of material without voids and help achieve specified compaction.

E. Stormwater Treatment Areas (STAs): The CONTRACTOR shall construct STAs with Levee Fill Material.

F. Final Dressing of Slopes: Following the completion of embankment placement and compaction, the CONTRACTOR shall grade embankment slopes and adjacent transition areas so that they are reasonably smooth and free from irregular surface changes. The CONTRACTOR shall comply with the following:

1. In areas where the embankment is to have grass, sod, or landscaping, the material within the top one foot of the levee, shall be free of any rocks greater than 2 inches (51 mm) in diameter.

2. The degree of finish shall be that ordinarily obtained from blade grader or similar operations.

3. Provide roundings at bottom of slopes and other breaks in grade.

G. Cross-Sections: Provide field measured cross-sections of the final embankments to the DISTRICT for payment and record purposes, plotted at the same stations as the detailed cross-sections shown on the plans, which are not to exceed 500-foot intervals. A tolerance of 0.1 foot on the top of the levee and
0.3 foot on the sides of the levee is permitted. The top of the levee shall have a 2% slope to the interior or as specified by the DISTRICT.

3.4 BACKFILLING:

A. Pipe Embedment and Backfill: The CONTRACTOR shall perform pipe embedment and backfill as required, shown, and specified in accordance with SECTION 02221 - Trenching, Backfilling and Compacting.

B. Structure Backfill: The CONTRACTOR shall place structural backfill in accordance with the lines, grades, and cross-sections shown in the Drawings or as ordered by the DISTRICT. The CONTRACTOR shall backfill using select fill. Stones or rocks greater than 2 inches (51 mm) in any dimension shall not be placed within 12 inches of the structure. Lifts shall not exceed 12 inches. The following procedures shall be adhered to:

1. Structure backfill shall be compacted to not less than 95% maximum dry density as measured by ASTM D1557.

2. Backfill shall not be placed against fresh concrete without the approval of the DISTRICT. Once approved, backfill only after concrete has attained at least 70% design strength. Backfill adjacent to structures only after a sufficient portion of the structure has been built to resist the imposed load.

3. Remove all debris from excavation prior to placement of material.

4. Place backfill in level layers of thickness within the compacting ability of equipment used.

5. Perform backfilling simultaneously on all sides of structures. For walls, backfill shall be brought up evenly on each side of the wall and sloped to drain away from the wall.

C. Unclassified Backfill: The CONTRACTOR shall ensure that unclassified backfill be placed in 12-inch loose lifts to the lines and grades shown on the Drawings or as approved by the DISTRICT. The CONTRACTOR shall compact unclassified backfill to a density approximating the density of surrounding native material and in a manner that will prevent settlement of the completed area.

3.5 MAINTENANCE:

A. The CONTRACTOR shall protect newly graded areas from actions of the elements.

B. The CONTRACTOR shall fill, repair, and re-establish grades to the required elevations and slopes for any area that shows settling or erosion occurring prior to seeding.

END OF SECTION

SECTION 02220 EXCAVATION AND BACKFILLING

PART 1 - GENERAL

1.1 SCOPE:

A. Summary of Work: The CONTRACTOR shall furnish all labor, materials, and equipment to perform the excavation and backfilling as shown on the Drawings.

B. Related Work Specified Elsewhere:

1. SECTION 02110 Clearing and Land Preparation
2. SECTION 02200 Earthwork
3. SECTION 02221 Trenching, Backfilling & Compaction

1.2 APPLICABLE PUBLICATIONS:

A. American Society of Testing Materials (ASTM)

1. D698 Standard Test Methods for Laboratory compaction Characteristics of Soil Using the Standard Effort (56,000 ft-lbf/cu. ft.)
2. D1557 Standard Test Methods for Laboratory compaction Characteristics of Soil Using the Modified Effort (12,400 ft-lbf/cu. ft.)
3. D4253 Standard Test Methods for Maximum Index Density and Unit Weight of Soils Using a Vibratory Table
4. D4254 Standard Test Method for Minimum Index Density and Unit Weight of Soils and Calculation of Relative Density

B. Florida Department of Transportation

1. Standard Specifications for Road and Bridge Construction, latest edition, (FDOT)
2. Subsurface soil data logs by AIM Engineering & Surveying, Inc. September 2017

1.3 DEFINITIONS: (Not Applicable)

1.4 SUBMITTALS: The CONTRACTOR shall submit, prior to the start of work, the planned method of construction of the embankments shown on the Drawings, or as specified herein, for the DISTRICT'S review. This plan shall also indicate the intended construction sequence for backfilling operation.

1.5 QUALIFICATIONS: (Not Applicable)

1.6 RESPONSIBILITIES: (Not Applicable)

1.7 CERTIFICATIONS AND TESTING: Field density tests in accordance with ASTM Standards, for each type of material used in backfilling may be required. Failure to meet the specified density will require the CONTRACTOR to recompact and retest, at its own expense, those areas directed by the DISTRICT.

1.8 INSPECTION COORDINATION: The CONTRACTOR shall provide access to the WORK for the DISTRICT as requested for inspection. The CONTRACTOR shall provide the District at least 48 hours advance notice of its intention to begin new WORK activities.

1.9 WARRANTY:

A. The MANUFACTURER shall warrant the EQUIPMENT, MATERIALS, and PRODUCTS specified in this section against defective materials and workmanship with the

MANUFACTURER'S standard warranty, but for no less than one year from the date of Substantial Completion, and as described in Article 13 of SECTION 00700 - General Terms and Conditions.

B. The CONTRACTOR shall warrant the WORK against defects for one year from the date of Substantial Completion and as described in Article 13 of SECTION 00700 - General Terms and Conditions.

PART 2 - PRODUCTS

2.1 STRUCTURAL BACKFILL: The CONTRACTOR shall provide satisfactory structural backfill material which shall consist of material free of muck, stumps, rocks, or other material considered unacceptable by the DISTRICT. The general requirements for fill shall be in accordance with SECTION 02200 Earthwork and FDOT 120-7.1 and 7.2.

2.2 EMBANKMENT FILL: The CONTRACTOR shall provide embankment fill free of muck, stumps, roots, brush, vegetation, or other material considered undesirable by the DISTRICT. The general requirements of embankment fill shall be in accordance with SECTION 02200 Earthwork and FDOT 120-7.1 and 7.2.

PART 3 - EXECUTION

3.1 SITE PREPARATION:

A. Clearing and Grubbing: The CONTRACTOR shall perform clearing and grubbing in accordance with SECTION 02110 Clearing and Land Preparation and with the following provisions:

1. Perform only in areas where earthwork or other construction operations are to be performed or otherwise shown on Drawings.
2. Protect tops, trunks, and roots of existing trees that are to remain on the site.
3. Clear areas and dispose of other trees, brush, and vegetation before starting construction.
4. Remove tree stumps and roots larger than three inches in diameter and backfill resulting excavations with approved material.

B. Stripping: The CONTRACTOR shall remove topsoil from areas within limits of excavation and areas designated to receive compaction as shown on the Drawings, required and as provided below:

1. Scrape area clean of all brush, grass, weeds, roots, and other material.
2. Strip to depth of approximately six inches or to a sufficient depth to remove excessive roots in heavy vegetation or brush areas and as required segregating topsoil.
3. Stockpile topsoil in areas where it will not interfere with construction operations or existing facilities. Stockpiled topsoil shall be reasonably free of subsoil, debris and stones larger than two inches in diameter.

3.2 DISPOSAL OF SURPLUS AND UNSUITABLE MATERIAL: The CONTRACTOR shall dispose of all excess or unsuitable material off-site or in areas otherwise approved by the DISTRICT.

3.3 STOCKPILE OF EXCAVATED MATERIAL: The CONTRACTOR shall stockpile excavated materials in areas shown on the Drawings or in areas otherwise approved by the DISTRICT.

3.4 PLACEMENT OF STRUCTURAL FILL: The CONTRACTOR shall place structural backfill true to the lines, grades and, cross sections shown in the Drawings or as ordered by the DISTRICT. Structural backfill shall be deposited by the CONTRACTOR in horizontal layers not exceeding eight

inches in depth measured loose, and shall be compacted to a density of not less than 95 percent of the maximum density at optimum soil moisture content +/- 2% as determined by ASTM D1557 Standards. Backfill shall not be placed against fresh concrete without the approval of the DISTRICT.

3.5 PLACEMENT OF EMBANKMENT FILL: The CONTRACTOR shall construct embankments true to the lines, grades, and cross sections shown on the Drawings or as directed by the DISTRICT. Fill for embankments shall be placed by the CONTRACTOR in successive layers of not more than twelve inches in thickness, measured loose, for the full width of the embankment. Each layer of the material used in the formation of the embankments shall be compacted by the CONTRACTOR to a density of at least 95 percent of the maximum density as determined by ASTM D1557 Standards. Unreasonable roughness of the surface shall be dressed out. Rocks and boulders shall not project above the finished surfaces. All areas disturbed shall be graded by the CONTRACTOR so that water drains freely at all points after construction.

3.6 COMPACTION EQUIPMENT: When placing fill adjacent to foundations or retaining walls, heavy equipment for spreading and compacting fill shall not be operated closer than a distance equal to the height of backfill above the top of the footing; the area remaining shall be compacted in layers not more than 4 inches in compacted thickness with power-driven hand tampers suitable for the materials being compacted. Backfill shall be placed carefully around pipes or tanks to avoid damage to coatings, wrappings, or tanks. Backfill shall not be placed against foundation walls prior to 7 days after completion of the walls. As far as practicable, backfill shall be brought up evenly on each side of the wall and sloped to drain away from the wall.

3.7 GRADING: The CONTRACTOR shall perform grading as shown on the Drawings, required, and provided for below:

A. Grade and compact all areas within the project area, including excavated and filled sections and adjacent transition areas, reasonably smooth, and free from irregular surface changes.

B. Degree of finish shall be that ordinarily obtained from blade grader or scraper operations except as otherwise specified.

C. Finished rough grades shall generally be not more than one quarter foot above or below those indicated with due allowances for topsoil.

D. Finish all ditches, swales, and gutters to drain readily.

E. Provide roundings at top and bottom of banks and at other breaks in grade.

3.8 CLEANUP: The CONTRACTOR shall cleanup the site as required and provided for below, to the satisfaction of the District:

A. Clear surfaces of all stones, roots, grading stakes, and other objectionable materials.

B. Keep paved areas clean and promptly remove rock or dirt dropped upon surfaces.

3.9 PROTECTION AND MAINTENANCE: The CONTRACTOR shall maintain the embankments until final acceptance of all work. The maintenance shall include repairs of any erosion, slides, or other damages.

END OF SECTION

SECTION 02221 TRENCHING, BACKFILLING AND COMPACTING

PART 1 - GENERAL

1.1 SCOPE:

A. Summary of Work: The CONTRACTOR shall furnish all labor, materials, and equipment necessary for complete and proper trenching, backfilling and compacting as specified herein.

1. SECTION 02200 Earthwork

1.2 APPLICABLE PUBLICATIONS:

A. American Society of Testing Materials (ASTM):

1. D698 - Standard Test Methods for Laboratory compaction Characteristics of Soil Using the Standard Effort (12,400 ft-lbf/ ft3 (600 kN-m/m3))
2. D1557 - Standard Test Methods for Laboratory compaction Characteristics of Soil Using the Modified Effort (56,000 ft-lbf/ ft3 (2,700 kN-m/m3))
3. D4253 - Standard Test Methods for Maximum Index Density and Unit Weight of Soils Using a Vibratory Table
4. D4254 - Standard Test Methods for Minimum Index Density and Unit Weight of Soils and Calculation of Relative Density

B. Florida Department of Transportation (FDOT):

1. Standard Specifications for Road and Bridge Construction, latest edition, (FDOT)

C. Miscellaneous Project Data:

1. Subsurface soil data logs are provided for the CONTRACTOR'S reference: Geotechnical Memorandum on the Myakka State Forest Water Quality and Bank Stabilization, AIM Engineering & Surveying, Inc., September 30, 2017

DEFINITIONS: (Not Applicable)

1.3 SUBMITTALS: (Not Applicable)

1.4 QUALIFICATIONS: (Not Applicable)

1.5 RESPONSIBILITIES:

A. The CONTRACTOR shall make all excavations for piping and appurtenant structures in any material encountered to the depth and grades required, shall backfill such excavations and dispose of excess or unsuitable materials from excavation, and shall provide and place necessary borrow material to properly backfill excavations, all as indicated on the drawings, specified herein, or as directed by the DISTRICT.

B. Excavation, dewatering, sheeting and bracing required shall be carried out so as to prevent any possibility of undermining or disturbing the foundations of any existing structure or work, and so that all work may be accomplished and inspected in the dry, except as directed

by the DISTRICT. Aqueous construction may be performed only with prior approval of the DISTRICT.

1.6 CERTIFICATIONS AND TESTINGS: (Not Applicable)

1.7 INSPECTION COORDINATION: The CONTRACTOR shall provide access to the WORK for the DISTRICT as requested for inspection. The CONTRACTOR shall provide 48 hours' notice of its intention to begin new WORK activities.

1.8 WARRANTY:

A. The MANUFACTURER shall warrant the EQUIPMENT, MATERIALS and PRODUCTS specified in this section against defective materials and workmanship with the MANUFACTURER'S standard warranty, but for no less than one year from the date of Substantial Completion.

B. The CONTRACTOR shall warrant the WORK against defects for one year from the date of Substantial Completion.

PART 2 - PRODUCTS

2.01 MATERIALS: The CONTRACTOR shall furnish materials as required to complete the Work under this Section.

PART 3 - EXECUTION

3.1 EXTENT OF OPEN EXCAVATION: The CONTRACTOR shall perform the excavation such that at any time the amount of excavation open will be held to a minimum consistent with normal and orderly prosecution of the work, or as restricted by permit conditions.

3.2 CUTTING PAVEMENT: When excavations are required in paved areas the CONTRACTOR shall conform to the following.

A. When excavations are to be made in paved surfaces, the pavement shall be cut ahead of the excavation by means of suitable sharp tools to provide a uniform sharp edge with minimum disturbance of remaining materials.

B. Asphalt paving and other improvements in the right-of-way and on other private property affected by this construction shall be duly protected and, where disturbed, shall be restored or replaced to meet original conditions.

3.3 TRENCH EXCAVATION: The CONTRACTOR shall perform trench excavation in accordance with the following.

A. All excavation for piping shall be open cut. Trench sides shall be approximately vertical between an elevation of one foot above the top of the pipe and the centerline of the pipe; otherwise, trench sides shall be as vertical as possible or as required. Trenches may be excavated by machinery to a depth that will not disturb the finish grade.

B. Trench width shall be as narrow as practical and shall not be widened by scraping or loosening material from the sides.

3.4 EXCAVATION BELOW NORMAL GRADE:

A. In the event the CONTRACTOR through error or carelessness excavates below the elevation required, the CONTRACTOR shall at his own expense backfill with selected gravel and compact to obtain a suitable pipe bedding all as directed and to the satisfaction of the DISTRICT.

B. In the event unstable or unsuitable bedding material is encountered at or below the pipe bedding level, the CONTRACTOR shall remove such material and replace it with suitable compacted material.

3.5 BACKFILLING TRENCHES:

A. The CONTRACTOR shall be responsible for obtaining the necessary inspections before, during and after backfilling and shall re-excavate, refill, and perform all such related work to obtain satisfactory test results.

B. The CONTRACTOR shall use excavated materials classified as embankment fill for backfilling and such grading on the site as is required. The CONTRACTOR shall dispose of any excess fill or unstable material in areas approved by the DISTRICT. Pipe trenches shall be backfilled with fine, loose embankment fill (see SECTION 02220, paragraph 2.02), free from large stones, carefully deposited on both sides of pipe and thoroughly and carefully rammed until enough fill has been placed to provide a cover of at least one foot above the pipe. The remainder of the backfill material may then be thrown in and tamped. Water settling may be permitted. The CONTRACTOR shall submit written request detailing the need to perform water settling and reasons why work in the dry is not possible. The CONTRACTOR shall also submit detailed procedures for the review and approval of the DISTRICT. Whenever trenches have not been properly filled, or if settlement occurs, they shall be refilled, smoothed off and finally, made to conform to the surface of the ground. Backfilling shall be carefully performed, and the surface restored to the elevation shown on the plans. In unpaved areas the surface of trenches shall conform and be equal to quality, character and material of the surface immediately prior to making the excavation.

