DIVISION 2
EXISTING CONDITIONS

SECTION 02100

SITE SURVEY

PART 1 – GENERAL

1.01 The Plans contain survey information and benchmarks for the existing and proposed structure locations. **Surveys were performed prior to the design of the project and may differ from current conditions. Specifically, the survey data within the CREST Phase II Project area reflects the natural ground prior to Phase I excavation activities (the "CREST Canal" identified in the plans).** The CONTRACTOR is responsible to determine the extent of any deviation from the survey and construction on current conditions.

1.02 The contractor shall set a secondary benchmark to utilize for construction in the event of damage during the construction of the project.

1.03 The contractor is responsible for all surveying required to complete the project.

1.04 Some of the proposed structures shall contain a brass disc as shown on the Plans. Elevations of the disk shall be certified by a registered professional surveyor to the NGVD 29 Datum (registered in the state of Florida).

1.05 PAYMENT

Payment for the site survey shall be included in Item #3 (SURVEYING) of the Schedule of Values per Lump Sum (LS) and will not be compensated separately.

SECTION 02200

PROTECTION OF EXISTING FACILITIES

PART 1 - GENERAL

1.1 DEFINITION AND SCOPE

A. Structures and Utilities: Existing structures and utilities in the work site and access easements shall be maintained at all times under construction. Any damage to structures and utilities or the failure to maintain them shall be the responsibility of the CONTRACTOR.

B. Existing Drainage: Existing drainage and surface water flow through the work site and through construction access areas shall be maintained at all times and drainage under construction shall be left open so as not to cause flooding due to blockage. This may require the incorporation of culverts under construction access routes where a drainage or water management feature is crossed. Any damage caused by failure to maintain sufficient drainage and/or surface water flow shall be the responsibility of the CONTRACTOR.

1.2 PAYMENT

Payment for the protection of existing facilities shall be included in Item #2 (GENERAL REQUIREMENTS) of the Schedule of Values per Lump Sum (LS) and will not be compensated separately.

END OF SECTION

SECTION 02300

DEMOLITION

PART 1 - GENERAL

1.01 DEFINITION AND SCOPE

A. The CONTRACTOR shall provide all labor, equipment, and materials to remove existing pipes, chain link fencing along the east property boundary, and other unsuitable materials per the project plans and dispose of the materials properly.

1.02 PAYMENT

Payment for DEMOLITION shall be included in Item #2 of the Schedule of Values per Lump Sum (LS).

END OF SECTION

SECTION 02400

RESTORATION

PART 1 - GENERAL

1.1 DEFINITION AND SCOPE

A. The Contractor shall be responsible for the cost of repairing any damage caused by construction in the project area or on adjacent properties and for the complete restoration of any temporary or permanent easements acquired by the owner for the work.

B. Limits of restoration shall extend to any area affected and/or damaged by construction activity. Where not specifically shown in the plans & specifications, all Temporary Facilities, Temporary Construction, vegetation, slopes, pathways, structures, or any other physical feature damaged, removed, or otherwise modified shall be replaced in like kind.

1.2 PAYMENT

Payment for restoration shall be included in Item #2 (GENERAL REQUIREMENTS) of the Schedule of Values per Lump Sum (LS) and will not be compensated separately.

END OF SECTION

SECTION 02500

CONSTRUCTION STAKING

PART 1 - GENERAL

1.01 DEFINITION AND SCOPE

A. The CONTRACTOR shall be responsible for any and all construction surveying services necessary to complete the project, including but not limited to construction layouts, pre-excavation surveys, earthwork quantity progress verifications and calculations, and as-built drawings.

B. The CONTRACTOR shall provide field-engineering services, which include, but are not limited to establishing elevations, lines, and levels utilizing recognized engineering and surveying practices. The Work shall include furnishing, placing, and maintaining construction stakes necessary for the successful completion of the Work.

C. Record Log: Maintain a log of layout control work. Include beginning and ending dates and times of surveys, weather conditions, name and duty of each survey party member, and types of instruments and tapes used. Make the log available for reference by the ENGINEER.

D. The CONTRACTOR shall verify locations of survey control and reference points prior to starting work, and promptly notify the ENGINEER of any discrepancies discovered.