C. Place earth embedment as follows:

1. With level bottom layer at proper grade to receive and uniformly support pipe barrel throughout its length.
2. Form shallow depression under each joint to facilitate jointing.
3. Add second layer simultaneously to both sides of the pipe with care to avoid displacement of the pipe.
4. Place material in maximum 12-inch lifts.

3.6 BACKFILLING OF TRENCH UNDER ROADWAY AND AREAS TO BE PAVED: The CONTRACTOR shall place material in 12-inch maximum layers after filling one-foot above pipe as previously described. Each layer shall be compacted to 95 percent maximum dry density as measured by ASTM D1557 so that pavement can be placed promptly. Any pavement cut or area disturbed by this work shall be replaced to match existing.

3.7 BACKFILLING OF TRENCH OPEN AREAS: The CONTRACTOR shall place material in 12-inch maximum lifts after filling one-foot above pipe as previously described. The top one-foot layer shall be compacted to 85 percent maximum dry density as measured by ASTM D1557. Each layer shall be compacted to the density of adjacent soils. Restore the surface to original grade and place sod or seed as required by the contract documents.

END OF SECTION

SECTION 02230 ROADWAY EXCAVATION, BACKFILL AND COMPACTION

PART 1 - GENERAL

1.1 SCOPE:

A. Summary of Work: The work specified by the CONTRACTOR shall consist of the excavation and embankment required for the construction of the roadway, ditches, and shoulders shown on the Drawings and includes the preparation of subgrades, the construction of embankments, and utilization or disposal of the materials excavated, and the compaction and dressing of excavated areas and embankments. All work shall be in accordance with the alignment, grades and sections as shown in the Drawings or as directed.

1.2 APPLICABLE PUBLICATIONS:

A. Florida Department of Transportation (FDOT):

1. Standard Specifications for Road and Bridge Construction, latest edition, (FDOT)

B. American Society of Testing Materials (ASTM):

1. D698 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using the Standard Effort (12,400 ft-lbf/ft^3 (600 kN-m/m^3))
2. D1556 - Standard Test Method for Density and Unit Weight of Soil in Place by Sand Cone Method
3. D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft^3 (2,700 kN-m/m^3))
4. D2922 - Standard Test Methods for Density of Soil and Soil-Aggregate in Place by the Nuclear Methods (Shallow Depth)

1.3 DEFINITIONS: (Not Applicable)

1.4 SUBMITTALS: (Not Applicable)

1.5 QUALIFICATIONS: (Not Applicable)

1.6 RESPONSIBILITIES: (Not Applicable)

1.7 CERTIFICATIONS AND TESTING:

1.8 TESTS: If the DISTRICT deems necessary, field density tests may be used in accordance with ASTM D1556, Test for Soil in Place by Sand Cone Method, or ASTM D2922. The areas to be tested shall be determined by the DISTRICT. Laboratory compaction tests shall be conducted in accordance with ASTM D698 and D1557. Cost of testing will be the responsibility of the CONTRACTOR. Failure to meet the specified density will require the CONTRACTOR to recompact and retest those areas directed by the DISTRICT.

1.9 INSPECTION COORDINATION: The CONTRACTOR shall provide access to the WORK for the DISTRICT as requested for inspection. The CONTRACTOR shall provide 48 hours advance notice of its intention to begin new WORK activities.

1.10 WARRANTY:

A. The CONTRACTOR shall warrant the WORK against defects for one year from the date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MATERIALS FOR BACKFILL: The CONTRACTOR shall use all suitable materials resulting from the excavation to the extent practicable in the construction of the roadway and such other phases as shown on the drawings or required for completion of the work, as directed by the DISTRICT. Materials shall conform to FDOT Section 120-7.2 and shall contain no muck, stumps, roots, brush, organic matter, rubbish or other material that will not compact into a suitable and enduring roadbed.

PART 3 - EXECUTION

3.1 EMBANKMENT CONSTRUCTION: The CONTRACTOR shall construct by the dry fill method as specified by FDOT Specification Section 120-8.2.

3.2 COMPACTION: The CONTRACTOR shall compact each layer of material used in the formation of the embankments to a density of at least 95 percent of the maximum density as determined by ASTM D698, D1557. Each layer shall be uniformly compacted using equipment which will achieve the required density, and as compaction operations progress, each layer shall be shaped and manipulated as necessary to assure uniform density throughout the embankment. The material being compacted shall be maintained within plus or minus 2 percent of its optimum moisture content during compaction.

3.3 FINAL DRESSING: As a final grading operation the CONTRACTOR shall shape the surface of the earthwork to conform to the lines, grades and cross sections shown on the drawings or as directed by the DISTRICT. The tolerances of 0.1 feet above or below the plan cross section will be permitted with the following exceptions:

A. The surface of shoulders and subgrade shall be shaped to within 0.1 foot of the drawing cross section.

B. Earthwork shall be shaped to match adjacent pavement, curb, sidewalk, land surface, etc.

END OF SECTION

SECTION 02240 SOIL STABILIZATION

PART 1 - GENERAL

1.1 SCOPE:

A. Summary of Work: The CONTRACTOR shall furnish all labor, equipment, and materials for stabilization of the soil to provide a firm and unyielding subgrade for the WORK as described in this SECTION.

1. SECTION 02200 - Earthwork
2. SECTION 02230 - Roadway Excavation, Backfill, and Compaction

1.2 APPLICABLE PUBLICATIONS: The following standard specifications shall apply to the WORK of this SECTION as indicated:

A. Florida Department of Transportation

1. Standard Specifications for Road and Bridge Construction, latest edition, (FDOT)

B. American Society of Testing Materials, (ASTM)

1. ASTM D1557, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using the Modified Effort (56,000 ft-lb/ft^3 (2,700 kN-m/m^3))
2. ASTM D2922, Standard Test Methods for Density of Soil and Soil-Aggregate in Place by the Nuclear Methods (Shallow Depth)

C. Soils Report/Boring log, See Geotechnical Memorandum on the Myakka State Forest Water Quality and Bank Stabilization, AIM Engineering & Surveying, Inc., September 30, 2017

1.3 DEFINITIONS: (Not Applicable)

1.4 SUBMITTALS: (Not Applicable)

1.5 QUALIFICATIONS: (Not Applicable)

1.6 RESPONSIBILITIES: (Not Applicable)

1.7 CERTIFICATIONS AND TESTING: The CONTRACTOR shall provide to the DISTRICT three (3) c o p i e s of certified test results for the tests required to be performed by the CONTRACTOR.

1.8 INSPECTION COORDINATION: The CONTRACTOR shall provide access to the WORK for the DISTRICT as requested for inspection. The CONTRACTOR shall provide 48 hours advance notice of its intention to begin new WORK activities. The DISTRICT may perform field density tests in accordance with ASTM Standards, for each type of material used in backfilling. Failure to meet the specified density will require the CONTRACTOR to recompact and retest, at its own expense, those areas directed by the DISTRICT.

A. Soils Report/Boring log, sand, and clayey sand.

1.9 WARRANTY:

A. The CONTRACTOR shall warrant the WORK against defects for one year from the date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PRODUCT REQUIREMENTS:

A. General Requirements: The CONTRACTOR shall provide the required stabilization material which shall be either commercial limerock or crushed shellrock in conformance with FDOT Standard Specifications for Road and Bridge Construction Section 914-3, Type B Stabilizing.

PART 3 - EXECUTION

3.1 PREPARATION: The CONTRACTOR, prior to beginning the stabilizing operations, shall grade the area to be stabilized to an elevation such that upon completion of the stabilizing operations the stabilized subgrade will conform to the lines, grades and cross sections shown on the Drawings.

3.2 APPLICATION OF STABILIZING MATERIAL: The CONTRACTOR shall spread the stabilizing material uniformly over the area to be stabilized. The CONTRACTOR shall then mix the material with rotary tillers, or other equipment meeting the approval of the DISTRICT. The area to be stabilized shall be thoroughly mixed throughout the entire depth and width of the stabilizing area.

3.3 COMPACTION: After mixing operations are completed, the CONTRACTOR shall compact the area to the minimum density as required by FDOT Section 160-8. The subgrade shall be firm and unyielding; to the extent that it will support construction equipment. The CONTRACTOR shall remove all soft and yielding material, and any other portions of the subgrade, which will not compact readily, and replace with suitable material and the whole subgrade brought to line and grade.

3.4 FINISH GRADING: The CONTRACTOR shall shape the completed stabilized subgrade to conform to the finished lines, grades, and cross-sections indicated on the Drawings.

3.5 MAINTENANCE: After the subgrade has been completed as specified, the CONTRACTOR shall maintain it free from, ruts, depressions and any damage resulting from the hauling or handling of materials, equipment, etc. It shall be the CONTRACTOR's responsibility to maintain the required density until the subsequent base is in place.

END OF SECTION

SECTION 02370 RIPRAP SYSTEM

PART 1 - GENERAL

1.1 SCOPE:

A. Summary of Work: The CONTRACTOR shall furnish stone riprap, bedding stone and filter fabric for construction of channel lining where indicated, including temporary riprap for bypass channel(s).

1.2 RELATED WORK REFERENCED ELSEWHERE:

A. SECTION 01300 - Submittals

1.3 APPLICABLE PUBLICATIONS: The following standard specification shall apply to the WORK of this SECTION:

A. American Society for Testing and Materials (ASTM):

1. C88 - Standard Test Method for Soundness of Aggregate by use of Sodium Sulfate or Magnesium Sulfate for use in Saltwater Only
2. C127 - Standard Test Method for Density, Relative Density (Specific Gravity) and Absorption of Course Aggregate
3. C535 - Standard Test Method for Resistance to Degradation of Large Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine

B. American Association of State Highway and Transportation Officials (AASHTO)

1. T 85 Standard Method of Test for Specific Gravity and Absorption of Coarse Aggregate
2. T 120 Method of Test for Aggregate Durability Index

C. Florida Department of Transportation Standard Specifications for Road and Bridge Construction, latest edition, (FDOT)

1.4 DEFINITIONS: (Not Used)

1.5 SUBMITTALS: Furnish submittals in accordance with SECTION 01300 Contractor Submittals. The CONTRACTOR shall furnish to the DISTRICT, testing certificates from a qualified independent testing laboratory prior to acceptance of the rock source to verify the conformity to the requirements of the Contract Documents.

1.6 QUALIFICATIONS: (Not Used)

1.7 RESPONSIBILITIES: (Not Used)

1.8 CERTIFICATIONS:

A. Test Reports: The CONTRACTOR's rubble riprap supplier shall submit certified test reports prepared by a qualified independent testing laboratory selected and compensated by CONTRACTOR for the tests required in Article 2.1 B of this SECTION. The table shown

below specifies the minimum number of tests for each Project to establish quality control during the processing of a single 2,500-ton stockpile.

Test Required	Number of Tests	Test Method
Specific Gravity	2	ASTM C127
Absorption	2	ASTM C127, AASHTO T 85
Test Required	Number of Tests	Test Method
Soundness	2	ASTM C88
Durability Index	2	AASHTO T 210
L.A. Abrasion	2	FM 3-C 535
Gradation	1	FM 5-538

B. Filter Fabric: The CONTRACTOR shall submit MANUFACTURER's data for filter fabric demonstrating compliance with specified material properties, and including MANUFACTURER's recommendations for storage, handling, installation, and anchoring fabric.

1.9 INSPECTION COORDINATION: The CONTRACTOR shall provide access to the WORK for the DISTRICT as requested for inspection. The CONTRACTOR shall provide the DISTRICT 48 hours advance notice of its intention to begin new WORK activities.

1.10 WARRANTY:

A. The MANUFACTURER shall warrant the MATERIALS and PRODUCTS specified in this section against defective materials and workmanship with the MANUFACTURER's standard warranty, but for no less than one (1) year from the date of Substantial Completion.

B. The CONTRACTOR shall warrant the WORK against defects for one (1) year from the date of Substantial Completion.

PART 2 - MATERIALS

2.1 RIPRAP: The CONTRACTOR shall furnish stone for riprap that shall be sound, durable, and angular in shape. No more than 10% of the stone for any gradation shall have an elongation (ratio of greatest dimension to least dimension) greater than 3:1, and no stone shall have an elongation greater than 4:1. The riprap material shall be provided by a Florida Department of Transportation (FDOT) certified pit.

A. Material shall be free from cracks, seams, non- mineralized or other defects that would tend to increase its deterioration from natural causes. Riprap shall consist of dense, natural rock fragments. Stones shall be resistant to weathering and to water action; free from overburden, spoil, shale and organic material; and shall meet the gradation requirements below. Shale and stones with shale seams are not acceptable.

B. Stone for riprap shall have the following properties:

1. Bulk specific gravity (saturated surface-dry basis) not less than 2.38 when tested by ASTM C127 for gradations A, B, and C, and D.

2. The minimum apparent specific gravity of the stones shall be 2.5 as determined by

AASHTO T 85.

3. Absorption of not more than 5.0% when tested by ASTM C127.

4. Soundness: Soundness of stone shall be determined in accordance with ASTM C88, modified as specified herein. Weight loss in 5 cycles shall be not more than 10% when sodium sulfate is used or 15% when magnesium sulfate is used.

5. Stones shall consist of durable, sound, hard, angular rock meeting the following requirements for durability absorption ratio, soundness test, and abrasion test:

Durability Absorption Ratio	Acceptability
Greater than 23	Passes
10 to 23	Passes only if Durability Index is 52 or
greater Less than 10	Fails

$$\text{Durability Absorption Ratio} = \frac{\text{Durability Index (Coarse)}}{\%\ \text{absorption} + 1}$$

6. The durability index and percent absorption shall be determined by AASHTO T 210 and AASHTO T 85, respectively. The minimum apparent specific gravity of the stones shall be 2.5 as determined by AASHTO T 85.

7. Stones shall have less than ten (10) percent loss of weight after five cycles, when tested per ASTM C88.

8. Stones shall have a wear not greater than 40 percent, when tested per ASTM C535.

9. Stone gradation based on a representative sample of not less than 2.0 cubic yards. Each stone in the sample shall be individually weighed, and a cumulative plot of percent lighter (by weight) versus stone weight in pounds shall be submitted.

C. The riprap shall be graded as follows:

Type A (6-inch Average Size)		
Sieve Size		**Percent Passing by Weight**
Maximum	**Minimum**	
12”	**9”**	**100**
8”	**7”**	**50**
6”	**5”**	**15**

Type B (12-inch Average Size)		
Sieve Size		**Percent Passing by Weight**
Maximum	**Minimum**	
21”	**15”**	**100**
14”	**12”**	**50**
11”	**8”**	**15**

Type C (18-inch Average Size)		
Sieve Size		**Percent Passing by Weight**
Maximum	**Minimum**	
30”	**22”**	**100**
20”	**18”**	**50**
16”	**12”**	**15**

Type D (24-inch Average Size)		
Sieve Size		Percent Passing by Weight
Maximum	Minimum	
42”	31”	100
28”	24”	50
22”	17”	15

D. Control of gradation shall be by visual inspection. The CONTRACTOR shall furnish a sample of the proposed gradation of at least five (5) tons or ten (10) percent of the total riprap weight, whichever is less. If approved, the sample may be incorporated into the finished riprap at a location where it can be used as a frequent reference for judging the gradation of the remainder of riprap. Any difference of opinion between the DISTRICT and the CONTRACTOR shall be resolved by dumping and checking the gradation of two random truckloads of stones. Arranging for and the costs of mechanical equipment, a sorting site, and labor needed in checking gradation shall be the CONTRACTOR’s responsibility.