E. During the course of the rehabilitation, any property corners (i.e. iron rods, concrete monuments, PRM's section corners, etc.) disturbed as a result of the CONTRACTOR'S work shall, at the Contractor's expense, be reset by a Florida Registered Surveyor. The CONTRACTOR shall make no changes without prior written notice to the ENGINEER.

1.02 PAYMENT

A. Payment for the construction staking shall be included in Item #3 (SURVEYING) of the Schedule of Values per Lump Sum (LS) and will not be compensated separately.

END OF SECTION

DIVISION 3
CONCRETE

SECTION 03090

STRUCTURAL EARTHWORK

PART 1 - GENERAL

1.01 DESCRIPTION:

A. Work Included: All labor, materials, tools, equipment, supervision, etc. to perform all earthwork including clearing, grubbing, excavation, dewatering, filling, backfilling, compacting, grading and disposal of site spoil required for construction of structures, all complete as shown on Drawings and specified herein.

B. Definitions:
   1. Maximum Density: Maximum weight in pounds per cubic foot of a specific material.
   2. Optimum Moisture: Percentage of water in a specific material at maximum density.
   3. Rock Excavation: Excavation of any hard natural substance which requires the use of explosives or special impact tools such as jackhammers, sledges, chisels or similar devices specifically designed for use in cutting or breaking rock, but exclusive of trench excavating machinery.

C. Plan for Excavation: The Contractor shall be responsible for having determined to his satisfaction, prior to the execution of the Agreement, the conformation of the ground, the character and quality of the substrata, the types and quantities of materials to be encountered, the nature of the groundwater conditions, the prosecution of the work, the general and local conditions and all other matters which can in any way affect the work under this Contract. Prior to commencing the excavation, the Contractor shall submit a plan of his proposed operations to the plan for excavation shall reflect, the equipment and methods to be employed in the excavation. The prices established in the Proposal for the work to be done will reflect all costs pertaining to the work. No claims for extras based on substrata or groundwater table conditions will be allowed.

PART 2 - (NOT USED)

PART 3 - EXECUTION

3.01 QUALITY ASSURANCE

A. Retain a testing laboratory experience in soils and foundations acceptable to the Engineer to monitor earthwork and to make the specified tests. Schedule work so as to permit a reasonable time for testing before placing succeeding lifts and keep the laboratory informed of progress. A copy of this section shall be made available to the testing laboratory.

3.02 APPROVAL REQUIRED

A. Prior to any earthwork, submit sieve analysis and Proctor test results of the existing stripped soils and the proposed fill material to Engineer for review and approval.

B. Do not place any footing reinforcing until the excavations have been tested for compaction.

C. Obtain necessary permits for well pointing and dewatering from South Florida Water Management District and Department of Environmental Regulation.

3.03 JOB CONDITIONS

A. The Contractor shall satisfy himself as to the character and amount of different soil materials, groundwater and the subsurface conditions to be encountered in the work to be performed. Information and data, when furnished, are for the Contractor's general information. However, it is expressly understood that any interpretation or conclusion drawn there-from is totally the responsibility of the Contractor. Engineer assumes no liability for the accurateness of the data reported.

B. If, in the opinion of the Engineer, conditions encountered during construction warrant a change in the footing or base slab elevation, or in the depth of removal of unsuitable material from that indicated on the Drawings, an adjustment will be made in the contract price.

3.04 MATERIALS

A. Suitable: For fill and backfill, clean, coarse sand free from vegetation, organic material, marl, silt or muck. Not more than eight percent shall pass through the No. 200 sieve. Provide all necessary borrow material to complete the work to lines and grades indicated.

B. Suitable Fill Material To Be Placed in Water: Classified as A-1 or A-3 in accordance with AASHTO Designation M-145.

C. Unsuitable: Classified as A-2-5, A-2-6, A-2-7, A-4, A-5, A-6, A-7 and A-8 in accordance with AASHTO Designation M 145. Also peat and other highly organic soils.

D. Select Material: Suitable material that does not contain any rock larger than ½ inches.

E. Gravel Base: Washed coarse aggregate for concrete with fines not more than five percent passing through the No. 200 sieve.

3.05 SITE PREPARTION

A. Clean and grub all surface vegetation, excavating and removing all topsoil a minimum of eight inches from the building structure area plus a six-foot margin from the exterior foundation lines. Remove all tree stumps, concentration of roots and other deleterious materials. Stockpile usable topsoil for landscaped areas as directed by the Engineer.

B. Dispose of unsuitable topsoil and excavated material from the site.

C. If unsuitable bearing soils, peat or muck are encountered, contact Engineer for further direction.

D. Structures excavations below water table shall require a dewatering system to prepare the base of the excavation. The dewatering system shall remove water approximately two feet to three feet below the bottom of the excavation.

E. Compact exposed stripped and excavated surface for buildings by means of an approved vibratory roller until eight passes have been made and a soil density of 98 percent of maximum modified Proctor Density has been achieved twelve inches below the exposed compacted surface. Test compaction as specified. Add water if necessary to bring up moisture to optimum levels.

F. If ground water is within twelve to twenty-four inches from the ground surface, it would be necessary to lower the ground water to permit effective compaction. Lowering of the ground water may be accomplished by excavating four to five feet deep ditches around the construction area and pumping from sumps in the bottom of ditches. Contact testing lab to develop feasible procedures for dewatering.

3.06 DEWATERING

A. Provide labor and equipment necessary to adequately remove water from excavated areas including well pointing where excavations are near or below water table in order to maintain “dry” conditions in excavations at all times until backfilling is completed. Dewater excavations for cast-in-place structures to a minimum level of three feet below structural grade. Avoid settlement or damage to adjacent property. Dispose of water to an on-site drainage system approved by the Owner. When dewatering open excavations, dewater from outside the structural limits and from a point below the bottom of the excavation. Comply with dewatering permit.

B. Maintain fill area in such condition that it will be drained to prevent surface pooling of water at all times.

C. Operate pumps and engines for well point systems with mufflers. The Contractor shall be responsible for any nuisance created due to the disposal of water from his drainage system. All dewatering drains shall be approved by Owner.

D. Conform to South Florida Water Management and Florida Department of Environmental Regulation regulations and requirements when dewatering.

E. All dewatering wells shall be grouted when dewatering operations are concluded.

3.07 EXCAVATION

A. Perform all excavation of each description and through all substances encountered, including limestone to the dimensions required for construction and as specified herein. All excavations shall be made by open cut.

B. Keep walls of the excavation vertical and, if required to protect safety of workmen, the general public, this or other work and structures, or excavation walls, sheet and brace excavation. Excavation for the structures shall be sufficient to provide a clearance between their outer surfaces and the face of the excavation, sheeting, or bracing, of not less than 2 feet. Retain materials encountered in the excavation, undermine the banks, weaken the overlying strata, or are otherwise rendered unstable by the excavation operation by sheeting, stabilizing, grouting or other approved methods.

C. Excavation for the precast or prefabricated structures shall be carried to an elevation 1-foot lower than the proposed outside bottom of the structure to provide space for the select gravel backfill material. Prior to placing the select gravel backfill, the excavation shall be sounded, if not dewatered, using a rigid pole to indicate to the satisfaction of the Engineer that the excavation has been carried to the proper depth and is reasonably uniform over the area to be occupied by the structure.

D. Carry down excavation for structures constructed or cast in place in dewatered excavations to bottom of structure where dewatering methods are such that a dry excavation bottom is exposed and naturally occurring material at this elevation leveled and left ready to receive construction. Replace material disturbed below the founding elevation in dewatered excavations with Class B concrete.

E. Footings: Cast-in-place footing sides shall be formed immediately after excavation. Forming for footing sides is specified elsewhere.

3.08 FOUNDATION PREPARATION (FILLING, BACKFILLING AND EXCAVATION).

A. Compact existing ground beneath the base slabs to a density of not less than 95 percent of its maximum density as determined by ASTM D-1557 for a depth of not less than 2 feet below bottom of concrete slabs. Remove any unsuitable foundation material and replace with suitable material.

B. Buildings: After pre-compaction of the stripped building area, place approved fill material within the building foundation lines plus 6-foot margin in lifts of 12-inch maximum loose thickness, each lift compacted and fill brought to approximate underside of slab. Compact each lift to a minimum of 98 percent Modified Proctor 12 inches below the surface.