E. The acceptability of the stones will be determined by the DISTRICT prior to placement.

2.2 GRANULAR BEDDING: The CONTRACTOR shall place a blanket of bedding material beneath the riprap materials to the lines and grades shown on the drawings. Stone for use in granular bedding shall weigh not less than 135 lbs/cf (saturated surface dry). The material shall be composed of tough, durable particles, shall be reasonably free from thin, flat and elongated pieces, and shall contain neither organic matter nor soft, friable particles in quantities considered objectionable by the DISTRICT. Bedding stone shall be placed within the limits shown on the drawings and shall be reasonably well graded in accordance with FDOT Section 901, Standard Specifications for Road and Bridge Construction, latest edition. The bedding stone for each type of riprap shall be as follows:

Type of Riprap	Bedding Stone
Type A	ASTM C33 Size No. 57
Type B	ASTM C33 Size No. 357
Type C	ASTM C33 Size No. 2
Type D	ASTM C33 Size No. 1

2.3 FILTER FABRIC: The CONTRACTOR shall provide geotextile (filter) fabric conforming to the requirements of FDOT Section 985 for drainage applications.

2.4 TEMPORARY RIPRAP: The CONTRACTOR shall furnish temporary riprap as indicated on the Drawings conforming to the requirements of Part 2 of this SECTION for Gradation B.

PART 3 - PERFORMANCE

3.1 FIELD QUALITY CONTROL:

A. The CONTRACTOR shall recombine the riprap stone sample used for gradation analysis, transport to the Project Site, and place in a location acceptable to the DISTRICT. Field control of riprap gradation will be by visual comparison of the representative sample to arriving loads. Arriving loads not bearing reasonable similarity to the sample will be rejected.

1. CONTRACTOR may, at his option, arrange for gradation analysis of rejected loads at the Project Site. Should the analysis indicate the rejected stone meets the requirements of this SECTION; all reasonable costs for such analysis will be reimbursed to the CONTRACTOR. In no instance will stone of a coloration or appearance dissimilar to that in the sample be accepted.

3.2 SUBGRADE PREPARATION:

A. Dry Installation: The CONTRACTOR shall prepare the subgrade to the lines, slopes and elevations indicated. The CONTRACTOR shall clear the subgrade of sticks, stones, debris, and other materials that could puncture the overlying filter fabric. The finished subgrade shall not vary from design grade by more than 2" at any location.

B. Sub aqueous Installation: The CONTRACTOR shall excavate the subgrade to the lines and grades shown. Tolerance shall be plus 0.0 feet to minus 0.5 feet in the canal invert, and plus or minus 0.5 feet on the Canal banks.

3.3 FILTER FABRIC: The CONTRACTOR shall provide filter fabric in accordance with the requirements of FDOT Section 514. Filter fabric shall be placed only on subgrade approved by the DISTRICT.

3.4 GRANULAR BEDDING: The CONTRACTOR shall place bedding material beneath the riprap, to a nominal depth of six (6) inches.

A. Bedding material shall be spread uniformly over filter fabric material. Placement shall not commence until the DISTRICT has approved subgrade preparation and filter fabric installation.

B. Placement methods, which segregate the bedding particles, will not be permitted.

C. Compaction of the bedding material will not be required, but material shall be finished to a reasonably even surface.

D. Tolerance shall be + three-tenths foot provided this tolerance is not continuous over an area greater than 200 square feet when placed in the dry, or greater than 400 square feet when placed sub aqueous.

E. CONTRACTOR shall maintain the bedding material until the riprap is in place.

3.5 RIPRAP: The CONTRACTOR shall proceed placing the riprap upon completion of filter fabric and bedding material (where required) and after receiving approval of the DISTRICT to proceed. The CONTRACTOR shall place riprap in accordance with the following.

A. Stone shall be placed in such a manner as to produce a reasonably well-graded mass with the minimum practicable percentage of voids.

1. Place to full course thickness in one operation in a manner to avoid displacing or puncturing filter fabric.

a. Stone shall not be dropped from a height greater than three (3) feet above the fabric.

2. Finished riprap shall be free from objectionable pockets of small stones and clusters of larger stones. Hand place or adjust if necessary, to secure the desired results.

B. Surface Tolerances:

1. Dry Installation: The finished stone surface shall not vary from design grade by more than three (3) inches at any location, except that any extreme of the tolerance shall not be continuous over an area greater than 100 square feet.

2. Sub aqueous Installation: The finished stone surface shall not vary from design grade by more than plus one-foot, minus one-half feet at any location; either extreme of the tolerance shall not be continuous over an area greater than 225 square feet.

3.6 MAINTENANCE: The CONTRACTOR shall maintain the riprap until accepted by the DISTRICT. The CONTRACTOR shall replace riprap displaced by any cause prior to acceptance.

END OF SECTION

SECTION 02433 STORM DRAINAGE SYSTEM – REINFORCED CONCRETE PIPE

PART 1 - GENERAL

1.1 SCOPE:

A. Summary of Work: The CONTRACTOR shall furnish all labor, materials, and equipment necessary for the installation of the storm drainage system including excavation, bedding, and backfill, as shown on the Drawings and/or specified.

1. SECTION 02200 Earthwork
2. SECTION 02220 Excavation and Backfilling
3. SECTION 02221 Trenching, Backfilling and Compacting

1.2 APPLICABLE PUBLICATIONS:

A. American Society for Testing and Materials (ASTM):

1. A82 - Standard Specification for Steel Wire, Plain, for Concrete Reinforcement
2. A185 - Standard Specification for Steel Welded Wire Reinforcement, Plain, for Concrete
3. A495 - Standard Specification for Calcium-Silicon Alloys
4. A496 - Standard Specification for Steel Wire, Deformed, for Concrete Reinforcement
5. A615 - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement
6. C76 - Standard Specification for Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe
7. C150 - Standard Specification for Portland Cement
8. C387 - Standard Specification for Packaged, Dry, Combined Materials for Mortar and Concrete
9. C443 - Standard Specification for Joints for Concrete Pipe and Manholes Using Rubber Gaskets

B. Florida Department of Transportation (FDOT): Standard Specifications for Road and Bridge Construction

C. Association of American State Highway and Transportation Officials (AASHTO): M85 Standard Specification for Portland Cement

1.3 DEFINITIONS: (Not Used)

1.4 SUBMITTALS: The CONTRACTOR shall make submittals in conformance with SECTION 01300. Submit shop drawings for pipe, inlets, manholes, frames and covers.

1.5 QUALIFICATIONS: (Not Used)

1.6 RESPONSIBILITIES: (Not Used)

1.7 CERTIFICATIONS AND TESTING: (Not Used)

1.8 INSPECTION COORDINATION: The CONTRACTOR shall provide access to the WORK for the DISTRICT as requested for inspection. The CONTRACTOR shall provide the District at least 48 hours advance notice of its intention to begin new WORK activities.

1.9 WARRANTY:

A. The MANUFACTURER shall warrant the EQUIPMENT, MATERIALS, and PRODUCTS specified in this SECTION against defective materials and workmanship with the MANUFACTURER'S standard warranty, but for no less than one year from the date of Substantial Completion

B. The CONTRACTOR shall warrant the WORK against defects for one year from the date of Substantial Completion.

PART 2 - PRODUCTS

2.1 REINFORCED CONCRETE PIPE:

A. The CONTRACTOR shall furnish all pipe and appurtenances for the storm drainage system of the type and material specified. All pipe, fittings, jointing, materials, and other required appurtenances shall be new material to be included in the work; and if not specifically described in these specifications, shall be of the best quality and entirely suitable for the service intended. The DISTRICT, prior to installation, shall approve all such material.

B. The CONTRACTOR shall furnish reinforced concrete pipe for the construction of the storm drainage system in accordance with Section 449 of the FDOT Standard Specifications for Road and Bridge Construction and ASTM C76. The reinforced concrete pipe shall meet the design requirements for Class III pipe as specified in ASTM C76. Location and size of pipe is as shown on the Drawings.

C. The CONTRACTOR shall furnish reinforced concrete pipe sealed by the use of round rubber gaskets. The rubber gaskets used shall meet the requirements as specified in Section 449 of the Standard Specifications for Road and Bridge Construction and ASTM C443.

D. Reinforced Concrete Pipe: Conform to ASTM C76 and the following additional requirements:

1. Cement shall be Type II conforming to ASTM C150 or Type I/II conforming to AASHTO M85.
2. The minimum Portland cement content shall be 470 lbs. per cubic yard.
3. The water/cement ratio shall not exceed 0.53.
4. Sizes of storm drainage pipe to be used as indicated. In all cases, the strength classification is III based on concrete pipe standards
5. All pipe reinforcement shall consist of ASTM A82, A496, A185, A497 or A615.
6. The CONTRACTOR shall provide the DISTRICT with a Certificate of Compliance from the pipe manufacturer that the pipe and concrete mix conform in all respects to these specifications and other non-conflicting requirements of the reference ASTM Specifications.

E. Concrete Pipe Joints: Joints shall be tongue and groove rubber gasketed type and furnished by the pipe manufacturer. Joints shall conform to ASTM C443, including performance requirements for joints. The CONTRACTOR shall lubricate the joints immediately prior to laying section with lubricant provided by the pipe manufacturer.

F. Cement Mortar: Use mix of 1-part cement and 2 parts of clean, well-graded sand of which 100% will pass a one-eighth inch sieve or, optionally, premixed mortar conforming to ASTM C387, Type N may be used.

2.2 MANHOLES AND INLETS:

A. The CONTRACTOR shall furnish precast manholes and inlets manufactured in accordance with Section 425 of the FDOT Standard Specifications for Road and Bridge Construction and the Department of Transportation Road Design Standards.

B. The CONTRACTOR shall furnish manhole frames and covers, and inlet frames and of the type and duty as shown on the drawings. All castings shall be true to pattern in form, have the correct dimensions and be free from faults and cracks. Bearing surfaces between frames and covers shall be machine-fitted to prevent rocking.

PART 3 - EXECUTION

3.1 INSTALLATION:

A. The CONTRACTOR shall protect the pipe during storage and handling against impact shocks, and free fall. Pipe shall be kept clean at all times and no pipe shall be used that does not conform fully to standards or specifications.

B. The CONTRACTOR shall lay each pipe section in strict conformance with the line and grade as shown on the construction plans. The laying of pipe in finished trenches shall commence at the lowest point with the bell end laid upgrade.

C. The CONTRACTOR shall provide and maintain on the job site at all times, appropriate and well-maintained equipment for checking the grade of the pipe being laid.

D. The CONTRACTOR may use any of the several types of laser beam devices provided it is in good repair and calibration and a level and level rod is used to check for grade at catch basins, manholes and outfalls. Use of levels and/or transits alone is discouraged and generally will not be permitted.

E. The CONTRACTOR shall, prior to, but not more than 24 hours prior to installing the pipe, place the rubber gasket on the tongue to the pipe, in accordance with the manufacturer's recommendations. The tongue end shall be protected at all times from the sun, blowing dust, or other deleterious agents. Gaskets shall be inspected before installation of the pipe and any loose or improperly affixed gaskets shall be removed and replaced.

F. The CONTRACTOR shall provide filter fabric in accordance with the installation procedures and material requirements of FDOT Standard Specifications for Road and Bridge Construction (latest edition) Section 514 and Section 985, respectively. Filter fabric shall be placed only on subgrade approved by the District.

G. The CONTRACTOR shall set the pipe firmly according to the lines and grade; and preparatory to making joints for concrete pipe, all surfaces of the portion of the pipe to be jointed shall be thoroughly cleaned. The pipe shall be laid with the groove upstream. A shallow

excavation shall be made underneath the pipe at the joint to accommodate the bell section.

H. The CONTRACTOR shall coat the entire interior of the groove, or bell, of the pipe with an approved vegetable soap lubricant immediately prior to installation. For o-ring gasket pipe, the spigot of the adjoining pipe, including the o-ring gasket recess, shall also be lubricated. Lubricate the o-ring gasket and install in the gasket recess of the spigot. Equalize the gasket around the entire spigot. For profile gasket pipe, lubricate only the interior bell surface of the pipe and install the gasket on the spigot end according to the manufacturer's instructions. Self-lubricated, or internally lubricated, gaskets shall not be used. The groove and spigot ends shall be cleaned prior to application of the lubricant. The pipe shall then be aligned with the previously installed pipe and the joint pulled together. The joint shall be pulled by the use of interior or exterior pull jacks or winches, anchored by suitable means. The choice of methods and type of equipment will depend on trench conditions, type and size of pipe, and its ability to properly seat the gasket. If, while making the joint, the gasket becomes loose and can be seen through the exterior joint recess, when the joint is pulled up to within one inch of closure, the pipe shall be removed and the joint remade.

3.2 BACKFILLING:

A. Under Pipe: The CONTRACTOR shall backfill trenches from the bottom of the trench to the centerline of the pipe with flowable fill. The CONTRACTOR shall take care to prevent pipe floatation movement during the placement of the flowable fill.

B. Over Pipe: From the centerline of the pipe, fittings and appurtenances, to an elevation one foot above the top of the pipe, the CONTRACTOR shall backfill the trench by hand or by approved mechanical methods. The backfill material shall be as indicated on the Drawings and as specified herein, and shall be compacted by use of tampers.

3.3 WATER CONTROL: The CONTRACTOR shall control water so that it does not interfere with the installation of piping and ability to achieve compaction.

END OF SECTION

SECTION 02435 TURBIDITY CONTROL AND MONITORING

PART 1 - GENERAL

1.1 SCOPE:

A. Summary of Work: The CONTRACTOR shall furnish all necessary equipment, labor and materials and utilize appropriate means and methods of turbidity controls necessary and sufficient to ensure that the more restrictive and protective of the following are achieved at all times: (1) all applicable State water quality standards, as prescribed in Chapter 62-302.530, Florida Administrative Code (F.A.C.), incorporated by reference, (2) all applicable environmental permit conditions, as prescribed in the permits appended to the Contract, and (3) all stormwater and erosion control shall be in accordance with the Florida Department of Environmental Protection (FDEP) Florida Stormwater Erosion and Sedimentation Control Inspector's Manual, July 2008 Edition. Per the FDEP ERP permitted plan set, Type III silt fencing shall be installed at least 8" below natural ground to ensure gopher tortoise exclusion from project boundary.

1.2 RELATED WORK SPECIFIED ELSEWHERE:

A. SECTION 01300 – Submittals

1.3 APPLICABLE PUBLICATIONS: The environmental protection rules and standards in the applicable sections of the Florida Administrative Code (F.A.C.) incorporated herein by reference are:

A. http://www.dep.state.fl.us/legal/Rules/rulelistnum.htm.
B. Design and Performance Standards – 62-25.025 F.A.C.
C. Quality Assurance – 62-160 F.A.C.
D. Surface Waters of the State – 62-301 F.A.C.
E. Surface Water Quality Standards – 62-302 F.A.C.
F. Generic Permits – 62-621.300(2) &(4) F.A.C.

1.3 DEFINITIONS: (Not used)

1.4 SUBMITTALS: The CONTRACTOR shall make submittals for the turbidity control and monitoring system in accordance with SECTION 01300 and the requirements herein.

A. Provide details of the turbidity controls proposed.

B. Provide proposed layout of turbidity controls and monitoring system on the site plan.

C. Obtain monitoring data and prepare quarterly reports in accordance with Paragraph 3.3B.

1.5 QUALIFICATIONS: The CONTRACTOR shall have on-site at least one (1) employee certified by the Florida Department of Environmental Protection as a Stormwater Erosion and Sedimentation Control inspector. The certification shall be submitted to the DISTRICT for review prior to the installation, inspection, maintenance, repair or replacement of any erosion or sedimentation control Best Management Practices, including but not limited to turbidity controls. The turbidity monitoring shall be conducted according to FDEP-approved procedures.

1.6 RESPONSIBILITIES: (Not Used)

1.7 CERTIFICATIONS AND TESTING: (Not Used)

1.8 INSPECTION COORDINATION: The CONTRACTOR shall provide access to the WORK for the DISTRICT as requested for inspection. The CONTRACTOR shall provide 48 hours advance notice of its intention to begin new WORK activities.

1.9 WARRANTY: (Not Used)

PART 2 – PRODUCTS

2.1 FABRIC: The CONTRACTOR shall provide fabric that is flexible and impermeable or of sufficiently fine mesh to prevent passage of suspended material through the fabric. Fabric shall provide not less than 60 inches vertical depth of barrier where existing water depths are six feet or greater. Where existing water depths are less than six feet, the fabric depth may be decreased in 12-inch increments to not less than 12 inches to conform to existing bottom depths.

2.2 FLOATS: The CONTRACTOR shall provide floats for barriers of sufficient buoyancy to prevent the top of the barrier from submerging under any water and wind conditions. If the top of the barrier becomes submerged for any reason, the CONTRACTOR shall suspend construction operations until the condition is corrected.

2.3 ANCHORS AND WEIGHTS: The CONTRACTOR shall provide and maintain an anchor system to secure the barrier in position. Attach weights to the barrier as necessary to keep the fabric at an angle to the vertical of 30 degrees or less. Fabric material shall not be attached to the canal bottom.

PART 3 – EXECUTION

3.1 TURBIDITY BARRIERS:

A. The CONTRACTOR shall install and maintain turbidity barriers as noted in the drawings and where necessary to maintain turbidity releases at or below permit compliance levels. Barriers shall be installed prior to any backfilling, clearing and grubbing, dredging, or excavation and maintained in place until construction is complete and turbidity from construction has dissipated. All barriers shall be adequately marked, and appropriate signage erected to identify them as obstructions to navigation.

B. Siltation or turbidity barriers shall be made of material in which manatees cannot become entangled, shall be properly secured, and shall be regularly monitored to avoid manatee entanglement or entrapment. Barriers must not impede manatee movement.

The applicable U.S. Amy Corps of Engineers in-water work protection guidelines for the endangered West Indian Manatee incorporated herein by reference are: http://www.saj.usace.army.mil/Divisions/Regulatory/sourcebook/25-EndangeredSpecies.html

C. Any rips or tears that occur in the turbidity barrier material during use shall be repaired or replaced immediately by the CONTRACTOR at its expense. Rips or tears that occur in the turbidity barrier material in use that are not repaired or replaced immediately by the CONTRACTOR will result in a suspension of excavation and/or construction operations, and shall require repairs and replacements as a prerequisite to the resumption of work.

D. The CONTRACTOR shall keep in place and maintain all barriers until the WORK is complete (construction areas stabilized with vegetation) and turbidity levels return to background levels based on monitoring results. Upon completion of use, the CONTRACTOR shall remove the turbidity barriers and associated items to an off-site location at its own expense.

E. The CONTRACTOR shall conduct its operations at all times in a manner that minimizes turbidity. The CONTRACTOR is required to conform to State water quality standards as prescribed in Chapter 62- 302.530, F.A.C., and to meet the special requirements of any environmental permits that have been issued.

F. Turbidity controls shall be inspected by the CONTRACTOR every work day, after every rainfall event of 0.5 inches or greater in a 24 hour period, and after every extreme weather event that could dislodge or damage the turbidity controls, to assure that the turbidity controls remain properly installed, undamaged, and fully functional at all times.

3.2 EROSION CONTROL:

A. The CONTRACTOR shall prevent and control erosion and water pollution as per Florida Department of Transportation (FDOT) Specification Sections 104-1, 2, 3, 4, 6 and 7 and FDEP regulations and permit conditions including the permitted plan set attached to the FDEP Permit..

3.3 MONITORING:

A. The CONTRACTOR shall conduct and record the results of turbidity monitoring appropriate to the conditions and at the locations, times, and frequencies specified below. An FDEP approved Turbidity Monitoring Log is attached (Appendix A) for the CONTRACTOR's use.

1. Background Monitoring Location: At least 1,000 feet (or as specified in the applicable environmental permit) upstream of any construction activities that may generate turbidity within a canal or conveyance feature outside the construction area, in the middle of the canal, at mid-depth in the water column, and outside of any visible turbidity plume.

2. Compliance Monitoring Location: At a point no greater than 450 feet downstream (or as specified in the applicable environmental permit) of any construction activities discharge locations that may generate turbidity, in the middle of the canal, in the densest portion of any visible plume, at mid-depth.

3. Sampling Time:
   a. During Activities or Environmental Conditions that Can Generate Construction-Related Turbidity: Water samples for turbidity measurement shall be collected beginning no sooner than one hour after and no later than two hours after construction activity commences (or as specified in the applicable environmental permit) and every four hours thereafter until the work day ends. Water samples shall be collected at the same time(s) every workday according to this schedule. Any substantial deviation from this schedule must be approved by the DISTRICT, unless otherwise compelled by force majeure, in which case, an explanation must be provided verbally as soon as possible and in writing within 48 hours of the deviation.

b. During Activities and Conditions That Cannot Generate Construction-Related Turbidity: Once daily at 10:00 AM or as specified in the applicable environmental permit.

4. Equipment: The turbidity monitoring equipment shall meet the specifications and be calibrated, maintained, repaired, and replaced according to the methods, procedures, and frequencies set forth in Chapter 62-160, F.A.C.

5. Records Management: The individual conducting the turbidity monitoring shall transcribe the readings to the approved Turbidity Log Form (Appendix A) and sign and date the form at the close of each monitoring day. The notebook containing the signed and dated daily turbidity log forms shall be accessible at the construction site during the workday.

B. The CONTRACTOR shall submit quarterly monitoring data (turbidity Log Forms), to the DISTRICT.

Documents submitted shall contain the following information:

1. Permit number
2. Project name
3. Dates of sampling and analysis
4. A statement describing the methods used in collection, handling, storage and analysis of the samples
5. A map indicating the sampling locations
6. A statement by the individual responsible for implementation of the sampling program concerning the authenticity, precision, limits of detection and accuracy of the data.

C. The CONTRACTOR shall submit monitoring reports that also include the following information for each sample that is taken:

1. Time of day samples taken
2. Depth of water body
3. Depth of sample
4. Antecedent weather conditions
5. Water level stage
6. Direction of flow

3.4 EXCEEDANCES OF WATER QUALITY STANDARDS

A. If at any time, monitoring reveals the turbidity levels, at the compliance sampling station is greater than 29 NTUs above the corresponding background sample in Class I or III receiving waters or greater than 0 NTU above background samples in receiving waters classified as OFW (Outstanding Florida Waters), construction activities shall cease immediately and not resume until corrective measures have been taken and turbidity has returned to acceptable levels. Turbidity violations and corrective measures shall be documented in the monitoring reports.

B. The CONTRACTOR must notify the DISTRICT Construction Manager and the DISTRICT's Permitting and Compliance Staff immediately who then, per the permit, must notify the permitting agency of the exceedance. If known, the CONTRACTOR may also contact the assigned Permitting and Compliance Staff for the Project directly.

END OF SECTION

APPENDIX A

TURBIDITY MONITORING LOG

A site map depicting sampling locations must accompany the quarterly turbidity monitoring reports

Project Name:	Permit No.:
Collector Name:	Date:

Water Observations		Weather Observations
Water Level Stages		Temperature:
Direction of Flow		Conditions:
Water Depth		

Activities Taking Place During Sampling		
Activity	**Yes**	**No**
Excavation or Filling within 50 ft of Water Body?		
Other In-Water Work? (e.g., dewatering; installing piling or forms; injecting concrete; sand blasting; painting)		
Other Activity? (e.g., materials transfer; washdown; interim stabilization)		

Background Station Data	**A.M. Mid-Depth**	**Mid-Day Mid-Depth**	**P.M. Mid-Depth**
Describe Location:			
Collection Time			
Analysis Time			
Turbidity (NTU)			
Analysis Date			

Compliance Station Data	**A.M. Mid-Depth**	**Mid-Day Mid-Depth**	**P.M. Mid-Depth**
Describe Location:			
Collection Time			
Analysis Time			
Turbidity (NTU)			
Analysis Date			
Was Compliance Sample more than 29 NTU's above Background Sample?	__ Yes __ No	__ Yes __ No	__ Yes __ No
If the 29 NTU limitation was exceeded, please describe cause (e.g., excessive rainfall; interim stabilization failure; BMP capacity exceedance, short-circuiting, or other causes), location(s) (depicted on attached site map), and corrective actions taken describe on reverse side.			

Comments (on reverse side of this form):

Statement of Authenticity	
I certify this test was conducted with a calibrated device and that the results are complete and accurate. Signature:	Date:

Comments:

Explanation of Exceedances of Turbidity Water Quality Standard (>29 NTU above background or > 0 NTU above background for a water body classified as an Outstanding Florida Water (OFW). Turbidity source activities must be depicted on attached site map.

SECTION 02436 ENVIRONMENTAL PROTECTION

PART 1 - GENERAL

1.1 SCOPE:
Summary of Work: The CONTRACTOR shall provide labor, equipment, and materials for the prevention of environmental damage as the result of construction operations under this contract and for those measures set forth in other technical requirements of these specifications.

1.2 APPLICABLE PUBLICATIONS: Numerous environmental laws and regulations may apply. At the federal level, the contractor shall comply with the Clean Water Act (CWA); Clean Air Act (CAA), Safe Drinking Water Act, Coastal Zone Management Act (CZMA); Comprehensive Environmental Response, Compensation and Liability Act (CERCLA); Endangered Species Act (ESA); Fish and Wildlife Coordination Act (FWCA); National Environmental Policy Act (NEPA); National Pollution Discharge Elimination System (NPDES); National Historic Preservation Act (NHPA); Native American Graves Protection and Repatriation Act (NAGPRA); Resource Conservation and Recovery Act (RCRA); Toxic Substance Control Act (TSCA); Federal Insecticide, Fungicide and Rodenticide Act (FIFRA); Code of Federal Regulations (CFR); Executive Orders and Environmental Protection Agency (EPA) requirements, as appropriate; and all general and specific Federal Permit Conditions as applicable. Additionally, the CONTRACTOR shall comply with state and local codes, permits, regulations and ordinances as applicable.

1.3 DEFINITIONS: For the purpose of this specification, environmental damage is defined as the presence of hazardous, physical, or biological elements or agents which alter the physical, chemical or biological integrity of the environment in such a way that it represents an unacceptable risk to public health, safety or welfare; unfavorably alter ecological balances; affect other species, biological communities, or ecosystems; or degrade the quality of the environment for aesthetic, cultural, and/or historical purposes. The control of environmental damage requires consideration of land, water, and air, and includes management of visual aesthetics, noise, solid waste, radiant energy, and radioactive materials, as well as other pollutants.

1.4 SUBMITTALS: Within 20 calendar days after the Notice to Proceed, the CONTRACTOR shall submit an Environmental Protection Plan for review and acceptance by the DISTRICT. Approval of the plan shall not relieve the CONTRACTOR of its responsibility for adequate and continuing control of pollutants and appropriate environmental protection measures. Approval of the plan is conditional and predicated on satisfactory performance during construction. The DISTRICT reserves the right to require the CONTRACTOR to modify the Environmental Protection Plan if it is determined that environmental protection requirements are not being met. No physical work at the site shall begin prior to acceptance of the Environmental Protection Plan. The plan shall include, but not be limited to the following:

A. A list of the Federal, State and Local laws, regulation and permits concerning environmental protection, pollution control and abatement that are applicable to the CONTRACTOR's proposed operations and the requirements imposed.

B. Methods for protection of features to be preserved within the authorized WORK areas: The CONTRACTOR shall prepare a listing of methods to protect resources needing protection (trees, shrubs, vines, grasses and ground cover, landscape features, air and water quality, fish and wildlife, soil and historical, archeological and cultural resources).

C. Procedures to be implemented are to provide the required environmental protection and to comply with applicable laws and regulations: The CONTRACTOR shall provide written assurance that immediate corrective action will be taken to correct any environment damage due to accident, natural causes or failure to follow the procedures set out in accordance with

the Environmental Protection Plan.

D. Environmental monitoring plans, if appropriate.

E. Traffic control plan, if appropriate.

F. Drawings showing locations of proposed temporary activities, such as material storage areas or stockpiles of excess spoil or materials.

G. Erosion and sediment control methods, for protecting surface waters, wetlands, and groundwater during construction. All stormwater and erosion control methods shall be in accordance with the FDEP Florida Stormwater Erosion and Sedimentation Control Inspector's Manual, July 2008 Edition. The CONTRACTOR shall prevent and control erosion and water pollution as per FDOT Specification Sections 104-1, 2, 3, 4, 6 and 7 and Florida Department of Environmental Protection (FDEP) regulations and permit conditions.

H. Spill Prevention Methods: The CONTRACTOR shall identify any hazardous or potentially hazardous substances to be used on the job site and indicate intended actions to prevent accidental or intentional introduction of these materials into the air, ground, water, wetlands or drainage areas. The plan shall specify the actions that will be taken to meet the federal, state and local laws regarding labeling, storage, removal, transport and disposal of all hazardous or potentially hazardous substances.

I. Spill Contingency Plan for hazardous, toxic or petroleum material.

J. A WORK area plan, showing proposed activities and identifying areas of limited use or non-use, and including measures that will be taken for field identification of these areas.

K. Identification of the person who shall be responsible for implementation of the Environmental Protection Plan. This person shall have authority to respond for the CONTRACTOR in all environmental protection matters.

L. A recycling and waste management plan. The CONTRACTOR shall include waste minimization efforts in the Plan.

1.5 QUALIFICATIONS:

When the Eastern Indigo Snake is identified as a species of concern in the environmental permits the CONTRACTOR shall supply qualified eastern indigo snake observers during ground clearing activities. The observer's qualifications shall be provided to DISTRICT's Construction Manager at least two weeks prior to the commencement of ground clearing activities.

1.6 RESPONSIBILITIES:

A. Quality Control: The CONTRACTOR shall establish and maintain quality control for the environmental protection of all items set forth herein. The CONTRACTOR shall record on daily quality control reports or attachments thereto, any problems in complying with laws, regulations and ordinances, and corrective action taken.

B. Permits and Authorizations: The CONTRACTOR shall obtain all needed permits or licenses unless the DISTRICT has already acquired them. The CONTRACTOR shall be responsible for implementing the terms and requirements of all permits issued for construction of the project. The CONTRACTOR shall install speed limit signs for off-road and improved road travel for construction equipment and employee vehicles that identify speeds protective of wildlife. The CONTRACTOR shall also provide all necessary signage describing Threatened and/or Endangered species which are identified in applicable environmental permits.

1.7 CERTIFICATIONS AND TESTINGS: (Not Used)

All physical, chemical, and biological measurements and analyses that are necessary to comply with the monitoring requirements in all applicable permits or in this contract must be performed according to approved methods and procedures by a commercial laboratory that is certified to perform

the required analyses according to the approved methods and procedures by the National Environmental Laboratory Accreditation Conference (NELAC).

1.8 INSPECTION COORDINATION: The CONTRACTOR shall provide access to the WORK for the DISTRICT as requested for inspection. The CONTRACTOR shall provide to the District at least 48 hours advance notice of its intention to begin new WORK activities.

1.9 WARRANTY: (Not Used)

PART 2 - ENVIRONMENTAL PROTECTION PLAN

2.1 NOTIFICATION: In the event that the DISTRICT notifies the CONTRACTOR of any non-compliance with federal, state or local laws, permits or other elements of the CONTRACTOR's Environmental Protection Plan, the CONTRACTOR shall inform the DISTRICT of the proposed correction action and take such action as approved.

The CONTRACTOR shall notify the DISTRICT's Construction Manager immediately of any warnings or notices of noncompliance, fines, citations or tickets issued directly to the contractor by any federal, state, or local environmental protection, waste management, code enforcement, or fire, police, or public health agency.

If the CONTRACTOR fails to comply, the DISTRICT may order all WORK to cease until corrective action has been taken. No time extensions shall be granted, or damages allowed for the suspension of WORK under this circumstance.