C. Excavation for all building footings shall be made through pre-compacted pad to design elevations. Bottom of excavation shall be additionally compacted to 98% of Proctor Density 12-inches below the surface by portable vibratory sled type of compactors. Test compaction as specified.

D. Building Slab Backfill: Place fill inside the building foundation walls in lifts of 6-inches maximum loose thickness, each lift compacted with vibratory portable compactors and fill brought to bottom of the slab. Add necessary water to each lift to bring moisture content to optimum levels and compacting to achieve a minimum of 95% of modified Proctor Density 6-inches below the surface.

E. Form monolithic slab beams by excavating from the compacted fill material to grades and lines indicated on the drawings.

F. Place all backfill around foundation slabs, walls, utility trenches, mechanical and plumbing pipes, etc., in layers of six inches maximum loose thickness and compact with portable plate compactors.

G. Equipment Pads and Slabs on Grade: Cut, fill and compact sub-grades for concrete slabs to required grade. Compact top 8-inches of concrete slab sub-grade in cut sections and all fill material to a density of not less than 95 percent of its maximum density as determined by ASTM D-1557.

H. Test compaction of all structural fill by a testing lab as specified.

I. Vibratory compaction shall never be done on dry sandy material or when water table is within eighteen inches of the surface. Before start of vibratory compaction, the soils should either have natural moisture or applied water to bring the soils to optimum moisture content.

J. Vibratory Roller: The Vibratory Roller shall be a self-propelled minimum two-ton drum type vibratory roller. Submit technical specifications for review and approval to the Engineer.

K. Cast-in-Place Structures Below Water Table

1. Do not place backfill until the structure has been completed above the natural water table, is stable against hydrostatic uplift, exterior formwork has been removed and any necessary patching, grouting, and waterproofing has been completed. Backfill shall be placed as specified in Subparagraph K-2. Do not commence backfilling until concrete and waterproofing to be covered have been inspected and approved.
2. Selected material from the excavation may be used for backfilling around the structure. Trash shall not be allowed to accumulate in spaces to be backfilled. Place backfill around the structure in uniform layers of maximum 8" loose thickness compacting each layer to a minimum of 95 percent of maximum density. Carry backfilling to the finished grades shown on the Drawings.

L. Precast Structures Below Water Table
1. Gravel Base: The space between the proposed bottom of the structure, and the bottom of the excavation shall be backfilled with gravel and screeded level to receive the proposed structure. If the excavation is not dewatered, after placing the screeding, the backfill will be sounded with a rigid pole and attached 6-inch diameter foot piece to indicate, to the satisfaction of the Engineer, that the backfill has been placed to the proper elevation, is level throughout, and is ready to receive the structure. This final sounding of the material shall immediately precede setting of the structure.
2. Remainder of Backfill: Selected material from the excavation shall be used for backfilling around the structure. Trash shall not be allowed to accumulate in spaces to be backfilled. Backfill around the structure shall be placed in uniform layers to the level of the water table. Above the water table, backfill material shall be placed in 8-inch layers and compacted to a minimum of 95 percent of maximum density as determined by AASHTRO Designation T 180. Backfilling shall be carried to the finished grades shown on the Drawings

3.09 SITE GRADING AND FILLING OUTSIDE STRUCTURES

A. Form exterior grade in accordance with drawings. Grade to slope surface away from building and pump station structures.

B. Conform to Sections 31100, 31210 and 31220 for site preparation, grading and backfilling.

3.10 TESTING

A. All soil testing and earthwork monitoring shall be done by a testing company in conformance with Paragraph 1.02-A. Notify the Testing Lab in time to be on hand to make the tests required by these specifications. Testing lab shall inform the project superintendent his findings and designate areas requiring corrective work. Mail all test reports directly to Engineer, Structural Engineer, General Contractor and OWNER.

B. Optimum moisture content of fill material shall be as determined by Modified Proctor Method (ASTM D-1557). Conduct field densities to verify compaction in accordance with ASTM D-1556, ASTM D-2927 or ASTM D-2922.

C. Retest compaction tests that fail to pass after additional compaction effort has been performed and until the specified minimum compaction density is achieved. Two additional tests shall be taken for each failed test. Retesting shall be paid for by the Contractor.