A Notice of Termination (NOT) shall be sent to the applicable federal, state, and local permit-issuing authorities with copy to the DISTRICT's Construction Manager within fourteen (14) days of final stabilization

2.2 SUMMARY: The CONTRACTOR shall submit a written report within 30 days of completion of the project. This report shall delineate the absence, or occurrence, of reported or unreported environmental incidents during the course of the project.

2.3 TRAINING: The CONTRACTOR shall train its personnel in relevant phases of environmental protection. The training shall include methods of detecting and avoiding pollution, familiarization with pollution standards, and careful installation and monitoring of the project to ensure continuous environmental pollution control.

Due to the probability that wildlife species of concern, including but not limited to Threatened and/or Endangered species and Protected Migratory Bird species may be present within or adjacent to construction sites, prior to initiation of construction activities, the CONTRACTOR(s) will be trained by the DISTRICT and/or U.S. Fish & Wildlife Service on how to identify and implement appropriate protection measures for each species.

PART 3 - PROTECTION OF ENVIRONMENTAL RESOURCES

3.1 GENERAL: During the entire period of the Contract, the CONTRACTOR shall protect environmental resources within the project boundaries and those affected outside the limits of construction. The CONTRACTOR shall confine its activities to the areas defined by the drawings and specifications. Any deviations from the plans (borrow areas, disposal areas, staging areas, and alternate access routes) will require additional review by the DISTRICT to ensure compliance with environmental rules and regulations prior to implementation/or commencement of those deviations.

3.2 PROTECTION OF LAND RESOURCES: Prior to the beginning of any construction the CONTRACTOR shall identify all land resources that are to be preserved or avoided within the WORK area. The CONTRACTOR shall not remove, cut, deface, injure, or destroy any land resources (trees, shrubs, vines, grasses, topsoil, or landforms) unless indicated in the plans or specifically authorized by the DISTRICT. All damaged areas shall be restored to original or better condition.

3.3 DISTURBED AREAS: The CONTRACTOR shall effectively prevent erosion and control sedimentation through approved materials and methods as identified in the Environmental Protection Plan. Disturbed areas will include areas of ingress and egress, construction materials storage, staging, washdown areas, and toxic, hazardous, and solid materials/waste storage areas. Disturbed areas shall be temporarily stabilized within seven (7) days of cessation of phased construction activity and permanently stabilized within fourteen (14) days of cessation of all phases of construction activity. Temporary BMPs shall remain in place and in effect until the final site inspection is complete and construction site is certified as stabilized.

3.4 PROTECTION OF WATER RESOURCES: The CONTRACTOR shall conduct all activities in a manner to avoid pollution of surface and ground water and wetlands. The CONTRACTOR's construction methods shall protect wetland and surface water areas from damage due to mechanical grading, erosion, sedimentation, and turbid discharges. No storage or stockpiling of equipment shall be allowed within any wetland area unless specifically authorized under permit.

Water directly derived from construction activities shall not be allowed to directly discharge to water areas but shall be collected in retention areas to allow settling of suspended materials. The CONTRACTOR shall monitor water quality of dewatering discharge into water bodies or leaving the site in accordance with applicable environmental permits. All monitoring of any water areas that are affected by construction activities shall be the responsibility of the CONTRACTOR.

3.5 OIL, FUEL AND HAZARDOUS SUBSTANCE SPILL PREVENTION: The CONTRACTOR shall prepare a spill contingency plan in accordance with 40CFR, Part 109. The CONTRACTOR shall prevent oil, fuel, or other hazardous substances from entering the air, ground, drainage, and local bodies of water or wetlands. In the event that a spill occurs, despite design and procedural controls, the CONTRACTOR shall take immediate action to contain and clean up the spill and report the spill immediately to the DISTRICT and to other appropriate federal, state, and local agency contacts. Reportable quantities (> 25 gallons) of petroleum-based fluids must be reported within 1 hour to the National Response Center (800-424-8802) and State Warning Point (800-320-0519) if it reaches the waters of the state or, if not, within 24 hrs. to State Warning Point. Toxic and hazardous substance spills directly into waters of the state, in any quantity, must be reported immediately to the DISTRICT and those federal and state points of contact listed above.

The CONTRACTOR shall submit a written report to the DISTRICT and to the State of Florida Bureau of Emergency Response providing certification of commitment of manpower, equipment, and materials necessary to prevent the spread and effect expeditious cleanup and disposal. This report shall be submitted within 48 hours of the spill event.

3.6 MATERIALS AND WASTE MANAGEMENT: For sanitary waste management, the CONTRACTOR shall ensure that portable restrooms will be anchored on level ground with at least a 15-foot set-back from water bodies or banks or slopes thereto. For solid waste management, dumpster(s) will either be outfitted with a water-tight cover or be covered with a tarpaulin when not in use to minimize infiltration and leaching of rain with at least a 15-foot set-back from water bodies, conveyances thereto, or banks or slopes thereto. Hazardous materials storage areas and liquid refuse and hazardous waste collection and storage areas shall be denoted on a BMP Site Plan.

The CONTRACTOR shall ensure toxic substances and hazardous materials are stored in a locked, blast- resistant shed anchored to a bermed concrete or asphalt pad on level ground with at least a 15-foot setback from any water bodies, conveyances thereto, or banks or slopes thereto.

For solid & hazardous waste disposal involving lead-based paint, the CONTRACTOR shall ensure containers with TCLP TPb concentrations in excess of the RCRA action level will be transported by a licensed hazardous waste hauler to a licensed hazardous waste disposal facility within the time limit appropriate to the generation rate and accumulated volume of hazardous waste material. Containers with TCLP TPb concentrations less than the RCRA action level will be transported by a licensed solid waste hauler to a licensed Class I solid waste disposal facility. In either case, the contractor will obtain and transmit signed and dated copies of the transport and disposal manifests to the District's for records retention.

The CONTRACTOR is prohibited from the on-site burning of hazardous wastes (aerosol cans, oil filters, etc.). All hazardous wastes will be disposed of as required by law. Copies of relevant Material Safety Data Sheets (MSDSs) shall be appended to the Environmental Protection Plan, Safety Plan, Spill Prevention Plan, and SWPPP.

The CONTRACTOR is responsible for the materials and processes where wastes may be generated under the contracted activities. CONTRACTOR is responsible for providing the materials in order to implement the contract and is responsible for operating and maintaining any processes from which waste material may be generated.

The CONTRACTOR is deemed to be the "generator" as defined in 40 CFR 261.10 for any hazardous wastes or spill residue that is generated during the activities encompassed in this contract. It is recognized that it is the CONTRACTOR'S or a subcontractor of the CONTRACTOR whose act first causes a hazardous waste to become subject to regulation. The CONTRACTOR is a different legal entity from the owner/operator of the physical location/property where the contracted activities will be conducted. CONTRACTOR is a "person" within the meaning of Section 403.031(5), Florida Statutes.

The CONTRACTOR is responsible for compliance with applicable standards of 40 CFR 260-268 and 40 CFR 273 and 279 and state regulations which adopt or reference these federal standards.

The CONTRACTOR is responsible for the generation and retention of records associated with waste management practices and disposition. All records shall be maintained for a minimum of three years from the date of generation. All records will be made available to the District or regulatory agencies upon request.

In the event of any chemical discharges associated with CONTRACTOR'S or subcontractor's activities, CONTRACTOR will be responsible for reporting, assessment and remediation of such discharges in accordance with applicable federal, state or local regulations and/or guidelines including, but not limited to, 40 CFR 264/265, Chapter 62-770, F.A.C. and Chapter 62-780, F.A.C.

3.7 FISH AND WILDLIFE RESOURCE PROTECTION: The CONTRACTOR shall control and minimize interference with, disturbance to, and damage of fish and wildlife resources.

If adverse impacts occur to fish and wildlife species of concern, including but not limited to Threatened and/or Endangered Species and Protected Migratory Bird Species, the CONTRACTOR shall immediately notify the DISTRICT's Construction Manager and provide details of adverse impacts for determination of further action that may be required. Adverse impact is defined as any harassing, harming, pursuing, hunting, shooting, wounding, killing, trapping, capturing, collecting,

or attempting to engage in any such activity. Threatened and/or Endangered species that require specific protection measures as identified in the environmental permits shall be listed in the Environmental Protection Plan.

In the event that the DISTRICT determines that an adverse impact to species of concern, including but not limited to Threatened and/or Endangered Species and Protected Migratory Bird Species occur as a result of the construction activities, the DISTRICT shall notify the Corps of Engineers and the U.S. Fish and Wildlife Service for determination of further action and possibly to determine if seasonal or daily timing restrictions on construction activities is needed. [The person designated as responsible for the Environmental Protection Plan shall be able to identify the threatened and endangered species listed in the Environmental Protection Plan. Any activity observed by the CONTRACTOR that may result in adverse impact to threatened or endangered species shall be reported immediately to the DISTRICT, who shall have sole authority for any WORK stoppages, creation of a buffer area, or restart of construction activities.

Any Threatened and/or Endangered species and species of concern observed at the site will be recorded and logged. The logs shall be provided to DISTRICT's Construction Manager on a bi-weekly basis. See attached Wildlife Log, Appendix A. If nesting activity is detected within and/or adjacent to the project site, the CONTRACTOR shall immediately contact DISTRICT's Construction Manager for determination of further action and possibly to determine if seasonal or daily timing restrictions on construction activities is needed.

Per the approved FDEP permitted plan set, Type III silt fencing shall be installed around the project boundary and buried to a depth of a least 8" below ground to exclude gopher tortoises from on-site activities.

3.8 ENVIRONMENTAL PROTECTION RETENTION RECORD RETENTION: The CONTRACTOR shall retain a copy of all required permits, the EPP, the SWPPP, the Spill Prevention Plan, and all associated reports, records and documentation required by these permits or the contract at the construction site or an appropriate alternative location as specified in the NOI from Notice to Proceed (NTP) through Notice of Termination (NOT). Such documentation includes but is not limited to soil disturbance and stabilization logs, inspection and corrective action logs, turbidity monitoring logs, wildlife observation logs and reports, TCLP and SPLP assay results, sanitary, solid, and hazardous waste transport and disposal manifests, spill reports, material safety data sheets, and any warnings, citations or notices of noncompliance, or fees, levees, fines or penalties. A copy of all such records shall be submitted to the DISTRICT's Construction Manager at the time of contract close-out.

3.9 PROTECTION OF AIR RESOURCES: The CONTRACTOR shall minimize pollution of air resources. All activities, equipment, processes and work operated or performed in accomplishing the specified construction shall be in strict accordance with the applicable air pollution standards of the State of Florida (F.S. Chapter 403 – Environmental Control and F.A.C. Section 200 – Recirculation Chiller) and all Federal emission and performance laws and standards as appropriate. This includes control of particulates, dust generated by or incidental to construction activity, burning and odors.

3.10 PRESERVATION AND RECOVERY OF HISTORIC, ARCHEOLOGICAL, AND CULTURAL RESOURCES: If applicable, known historic, archeological and cultural resources within the CONTRACTOR's WORK area(s) will be designated as a "sensitive environmental area" on the contract drawings or other documents. If so designated, the CONTRACTOR shall install protection for these resources and shall be responsible for their preservation during the contract's duration. The CONTRACTOR shall not distribute maps or other information on these resource locations except for distribution among the CONTRACTOR's staff with a "need to know" technical responsibility for protecting the resources.

A. Inadvertent Discoveries: If, during or other construction activities, the CONTRACTOR observes items that may have historic or archeological value, such observations shall be reported immediately to the DISTRICT so that the appropriate staff may be notified and a determination for what, if any, additional action is needed. Examples of historic, archeological and cultural resources are bones, remains, artifacts, shell, midden, charcoal or other deposits, rocks or coral, evidences of agricultural or other human activity, alignments, and constructed features. The CONTRACTOR shall cease all activities that may result in the destruction of these resources and shall prevent his employees from further removing, or otherwise damaging, such resources.

B. Claims for Downtime due to Inadvertent Discoveries: Upon discovery and subsequent reporting of a possible inadvertent discovery of cultural resources, the CONTRACTOR shall seek to continue WORK well away from, or otherwise protectively avoiding, the area of interest, or in some other manner that strives to continue productive activities in keeping with the contract. Should a n inadvertent discovery be of the nature that substantial impact(s) to the WORK schedule are evident; such delays shall be coordinated with the DISTRICT.

END OF SECTION

Appendix A
Wildlife Log

For Threatened and Endangered Species and Species of Concern Listed in Permit

Wood Storks Sightings, since they are so abundant, will be logged on a bi-weekly basis in coordination with Bi-weekly Construction Progress Meetings and will be reported quarterly along with other sightings.

D **Eastern Indigo Snake** D **Bald Eagle** D **Wood Stork** D **Florida Panther** D **Caracara** D **Gopher Tortoise** D **Other_**	
Project Name	
Date of Sighting	
Time of Sighting	
Temperature	
Wind (mph)	
Weather Conditions (ex: note sky cover, raining, humid, cloudy, sunny, cool, hot, etc)	
Construction Activity Occurring	
Equipment being Used	
Condition of Animal (ex: injured, unharmed, etc)	
Behavior of Animal (ex: disoriented, aggressive, etc)	
Actions taken after sighting	
Size of Animal	
GPS Coordinates/Specific Location	
Pictures Taken (Attach pictures)	
Date this form was completed	
Observers Company/Agency	
Observers Name	Print Name:
	Signature:
Observers Contact Info	Office:
	Cell:
	Email:

EXAMPLE FORM
Wildlife Log

For Threatened and Endangered Species and Species of Concern Listed in Permit

Wood Storks Sightings, since they are so abundant, will be logged on a bi-weekly basis in coordination with Bi-weekly Construction Progress Meetings and will be reported quarterly along with other sightings.

0 **Eastern Indigo Snake** D **Bald Eagle** D **Wood Stork** D **Florida Panther** D **Caracara** D **Gopher Tortoise** D **Other_**	
Project Name	C-44 Reservoir
Date of Sighting	Tuesday, January 29, 2008
Time of Sighting	0900
Temperature	75°
Wind (mph)	5-10 mph
Weather Conditions (ex: note sky cover, raining, windy, humid, cloudy, sunny, cool, hot, etc)	Partial cloud/Sunny
Construction Activity Occurring	Demobilization of Construction Trailers, nothing near the area snakes were sighted
Equipment being Used	n/a
Condition of Animal (ex: injured, unharmed, etc)	Good
Behavior of Animal (ex: disoriented, aggressive, etc)	under a door in an abandoned citrus office
Actions taken after sighting	Determined sex, took photos, estimated size
Size of Animal	Approx 6’
GPS Coordinates/Specific Location	N 27 05 33.59 W 80 26 59.90 NE Corner of Project along Eastern Levee
Pictures Taken (Attach pictures)	Yes, attached
Date this form was completed	Tuesday, February 5, 2008
Observers Company/Agency	Land Clearing Inc.
Observers Name	Print Name:
	Signature:
Observers Contact Info	Office:
	Cell:
	Email:

SECTION 02486 GRASSING

PART 1 - GENERAL

1.1 SUMMARY:

A. The WORK covered by this SECTION consists of furnishing all the necessary equipment, materials and labor associated with the establishment and maintenance of grass in all areas as specified herein and in the drawings. These include, but are not limited to seeding, mulching, and fertilizing newly grassed areas and maintenance.

1.2 SUBMITTALS:

A. Certificates:

1. Seed and fertilizer shall be certified that they meet requirements of these specifications, stating botanical name, percentage by weight, percentage of purity, germination, and weed seed for each grass seed species.

1.3 WARRANTY:

A. The MANUFACTURER shall warrant the EQUIPMENT, MATERIALS and PRODUCTS specified in this SECTION against defective materials and workmanship with the MANUFACTURER's standard warranty, but for no less than one (1) year from the date of Substantial Completion, and as described in Article 13 of Section 00700 - General Terms and Conditions.

B. The CONTRACTOR shall warrant the WORK against defects for one (1) year from the date of Substantial Completion and as described in Article 13 of Section 00700 - General Terms and Conditions.

PART 2 - MATERIALS:

2.1 GRASS SEED:

A. Provide fresh, clean, new crop seed complying with tolerance for purity and germination established by Official Seed Analysts of North America and as required below.

B. Seed shall be labeled according to the U.S. Department of Agriculture Federal Seed Act and shall be furnished in containers with tags showing seed mixture, purity, germination, weed content, name of seller, and date on which seed was tested.

1. Seed Mixtures: Meet the following minimum weight of pure live seed per acre:

Seed Name	Pounds Pure Live Seed
Argentine Bahia	41
Bermudagrass	14
Brown Top Millet	21

NOTE: Pure live seed (PLS) is determined by multiplying the % pure seed by the % germination. Therefore, if the pure seed is 80% and the germination is 70% the PLS is .80 X .70 or 56%. At 56% it would take 53.5 pounds to equal 30 pounds of PLS.

2. Moldy seed or seed that has been damaged in storage will not be accepted.

3. When seasonal conditions mandate, substitute a winter grass such as rye grass for the brown top millet.

2.2 FERTILIZER:

A. Commercial fertilizer shall be Ammonium Sulfate (21-0-0-24S) containing 21 percent nitrogen and 24 percent sulfur. Fertilizer containing phosphorus is not acceptable.

B. Deliver to site in unopened, labeled bags or containers.

2.3 MULCH:

A. Vegetative Anti-Erosion Mulch: Seed free, salt hay, rye, or oats, or of pangola, peanut, coastal Bermuda or Bahia grass hay.

B. Only undeteriorated mulch that can readily be cut into the soil shall be used.

C. Green mulch will not be accepted.

PART 3 - EXECUTION

3.1 SOIL PREPARATION:

A. Any growth, rocks, or other obstructions which might interfere with tilling, seeding, or later maintenance operations shall be removed and disposed of properly. Remove stones over two (2) inches in any dimension and sticks, roots, rubbish, and other extraneous matter.

B. Areas to be seeded are to be graded to a smooth, even surface with loose, uniformly fine texture. Roll and rake, remove ridges and fill depressions, to meet finish grades. Limit fine grading to areas which can be planted within immediate future.

C. Moisten prepared areas before planting if soil is dry. Water thoroughly and allow surface to dry before planting.

D. If prepared areas are eroded or otherwise disturbed after fine grading and prior to planting they shall be restored to specified condition prior to planting.

E. Immediately upon completion of construction, grass shall be planted in all disturbed areas and as designated in the drawings. Method of planting shall be either hydroseeding or dry seeding.

3.2 FERTILIZING:

A. Apply fertilizer in accordance with MANUFACTURER's recommendations.

B. Incorporate fertilizer into the soil to a depth of at least two (2) inches by discing, harrowing, or raking, except on slopes steeper than two (2) horizontal to one (1) vertical.

3.3 SEEDING:

A. Do not use wet seed or seed that is moldy or otherwise damaged in transit or storage.

B. Do not seed when wind velocity exceeds five (5) miles per hour. Distribute seed evenly

over entire area by sowing equal quantity in two directions at right angles to each other.

C. Sow not less than a rate of 76 pounds of pure live seed per acre.

D. Rake seed lightly into top 1/8-inch of soil, roll lightly, and water with fine spray.

E. Methods of Application:

1. Dry Seeding: Spreader or seeding machine.

3.4 MULCHING:

A. Apply a mulch covering to all seeded areas.

B. Apply vegetative mulch to loose depth of two (2) inches, by means of a mechanical spreader or other approved methods.

C. Mulch material shall be cut into the soil so as to produce a loose-mulched thickness of three to four inches. The use of harrows will not be permitted.

D. Immediately following the application of the mulch, water the seeded area in one watering, in sufficient amount to penetrate the seedbed to a minimum depth of two (2) inches. Perform so as not to cause erosion or damage to the seeded surface.

E. Protect seeded areas against hot, dry weather or drying winds by applying mulch not more than 24 hours after completion of seeding operations.

3.5 MAINTENANCE:

A. Perform maintenance until eight (8) weeks after all areas have been seeded.

B. Requirements:

1. The CONTRACTOR shall water all newly grassed areas a minimum of once a week until satisfactory grass growth is attained.

2. Repair any portion of the seeded surface which becomes gullied or otherwise damaged, or the seeding becomes damaged or destroyed.

3. Replace mulch when washed or blown away.

C. If, at the end of the 8-week maintenance period, a satisfactory stand of grass has not been produced, renovate and reseed the grass or unsatisfactory portions thereof immediately.

3.6 ACCEPTANCE OF GRASSING:

A. When grassing work is substantially completed, including maintenance, the DISTRICT will, upon request, make an inspection to determine acceptability.

1. Seeded areas may be inspected for acceptance in parts agreeable to the DISTRICT, provided WORK offered for inspection is complete, including maintenance.

B. Replant rejected WORK and continue specified maintenance until reinspected by the DISTRICT and found to be acceptable.

1. A satisfactory stand is defined as a grass or section of grass that has:
   a. No bare spots larger than three (3) square feet.
   b. Not more than five (5) percent of total area with bare spots larger than six (6) inches.
   c. Not more than ten (10) percent of total area with bare spots larger than two (2) inches square.
2. If the grassing is still unsatisfactory upon inspection of replanted area, the CONTRACTOR shall sod those areas that are unacceptable. Acceptance of the sodded areas is dependent upon satisfactory coverage criteria established in 3.06.B.1 above.

END OF SECTION

SECTION 02920 SODDING

PART 1 - GENERAL

1.1 SCOPE:

A. This section generally defines CONTRACTOR's responsibilities, unless otherwise indicated, for the following:

1. Preparation of subsoil
2. Placing topsoil
3. Fertilizing
4. Sod installation
5. Maintenance

1.2 REFERENCES:

A. FDOT - Florida Department of Transportation - Standard Specifications for Road and Bridge – 2004 (Section 575)

1.3 SUBMITTALS:

A. Submit sod certification for grass species and location of sod source.

1.4 QUALITY ASSURANCE:

A. Sod Producer: Company specializing in sod production and harvesting with minimum five years' experience and certified by the State of Florida.

B. Installer: Company approved by the sod producer.

C. Sod: Minimum age of 18 months, with root development that will support its own weight, without tearing, when suspended vertically by holding the upper two corners.

D. The DISTRICT reserves the right to test, reject or approve all materials before application.

1.5 REGULATORY REQUIREMENTS:

A. Comply with regulatory agencies for fertilizer.

1.6 DELIVERY, STORAGE, AND HANDLING:

A. Deliver products to site under provisions of SECTION 01600.

B. Store and protect products under provisions of SECTION 01600.

C. Deliver sod on pallets. Protect exposed roots from dehydration.

D. Do not deliver more sod than can be laid within 48 hours.

E. Deliver fertilizer in waterproof bags showing weight, chemical analysis, and name of manufacturer.

F. The CONTRACTOR shall furnish the DISTRICT invoices of all materials received in order that the minimum application rate of materials may be determined.

1.7 MAINTENANCE SERVICE:

A. Maintain sodded areas immediately after placement until grass is well established and exhibits a vigorous growing condition.

1.8 WARRANTY:

A. The MANUFACTURER shall warrant the EQUIPMENT, MATERIALS and PRODUCTS specified in this section against defective materials and workmanship with the MANUFACTURER'S standard warranty, but for no less than one year from the date of Substantial Completion, and as described in Article 13 of Section 00700 - General Terms and Conditions.

B. The CONTRACTOR shall warrant the WORK against defects for one year from the date of Substantial Completion and as described in Article 13 of Section 00700 - General Terms and Conditions.

PART 2 - PRODUCTS

2.1 MATERIALS:

A. Sod:

1. The sod shall be Argentine Bahia, to closely match existing as directed, with well matted roots.
2. The sod shall be commercial size rectangular measuring 16-inches by 24 inches or larger.
3. The sod shall be sufficiently thick to secure a dense stand of live grass, with a minimum thickness of 2-inches.
4. The sod shall be live, fresh, and uninjured at the time of planting.
5. The sod shall have a soil matt of sufficient thickness adhering firmly to the roots to withstand all necessary handling and be reasonably free of weeds and other grasses.
6. The sod shall be planted as soon as possible after being harvested and shall be shaded and kept moist from the time of harvesting until it is planted.
7. The source of the sod may be inspected and approved by the DISTRICT prior to construction

B. Topsoil:

1. Excavated from site and free of weeds.

C. Fertilizer:

1. Commercial fertilizer shall be Ammonium Sulfate (21-0-0-24S) containing 21 percent nitrogen and 24 percent sulfur. Fertilizer containing phosphorus is not acceptable.

Fertilizer shall be applied in accordance with manufacturer's recommendations.

D. Water:

1. Clean, fresh, and free of substances or matter which could inhibit vigorous growth of grass.

PART 3 - EXECUTION

3.1 INSPECTION:

A. Verify that prepared subsoil is ready to receive the work of this Section.

3.2 FERTILIZING:

A. Apply fertilizer in accordance with manufacturer's instructions.

B. Apply after smooth raking of topsoil and prior to installation of sod.

C. Apply fertilizer no more than 48 hours before laying sod.

D. Mix thoroughly into upper 2 inches of topsoil.

E. Lightly water to aid the dissipation of fertilizer.

3.3 LAYING SOD:

A. Moisten prepared surface immediately prior to laying sod.

B. Lay sod tight with no open joints visible, and no overlapping; stagger end joints 12 inches minimum. Do not stretch or overlap sod pieces.

C. Peg sod at locations where sod may slide, as directed by the DISTRICT.

D. Roll sod using a lightweight turf roller to provide and true and even surface.

3.4 MAINTENANCE:

A. Water all newly grassed areas once a week to prevent grass and soil from drying out.

B. Immediately replace sod in areas which show deterioration or bare spots.

C. CONTRACTOR shall include in pricing, water, and equipment to insure adequate survival of the sod for sixty days after substantial completion.

END OF SECTION

SECTION 02930 LANDSCAPING

PART 1 - GENERAL

1.1 SCOPE:

A. Summary of Work: The CONTRACTOR shall provide all labor, equipment and materials for the landscaping with Florida native plant species as required, shown and specified.

1. SECTION 01530 Barriers and Temporary Controls
2. SECTION 02486 Grassing
3. SECTION 02950 Exotics Removal

1.2 APPLICABLE PUBLICATIONS:

A. The following Standard Specifications shall apply to the work of this section as indicated.

1. Florida Department of Agriculture and Consumer Services
   a. Grades and Standards for Nursery Plants/Division of Plant Industry, 1998
2. Florida Nursery, Growers, and Landscape Association approved planting practices
3. Florida Department of Transportation
   a. Standard Specifications for Road and Bridge Construction (FDOT), latest edition
4. American Joint Committee on Horticultural Nomenclature
   a. Standardized Plant Names, Species, Etc., 1942 Edition
5. American National Standards Institute (ANSI)
   a. A300 guidelines

1.3 DEFINITIONS: (Not Used)

1.4 SUBMITTALS: The CONTRACTOR shall make submittals in accordance with Section 01300 and the following requirements.

A. Submit a written schedule of sources or suppliers of all materials for inspection and approval by the DISTRICT before they are delivered and installed on the project. Color photographs of plant material shall be submitted, if requested.

B. Shop drawings for all staking and guying methods to be used if the ones indicated in the Contract, Plans, Specifications, or other referenced documents are not to be implemented or there are no details provided.

C. If requested, provide a schedule of spraying, dusting materials or insecticide soaps to be used to control pests and disease infestation, the reason for their use, and the method to be used to apply the materials and the method of application before it is delivered and used on the project. Furnish documentation

that the implementation of these control measures for pests and disease infestation is in strict compliance with all applicable regulations.

D. When the specified type, grade, quality, size, quantity, etc. of a material is not available, the CONTRACTOR shall submit a written request to the DISTRICT for a substitution, along with written, documented proof that the material is not available. All substitutions considered must be Florida native species appropriate for the planting area. Before they are installed, all substitutions shall receive the approval of the DISTRICT.

1.5 QUALIFICATIONS: The CONTRACTOR shall ensure that personnel handling planting chemicals are appropriately licensed to do so, and that the application of such chemicals is in compliance with the manufacturer's printed literature and/or directions on the label.

1.6 RESPONSIBILITIES:

A. The CONTRACTOR shall be responsible for receiving, storing, maintaining (before and after planting), planting soil, fertilizer, mulch, water, temporary irrigation system, miscellaneous landscape accessories, bracing, etc.

B. The CONTRACTOR shall provide all plants required to perform the work covered by this section, including all shrubs and trees. All shrubs, trees, and groundcovers other than sod shall be Florida native plants, unless otherwise specified in the Contract Documents.

C. The Drawings represent a schematic layout depicting the limits of the different plant species, and other typical details pertinent to the project. The DISTRICT may make adjustments to the final location of the plants. The DISTRICT reserves the right to adjust the number and locations of the designated types and species to be used at any of the locations shown.

D. The CONTRACTOR shall be responsible for making site subsurface investigations and examinations as he or she chooses in order to become familiar with the construction conditions under which the work will be performed.

E. Work Covered by Contract Documents: The CONTRACTOR shall provide all supervision, labor, materials, equipment, and tools, and perform all operations necessary to excavate, grade, plant, and backfill all landscape material indicated in the Drawings.

F. The CONTRACTOR shall procure all necessary permits to accomplish all of the work.

G. The CONTRACTOR is responsible for performing all work in accordance with all applicable regulations, ordinances, and code requirements from the appropriate city, county, state, and/or federal jurisdiction the project is located in.

1.7 CERTIFICATIONS: The CONTRACTOR shall provide certifications for indicating that the plants used in the WORK meet or exceed the requirements of the specifications. As a minimum, the certifications shall indicate that the plants comply with the grade, size, and quality of the planting material specified or shown and that the plants are Florida native landscaping materials, unless otherwise specified.

1.8 INSPECTION COORDINATION: The CONTRACTOR shall provide access to the WORK for the DISTRICT as requested for inspection. The Contractor shall provide 48 hours' notice of its intention to begin new WORK activities.

1.9 WARRANTY: The CONTRACTOR shall warrant plantings and landscaping in accordance with

the following.

A. All plants shall be of the same grade and standard, as set forth in the latest revision of the "Florida Grades & Standards for Nursery Plants", at the end of the warranty period as they were originally specified prior to installation.

B. Upon completion of the last day of planting operation and acceptance of the planting by the District, the plant establishment period will commence. The Contractor is responsible for a minimum survival rate of 90 percent for all installed plant material per species for a period of 90 days. Contractor is responsible for watering as necessary to insure the plant's survival.

C. An inspection will be made at the end of the 90-day plant establishment period to determine the status of landscape elements and plant materials. If the 90 percent survival is not met, CONTRACTOR will replant to meet the original plant quantities. A follow up inspection will be conducted 60 days later to determine survivability. This procedure will continue until the survivorship of 90 percent is met.

D. Maintenance in accordance with Section 02940 will commence after acceptance of the plant establishment period.

E. Existing Plant material, which is on site and scheduled to be transplanted or placed into nursery pots, is not covered by a warranty except in the case of the CONTRACTOR's negligence or work that has been done in an unworkman-like manner. If it is determined by the DISTRICT in its sole discretion that the CONTRACTOR's negligence or unworkman-like operations has severely damaged, or poses a threat to, the health of material to be transplanted or already transplanted, then the CONTRACTOR shall be responsible to replace the plant(s) per original Specifications or an equal replacement, as defined in SECTION 1.12.

F. Warranty replacement may be required for defective landscape elements and plant materials caused by:

- Girding trunk and limbs
- Breaking limbs so as to deform tree
- Failure to water plants upon initial installation
- Allowing trees to dry out during the transplant procedure or after installation during the required watering period
- Providing improper bracing
- Excessive pruning beyond that approved by the DISTRICT or state/national horticultural standards
- Installing plant at improper planting depth

G. The warranty shall become null and void for plant material which is damaged or dies as a result of "Acts of Nature" limited to hail, freeze, lightning, winds that exceed hurricane force, lethal yellowing or any other non-preventable and incurable plant diseases, provided that the plant was in a healthy growing condition prior to these "Acts of Nature".

H. If replacement plant material that meets the requirements of size, quality, and grade cannot be found the CONTRACTOR shall notify the DISTRICT, who will recommend one of the following courses of action:

1. Do not replace the material, or if the plants have not yet been installed, do not install them. Full credit for plant cost, including installation, based on the proposal values, will be given to the DISTRICT.

2. Delay installation of the plant material until material that meets the specifications is available.

3. Accept smaller sizes of the native plant material specified and negotiate any fee adjustment prior to installation.

I. The warranty of plant material shall be construed to mean the complete and immediate replacement of plant material within seven (7) calendar days if:

1. It is not in a healthy growing condition and thus renders it below the minimum quality indicated in the Specifications (Florida #1).

2. There is a question as to its ability to survive after the end of the guarantee period that would render it below the minimum quality indicated in the Specifications (Florida #1).

3. It is dead.

J. The seven (7) calendar days may be extended due to seasonal conditions, availability, preparation time such as root pruning, etc., only if approved by the DISTRICT in advance. The extended time shall be negotiated between all parties concerned but must receive final approval by the DISTRICT. After the 7-day replacement period, the DISTRICT may perform the work and charge said CONTRACTOR in accordance with the General Terms & Conditions.

K. Size, Quality and Grade:

1. Provide replacement of the same species of equal size and quality as the damaged plant.

2. If an equal-sized plant cannot be found, then other methods of compensation shall be determined in negotiation with the DISTRICT. They may include, but not be limited to:

   a. Replacement with plant(s) of another species of same size as original plant

   b. Replacement with more than one plant to equal the canopy, trunk diameter, or overall height

   c. Payment in lieu of replacement, with value determined by "replacement" value

3. Replacements shall be guaranteed for a period equal to the originally specified warranty and shall begin again at time of acceptable replacement.

4. The CONTRACTOR or its designated landscaping provider shall be responsible for watering the replacement upon installation and as required for sixty (60) calendar days after planting.

PART 2 - PRODUCTS

2.1 PLANT GRADE: Any supplier of materials misrepresenting the grade or quality of their

materials (i.e., a higher grade than they actually are) as determined by the DISTRICT, shall not be allowed to supply any material for the project. All material already supplied and received from such a supplier shall be removed and replaced at the CONTRACTOR's sole cost. This requirement for removal and replacement shall also include any installed materials. No further materials will be accepted from such supplier until written evidence is submitted and confirmed that all material for delivery is of the grade or quality represented.

2.2 NOMENCLATURE: The CONTRACTOR shall supply plant material conforming to the names given in Standardized Plant Names, Species, Etc., 1942 Edition, prepared by the American Joint Committee on Horticultural Nomenclature. Names of varieties not included therein shall conform generally with names accepted in the nursery trade.

2.3 GRADE STANDARDS: The CONTRACTOR shall furnish plant material nursery grown Florida native species and shall comply with all required inspections, grading standards and plant regulations as set forth in the latest edition of the Florida Department of Agriculture and Consumer Services Division of Plant Industry manual "Grades and Standards for Nursery Plants" or with any superseding specifications that may be called out on the plans. All plants not listed in the "Grades and Standards for Nursery Plants" shall conform to Florida No. 1 as to: (1) health and vitality; (2) condition of foliage; (3) root system; (4) freedom from pest or mechanical damage; and (5) heavily branched and densely foliated according to the accepted normal shape of the species.

2.4 PLANT DESIGNATIONS: The CONTRACTOR shall furnish plants as designated on the Drawings and conforming to the following.

A. Balled and Burlapped (B&B) and Wire Balled and Burlapped (WB&B) Plants:

1. Only burlap and other wrapping materials made of natural biodegradable materials shall be used. These plants shall be properly protected until they are planted. The plants shall be handled by both the trunk and root ball at the same time and not by the trunk only. Any B&B or WB&B plant, which shows evidence of having been handled by a method other than the method, outlined above and resulting in damage to the plant, such as a cracked root ball, broken root ball, or the roots that have been loosened within the ball, shall be rejected.
2. For plants grown in soil of a loose texture that does not readily adhere to the root system, especially in the case of large plant material, wired B&B plants shall be used. For WB&B plants, before the plant is removed from the hole, hog wire with approximately 1 to 1-1/2 inch openings or a Kerr's wire basket (Vermeer Standard, Caretree Standard, Caretree Truncated or Clegg) shall be placed around the burlapped ball and looped and tensioned until the burlapped ball is substantially packaged by preventing disturbance of the loose soil around the roots during handling.

B. Any Container Grown (CG) plants that have become root bound or which the foliar system is out of proportion (larger) to the size of the container will not be accepted.

1. With metal containers, unless the root ball system slips easily and unbroken from the can, a nursery can-cutter shall be used to slit the can in such a way that the can may be opened fully.
2. CG plants shall not be removed from the container until immediately before planting and with all due care to prevent damage to the root system.

C. Collected Plants: When collected plants are allowed, the DISTRICT shall be given at least two days' written notice before the digging to allow the DISTRICT the opportunity to inspect the plants prior to digging. Included in this written notice shall be a copy of the appropriate

permits secured from the Florida Department of Agriculture for the collected plants. Collected plants shall be dug with a root spread at least 10 percent greater than nursery grown plants of the same species and size. No collected plant shall be planted prior to the DISTRICT's approval and inspection.

D. Specimen Plants (Florida Fancy): When specimen or Florida Fancy plants are specified, they will be labeled as such on the Plans.

E. Grade: Except where another grade is specifically called for in the Contract and/or Plans, all plant material shall be Florida No. 1, or better, at the time of installation, final acceptance, and at the end of the guarantee period.

F. Habit of Growth: All plant material shall have a habit of growth that is normal for that species and shall be sound, healthy, vigorous, and free from insects, plant diseases, and injuries.

G. Measurement of Trees, Palms, Shrubs, and Ground Cover:

1. Trees, Shrubs, and Ground Cover:

a. Root ball: Requirements for the measurement of root ball diameter and depth shall comply with requirements as set forth in the latest edition of the Florida Department of Agriculture and Consumer Services' (Division of Plant Industry) manual "Grades and Standards for Nursery Plants":

CALIPER (in.)	MIN. BALL DIA. (in.)	MIN. BALL DEPTH (% of diameter)
1.00" - 1.50"	16"	75% of dia.
1.50" - 1.75"	20"	65% of dia.
1.75" - 2.00"	22"	65% of dia.
2.00' - 2.50"	24"	65% of dia.
2.50" - 3.50"	26"	65% of dia.
3.50" - 4.00"	28"	65% of dia.
4.00" - 4.50"	30"	60% of dia.
4.50" - 5.00"	32"	60% of dia.
5.00" - 5.50"	34"	60% of dia.

5.50" or more increase in proportion up to 48", 60% of dia Then decrease in proportion for larger size diameter.

b. Height: The height of plant material shall be measured from finished grade and continue up to where the main mass of the plant uniformly ends. The height shall not include any singular or isolated parts of the plant, such as leaves, shoots, branches, limbs, or fronds that extend out beyond the main mass of the plant.

c. Width: The width of plant material shall be measured from one side of where the main mass uniformly ends and continue to the other side of where the main mass of the plant uniformly ends. The width shall not include any singular or isolated parts of the plant, such as leaves, shoots, branches, limbs, or fronds that extend out beyond the main mass of the plant.

d. Caliper: The caliper of tree trunks shall be measured 3' above the ground unless:

i. The landscape regulations, ordinances, and code requirements from the appropriate local jurisdiction the project is located in indicate another method of measurement.

ii. Another method of measurement is indicated otherwise on the Plans.

iii. Palms: Requirements for the measurement of clear trunk, clear wood, greywood, root ball diameter, and depth shall comply with requirements as set forth in the latest edition of the Florida Department of Agriculture and Consumer Services' manual "Grades and Standards for Nursery Plants".

H. All sizes shown for plant material on the Plans are to be considered as minimums. All plant material must meet or exceed these minimum requirements for height, spread, etc. as indicated on the Plans. When plant sizes are specified as a range of size, installed material shall average the mean of the range specified.

2.5 The CONTRACTOR shall furnish grass seed as shown on the drawings and specified herein.

A. Provide fresh, clean, new crop seed complying with tolerance for purity and germination established by Official Seed Analysts of North America and as required below.

B. Packaging shall be labeled according to the U.S. Department of Agriculture Federal Seed Act and shall be furnished in containers with tags showing seed mixture, purity, germination, weed content, name of seller, and date on which seed was tested.

1. Seed Mixtures: Meet the following minimum percentage requirements for purity and germination:

Seed Name	Purity	Germination	Pounds per 100 lbs of mixture
Argentine Bahia	95	80	70
Brown Top Millet	90	85	30

2. Moldy seed or seed that has been damaged in storage will not be accepted.

3. When seasonal conditions mandate, substitute a winter grass such as rye grass for the brown top millet.

2.6 The CONTRACTOR shall provide sod as shown on the drawings and specified herein.

A. Provide Argentine Bahia grass sod containing a minimum of 95 percent pure from a certified sod farm that grows its sod on sandy soil.

B. Sod shall be strongly rooted, free of pernicious weeds, mowed to a height of three inches before lifting, delivered to the site in strips 12 inches wide at least three feet long, rolled, and a uniform thickness of one and a quarter inch including three quarters inch thick layer of roots and topsoil.

2.7 PLANTING SOIL:

A. General Type: The CONTRACTOR shall plant all new transplanted plant material (other than sod) with the general type planting soil, unless otherwise stated. The planting soil shall be a sandy loam (50 percent sand and 50 percent Everglades peat **[muck]**), by volume. The soil shall be thoroughly mixed and delivered in a loose, friable condition. The sand shall be well-washed lawn sand, free of silt and sludge. "Cyclone" sand is not acceptable. The planting soil pH shall range between 6.5 and 7.2.

B. Soil for Backfilling Root-Pruning Trenches: The CONTRACTOR shall backfill root-pruning trenches with a soil mixture consisting of by volume of 70 percent planting soil as described in 2.05A above and 30 percent mulch with 0-0-20 fertilizer added at a rate of 1/3 pound per

cubic yard of soil, thoroughly mixed prior to backfilling.

C. The CONTRACTOR shall submit sample of sand and muck separately and/or soil analysis(es) if requested and as needed.

2.8 MULCH: Not Used

2.9 FERTILIZER: Not Used

2.10 STAKING AND GUYING MATERIALS:

A. The CONTRACTOR shall furnish wood for staking that is new, #2 grade yellow Pine, or #2 Cedar, free of knot holes, splinters, or cracks, or recycled pressure treated pine as approved by the DISTRICT, sized as shown on details or approved shop drawings.

B. The CONTRACTOR shall furnish wire for guying that is double strand #12 gauge.

C. The CONTRACTOR shall furnish hose material that is a minimum of 25 percent larger than diameter of attached tree.

2.11 HERBICIDES:

A. The CONTRACTOR shall furnish herbicides to kill existing weeds. Near water bodies where the chemical could runoff into the water, the CONTRACTOR shall use an herbicide approved for use on aquatic and emergent plants.

B. The CONTRACTOR shall furnish pre-emergent herbicides based on the type of weeds present.

C. Herbicide spray application will not be permitted when wind velocity exceeds 10 miles per hour.

2.12 TREE PROTECTION BARRICADES:

A. The CONTRACTOR shall provide tree protection barricades as indicated on the plans.

2.13 INSPECTIONS:

A. Inspection at the growing site does not preclude the right of rejection at the project site.

B. The CONTRACTOR shall request inspections in writing at least 48 hours in advance.

C. In the event the DISTRICT has made an early inspection shall not bar the DISTRICT from subsequently rejecting such work that is discovered to be faulty work or work omitted or work performed which is not in accordance with the contract requirements.

D. Die-Back and Leaf-Drop: Plant material showing signs of die-back or leaf-drop will not be accepted and must be removed from the project immediately if so directed by the DISTRICT. Any plant material with tendencies toward leaf-drop or die-back must be root pruned early enough to provide a sound network of hair roots prior to relocation.

E. Mechanical Destruction of Foliage: Mechanical destruction of foliage resulting from root pruning shall not affect more than 10 percent of the total foliage prior to planting on the

project. Loss of foliage caused by seasonal change will be accepted.

F. Spanish Moss: If Spanish Moss (*Tillandsia useoides*) exists on plant material, it shall be completely removed prior to planting on the project.

G. Chlorosis: The allowable level of Chlorosis in foliage shall be set forth in the latest edition of the Florida Department of Consumer Services' manual, "Grades and Standards for Nursery Plants".

H. Plant material shall not be accepted when the ball of earth surrounding its roots has been cracked, broken, or otherwise damaged.

I. The CONTRACTOR shall, when necessary, perform root pruning of plant material conforming to guidelines provided by an arborist or certified landscape professional to ensure the health, stability, and longevity of the plant material. Prior to root pruning, the CONTRACTOR shall give 48-hour advance notice to the DISTRICT advising of the date to root prune any plant material. This shall allow for any inspections during or after the root pruning, if necessary.

2.14 DELIVERY, HANDLING, STORAGE AND SUBMITTALS:

A. Delivery and Handling: The CONTRACTOR shall comply with the following regarding delivery, handling, and storage of planting materials.

1. Movement of nursery stock shall comply with all Federal, State, and local laws, regulations, ordinances, codes, etc.

2. The CONTRACTOR shall be responsible for protecting plant material from adverse environmental conditions including drying and sunburn during all phases of delivery and storage. Further, the CONTRACTOR shall be responsible for protecting plant material from any damage, theft, or deterioration of health or appearance during all phases of delivery and storage.

3. The CONTRACTOR shall wire wrap burlap if root ball is not sufficiently compacted. Palms will not require burlap wrapping if the following requirements are met:

a. The Palm is dug from marl or heavy soil that adheres to roots and retains shape without shattering.

b. Moistened material is used to cover root ball and not exposed to wind or allowed to dry out.

c. The palm is planted within 24 hours after being dug.

d. Palms are stored in shade and protected from weather.

e. Maintain and protect plant material that will not be planted within four hours of delivery.

4. Transport materials on vehicles large enough to allow plants not to be crowded and damaged. Plants shall be covered to prevent wind damage during transit.

5. Protect plant material during shipping to prevent damage to the root system and desiccation of leaves. Trees shall be protected during shipping by tying in the branches and covering all exposed branches as necessary. Do not bend or bind-tie plant material in such a manner as to damage bark, break branches, or alter the natural shape.

6. The CONTRACTOR shall exercise care in handling, loading, unloading, storing, and

transporting all material to prevent damage. The CONTRACTOR shall assume full responsibility for protection and safekeeping of materials.

2.15 DAMAGE TO EXISTING VEGETATION AND/OR IRRIGATION:

A. The CONTRACTOR shall exercise caution when working in the vicinity of existing vegetation and/or irrigation system components to prevent damage caused by the use of tools or equipment (mechanical), chemicals, grade changes, and excavation.

B. If the CONTRACTOR damages existing plants and/or vegetation due to his own negligence, he shall be responsible to replace them at his cost, within seven calendar days.

C. If tree damage results when the CONTRACTOR employed the appropriate preventive measures, those damages may, at the discretion of the DISTRICT, be rectified by pruning in conformance with the "American National Standards Institute (ANSI) A300 guidelines" or as directed by the DISTRICT.

PART 3 - EXECUTION

3.1 The CONTRACTOR shall keep areas free of all trash, debris, loose and excess material, unsecured equipment or tools, etc., which may be subject to theft or vandalism, or which may create a passive or active danger to the safety of the public or an unnecessary eyesore.

3.2 The CONTRACTOR shall carefully inspect all plants delivered to the site to verify that they meet the requirements of the Contract as to grading, condition, size, and species. The CONTRACTOR shall reject all plants that do not comply with the requirements.

3.3 PREPARATION OF SITE PRIOR TO PLANTING: Before any disturbance of the actual planting areas is performed, the CONTRACTOR and the DISTRICT shall conduct an inspection and evaluation of these sites. Most of the planting areas are sodded to prevent soil erosion on the steep slopes. The CONTRACTOR shall remove a circular area of sod three to four feet in diameter for trees and field-grown shrubs; and two feet in diameter for three-gallon material. All sod shall be removed completely from the area and immediately disposed of off-site.

3.4 TREE AND PLANTS PLANTING PITS: The CONTRACTOR shall prepare planting pits as follows.

A. Planting pits shall be excavated to the dimensions required to comply with the requirements for soil amendments and to include the following:

1. For balled and burlapped trees and shrubs, excavations shall be 24 inches larger in diameter than the root ball.

2. For container grown stock, excavate as specified for balled and burlapped stock, adjusted to comply with same diameter dimensions. For three-gallon containerized plants, excavate with a hole 12 inches larger in diameter. For one-gallon containerized plants, excavate with a hole three inches larger in diameter.

3. Stabilize excavations for trees and shrubs with water and allow to percolate out before planting.

3.5 TREE AND PLANTS PLANTING: The CONTRACTOR shall plant trees and plants in accordance with industry standards and as follows.

A. Set balled and burlapped stock on a six-inch (minimum thickness) layer of compacted

planting soil mixture, plumb and in center of pit, with top of ball at same elevation as adjacent finished landscape grades. Remove burlap from sides of balls; retain on bottoms. Set plants in pits at such level that after settlement they bear the same relationship to the finished grade of the surrounding ground as they did in their natural state. Proper turning of all plants to take advantage of the best and most natural growth appearance will be practiced at all times and will be subject to the approval of the DISTRICT. Place backfill around base and sides of ball and work each layer to settle backfill and eliminate voids and air pockets. When excavation is approximately one half full, water thoroughly. Repeat watering until no more is absorbed. Water again after placing final layer of backfill. Flush amended soil mixture into place with a slow full hose stream eliminating all air pockets and fill pit to form a broad saucer to surrounding grade.

B. Set container grown stock as specified for balled and burlapped stock.

C. Provide additional backfill berm around edge of excavations to form a shallow planting saucer to contain water with a minimum of three to five-inch berm.

D. Mulch planting saucer and the areas as indicated herein with two to four inches of mulch.

3.6 STAKING AND GUYING: The CONTRACTOR shall stake and guy trees and plants as follows.

A. Palm trees are to be staked with three 2-inch by 4-inch wood braces, toe nailed to cleats, which are securely banded by two points to the palm at one half the height of the trunk. The trunk shall be padded with five layers of burlap under the cleats. Braces shall be approximately 120 degrees apart and secured underground by two-inch by four inch by 12-inch stale pads.

B. Trees larger than one-inch caliper and smaller than two-inch caliper shall be staked with a two-inch stake set at least 24 inches in the ground and extending to the crown of the plant. The plant shall be firmly fastened to the stake with two strands of 12-gauge soft wire, enclosed in a rubber hose or other approved covering. The wire shall be nailed or stapled to the stake to prevent slippage.

C. Trees larger than two-inch caliper and smaller than three- and one-half-inch caliper shall be staked with two two-inch by four-inch stakes, eight feet long, set two feet in the ground. The tree shall be midway between the stakes and held firmly in place by two strands of 12-gauge wire, applied as specified above for single stakes. Tie wires will be tightened and kept tight by twisting.

D. Understory plants do not need staking.

E. Nails or spikes in trunks are prohibited

3.7 PRUNING AND REPAIR: The CONTRACTOR shall limit pruning to the minimum necessary to remove dead or injured twigs and branches. The CONTRACTOR shall prune so as not to change the natural habit or shape of the plant, not shall the CONTRACTOR prune any plant back to such an extent that it no longer meets specifications.

3.8 GRASSING GENERAL: The CONTRACTOR shall establish a stand of grass on slopes, shoulders, and other areas shown on the Drawings by seeding, fertilizing, mulching, and maintaining the area as specified herein. Fertilizing, seeding or mulching operations will not be permitted when wind velocities exceed 15 miles per hour. Seed shall be sown only when the soil

is moist and in proper condition to induce growth. Grassing shall be incorporated into the project at the earliest practical time in the life of the Contract.

3.9 GRASSING SEQUENCE OF OPERATIONS: The CONTRACTOR shall proceed with the WORK in the following sequence: fertilization and preparation of the ground, spreading of mulch, seeding, cutting-in mulch and rolling.

3.10 SOD DELIVERY: The CONTRACTOR shall follow the following requirements regarding delivery of sod.

A. Deliver sod immediately on lifting and after grass bed is prepared for planting.

B. Give advance notice to the DISTRICT on days on which deliveries of sod will be made.

C. The CONTRACTOR shall protect sod from drying by covering during delivery to protect from sun and wind.

3.11 SOD STORAGE: The CONTRACTOR shall store sod to protect it from damage and drying and in accordance with the following.

A. Store materials only in areas of site designated by the DISTRICT.

B. If sod is not laid within two days of delivery, spread out flat with grass side up in cool place and keep moist. Rolled or stacked sod that becomes yellow shall be removed from the site and replaced by the CONTRACTOR at its own cost.

3.12 GRASSING INSTALLATION: The CONTRACTOR shall follow the following guidelines in preparing the seed/sod bed and in placing seed and sod.

A. Preparation of Subgrade: After rough grading is completed and before topsoil is spread, apply superphosphate, and thoroughly scarify ground to a minimum depth of eight inches with a toothed ripping machine by running in two directions at right angles over the entire surface area to be planted.

B. Finish Grading:

1. Thoroughly mix the applied materials to a depth of six inches by running a rototiller over the entire area in two directions at right angles.
2. Rake the top soiled area to a uniform grade so that all areas drain, as indicated on the grading plan.
3. Remove all trash and stones exceeding two inches in diameter from area to a depth of two inches prior to preparation and planting.

C. Seeding:

1. Time of Seeding: Conduct seeding under favorable weather conditions during seeding seasons which are normal for such work as determined by accepted practice in locality of project.
2. Mechanical Seeding: Sow grassed areas evenly with a mechanical spreader at rate of 100 pounds per acre, roll with cultipacker to cover seed, and water with fine spray. Method of seeding may be varied at discretion of CONTRACTOR on his own responsibility to establish a smooth, uniformly grassed area.
3. Temporary Seed: Apply temporary seed at a rate of 30 pounds per acre to all areas

where permanent seed is placed.

4. Mulching and Protection: Mulch all seeded areas by spreading a uniform light cover of straw mulch over the seeded area at a rate of 2-1/2 tons per acre not later than 2 days after seeding has been performed.

D. Sodding:

1. Before sod is laid, correct soft spots, and grade the area smooth and remove sticks, rocks, and debris greater than three quarters inch in diameter. Lay so that no voids occur and tamp or roll, brush or rake screened topsoil with no lumps or stones larger than three quarters inch over sodded area, water sod thoroughly. Complete sod surface true to finished grade, even and firm. Fasten sod on slopes steeper than 1:2 by wooden pins 6 inches long driven through sod into soil, until flush with top of sod. Install at sufficient intervals to hold sod in place when saturated.

3.13 GRASS MAINTENANCE: The CONTRACTOR shall comply with the following maintenance guidelines for seeded and sodded areas.

A. Maintenance Period: Begin maintenance immediately after each portion of grass is planted and continue for eight weeks after all grass planting is completed.

B. Maintenance Operations: Water to keep surface soil and germinated grass moist. Repair washed out areas by filling with topsoil, liming, fertilizing and seeding. Replace mulch on banks when washed or blown away. Weed by local spot application of selective herbicide only after first planting season when grass is established.

C. Fertilization: On areas that have been seeded, apply 30lb N per acre as soon as grass seedlings have emerged; apply an additional 50 lb N per acre 50 days later. On areas that have been sodded, apply 30 lb N per acre two weeks after sodding; apply an additional 50 lb N per acre one to two months after the first application.

3.14 GRASSING INSPECTION FOR ACCEPTANCE: Eight weeks after the start of maintenance on the last section of completed grass and on written notice from the CONTRACTOR, the DISTRICT will, within 15 days of such written notice, make an inspection to determine if a satisfactory stand has been produced. If a satisfactory stand has not been established, another inspection will be made after written notice from the CONTRACTOR that the grass is ready for inspection following the next growing season. A satisfactory stand is defined as a grass or section of grass that has:

A. No bare spots larger than six inches in diameter.

B. Not more than five percent of total area with bare spots larger than three inches in diameter.

C. Not more than ten percent of total area with bare spots larger than two inches in diameter.

END OF SECTION

SECTION 02950 EXOTICS REMOVAL

PART 1 - GENERAL

1.1 SCOPE:

A. Summary of Work: The CONTRACTOR shall provide all equipment, labor and materials for removal and control of exotic and nuisance plant species throughout the Project area for the duration of the Contract. Also described in this section will be the re-removal and treatment of non-native and nuisance vegetation that shall occur (re-sprout) following initial clearing and grubbing, mechanical clearing, and/or hand removal efforts during the warranty and maintenance period. The CONTRACTOR shall perform all operations by use of ground application equipment.

B. Related Work Specified Elsewhere:

1. SECTION 01300 - Submittals
2. SECTION 02930 - Landscaping

1.2 APPLICABLE STANDARDS AND PUBLICATIONS:

A. Standards or Codes: The edition of the publications of the organizations listed below in effect at the time of the advertisement for bids form a part of this specification to the extent referenced. See the various paragraphs for the specified standard. In the case of a conflict between the requirements of this SECTION and those of the listed document, the requirements of this SECTION shall prevail.

1. Occupation Safety and Health Administration (OSHA) General Industry Standards
2. Federal Regulations (FR)
    a. Public Law 94-469 – Toxic Substances Control Act
    b. Public Law 95-396 – Federal Insecticide, Fungicide and Rodenticide Act (FIFRA)
    c. Public Law 95-609 - Resource Conservation and Recovery Act (RCRA)
    d. Title 29 Code of Federal Regulation (CFR) 1910 – Occupational Safety and Health Standards
    e. Title 40 CFR – Protection of Environment
    f. Title 49 CFR - Transportation
3. Florida Statutes (FS)
    a. Chapter 487 – Pesticide Regulation and Safety

1.3 DEFINITIONS: (Not Used)

1.4 SUBMITTALS:

A. The CONTRACTOR shall submit in accordance with SECTION 01300, for the approval of the DISTRICT, product data on chemicals and herbicides intended for use in removing and/or controlling exotic plant species.

1.5 QUALIFICATIONS:

A. The CONTRACTOR shall comply with all Federal, State, and local regulations governing the application, transportation, storage, use, and disposal of products utilized in the performance of this Contract. These regulations include at minimum, FIFRA, 29 CFR 1910, OSHA General Industry Standards, and Chapter 487, Florida Statutes. A certified herbicide applicator shall be on Site supervising all applications of chemicals.

1.6 RESPONSIBILITIES:

A. The CONTRACTOR shall remove and/or control exotic and nuisance plant species as specified herein and as indicated on the Drawings.

1.7 CERTIFICATIONS AND TESTINGS: (Not Used)

1.8 INSPECTION COORDINATION:

A. The CONTRACTOR shall provide access to the WORK for the DISTRICT as requested for inspection. The CONTRACTOR shall provide at least 48 hours advance notice of its intention to begin new WORK activities.

1.9 WARRANTY: (Not Used)

PART 2 - PRODUCTS

2.1 HERBICIDES:

A. The CONTRACTOR shall furnish herbicides to kill existing weeds. Near water bodies where the chemical could runoff into the water, the CONTRACTOR shall use a herbicide approved for use on aquatic and emergent plants.

B. The CONTRACTOR shall furnish pre-emergent herbicides such as Gallery, Ronstar, Surflan or equal based on the type of weeds present.

C. Herbicide spray application will not be permitted when wind velocity exceeds ten (10) miles per hour.

PART 3 - EXECUTION

A. Exotics Removal and Control:

1. The CONTRACTOR shall, for the duration of the Contract Period, remove the exotic plant species defined below throughout the entire Project area. Removal includes all above ground reproductive and vegetative parts, including stems, and flowering/fruiting parts. Combustible products of the removal operation may be burned on-site with approval of the DISTRICT's Inspector and local authorities. Burn locations and methods, including methods for preventing uncontrolled spread of the burn shall be in accordance with all local regulations. The remaining plant material shall be rototilled and disced to a depth of twelve (12) inches.

2. The CONTRACTOR shall prevent the return of the exotic plant species to the Project area by application of biodegradable herbicides throughout the duration of the Contract.

3. Exotic Plant Species: The CONTRACTOR shall remove and control the invasion of all Category I and II invasive species as identified on the most current list published by the

Florida Exotic Pest Plant Council

B. Nuisance Removal and Control:

1. The CONTRACTOR shall, for the duration of the Contract Period, control the nuisance plant species defined below throughout the entire Project. This control shall be by application of a biodegradable herbicide.

Nuisance Plant Species:

Scientific Name	Common Name
All species of the Family Fabaceae	
Eupatorium capillifoluim	Dog fennel
Eupatorium compositefolium	Yankee weed

C. Accident Prevention and General Safety: The CONTRACTOR shall prepare, post an accident prevention and general safety plan (The Plan). Workers shall be instructed regarding The Plan. At a minimum, The Plan shall address the following:

1. Application of chemicals shall be made in accordance with the label statements and applicator certification manuals. For all applications, appropriate safety precautions shall be taken and all MANUFACTURER's warnings and cautions noted on labels shall be followed.

2. Appropriate protective clothing, apparel, and equipment shall be used when handling and applying the required chemicals. These protective devices shall include eye protection, headgear, respirators, coveralls, boots, and gloves.

D. Transportation, Handling, Labeling, Storage and Disposal of Materials: The CONTRACTOR shall transport, handle, label, store and dispose of materials in accordance with all applicable laws and regulations and the MANUFACTURER's recommendations. At a minimum, the C O N T R A C T O R shall conform to the following:

1. The provisions of the following documents, as required shall govern transportation, handling, storage, labeling and disposal of all chemicals (herbicides and adjuvants):

   a. Code of Federal Regulations, Title 49, Parts 100 to 199

   b. Code of Federal Regulations, Title 40, Part 100 to 399

   c. Public Law 94-469

   d. Public Law 95-396

   e. Public Law 95-609

E. Record keeping: The CONTRACTOR shall provide the DISTRICT's Inspector with application records of all operations pertaining to the Contract. These records shall be in the form of a daily report and, at a minimum, indicate the chemical type, application rate and concentration, and amount of chemical used.

F. Application: The CONTRACTOR shall select the proper spray materials and use rates subject to approval by the DISTRICT. The applications shall be performed in such a manner to protect non- target plants. For exotic tree treatments, the CONTRACTOR shall use "Hack and Squirt" o r direct "Basal".

G. The CONTRACTOR shall be fully responsible for systematically treating the Project area.

Areas not treated or not responding to treatment shall be retreated by the CONTRACTOR.

H. Nuisance and non-native plants include but are not necessarily limited to: Brazilian pepper (*Schinus terebinthefolius*), Australian pine (*Casuarina* spp.), cattail (*Typha* sp.), torpedo grass (*Panicum repens*), primrose willow (*Ludwigia peruviana*), women's tongue (*Albizia lebbeck*), cogon grass *(Imperata* spp.), white leadtree (*Leucaena leucocephala*), tropical soda apple (*Solanum viarum),* air potato (*Discorea bulbifera*) primrose willow (*Ludwigia peruviana*), women's tongue (*Albizia lebbeck*), castor bean (*Ricinus communis*), natal grass (*Rhynchelytrum repens*), dogfennel (*Eupatorium capillifolium*), morning glory (*Impomoea* spp.), carrot wood (*Cupaniopsis anacardiodes*), danglepod (*Sesbania herbacea*), hairy indigo (*Indigofera hirsute*), para-grass (*Brachiaria mutica*), and guinea grass (*Panicum maximum).*

END OF SECTION