3.11 TESTS

A. Field Density Tests for Each Structure
   1. Stripped Area - 1 Test/2000 S.F. (Min. 2)
   2. Fill Area - 1 Test/2000 S.F./Each Layer (Min. 2)
   3. Bottom of Wall Footings - 1 Test/50 L.F. (Min. 2)

B. Optimum Moisture Content.
   1. Existing Stripped Area (Proctor) 1 Test
   2. Backfill Material Proctor – 1 Test/500 C.Y./Source

3.12 PAYMENT

Payment for structural earthwork shall be incidental to construction and will not be compensated separately.

END OF SECTION

SECTION 03100

CONCRETE FORMWORK

PART 1 – GENERAL

1.01 DESCRIPTION:
The CONTRACTOR shall supply and install cast-in-place concrete as shown on the drawings and as specified.

1.02 APPLICABLE CODES, STANDARDS AND SPECIFICATIONS:
The installation of forms shall be in accordance with the following codes and standards:

A. American Concrete Institute (ACI)

B. American Plywood Association (APA)

C. FDOT Standard Specifications for Road and Bridge Construction (Current Edition)

PART 2 – PRODUCTS

2.01 WOOD FORMS: All form lumber shall be free from warp, loose knots, dressed to uniform width and thickness. All forming shall conform to ACI 437.

A. Unexposed Concrete Surfaces: No. 2 common or better lumber.

B. Exposed Concrete Surfaces: Commercial standard, moisture resistant concrete form plywood.

2.02 METAL FORMS: Approved removable type metal forms shall be used. These forms shall be reconditioned and cleaned before reusing. Do not oil or apply material that will stain exposed concrete or prevent bonding of stucco to concrete. Forms shall be smooth on interior so that no line shows on finished concrete.

2.03 FORM OIL: Clear non-staining mineral base paraffin oil.

2.04 FORM TIES AND SPREADERS: Shall be metal, cone nut type. No embedded wood spreaders will be permitted.

2.05 SHORING: Shall be vertical support members designed to carry weight of formwork and concrete; also the weight of any construction loads above.

PART 3 – EXECUTION

3.01 GENERAL REQUIREMENTS

A. Provide complete forms of such strength and construction as to prevent any spread, shifting, or settling when concrete is deposited, and tight enough to avoid any leakage or washing out of cement mortar.

B. Design forms and falsework supports so that they shall have sufficient rigidity to resist deflection more than 1/8 inch between supports after concrete has been placed and to assure a smooth and even appearance of surfaces.

C. Use bolts, rods and other approved devices for internal ties and spreaders; of such construction that when forms are removed, no metal is within one inch (1") of an exterior nor within one-half inch (1/2") of an interior concrete surface.

D. Take special care that forms are true to required lines, grades and surfaces so as to give a uniform, neat and workmanlike finish to all concrete surfaces.

E. Remove all dirt, chips, sawdust, rubbish, water and other foreign substances from forms by water hosing and air pressure before any concrete is deposited. Leave no wooden ties or blocking in concrete except where shown on drawings for attachment of other work. Leave lowest board of forms along walls loose or provide clean-out pockets. At columns and pilasters, provide holes in forms at bottom for cleaning purposes. Leave openings for the introduction of vibrators wherever necessary. Where required due to excessive concrete drop, provide access in forms for placing of concrete.

F. When removing forms, all bolts, anchoring wires and other fasteners shall be either removed, cut off to lengths as directed by the ENGINEER, or left in place for anchorage of other work.

G. Forms shall be in good condition and thoroughly cleaned before being reused.

H. Box out for all slots, chases and recesses as shown on the drawings or as required by the work of other trades.

3.02 COORDINATION

A. Secure all pipe sleeves, anchors and bolts, including those for angle frames, inserts, supports, ties and other materials in connection with concrete construction, in position before concrete is placed.

B. Obtain information and instructions from other trades and suppliers in ample time to schedule and coordinate the installation of items furnished by them to be embedded in concrete so provisions for their work can be made without delaying the project.

3.03 SURFACE TREATMENT: Plywood panels shall have a smooth surface treatment to prevent any development of bond or adhesion to concrete and to seal plywood surfaces against moisture. Forms, except those lines with non-absorptive form lining, shall be clean and coated with a non-staining mineral oil applied, shortly before placing the concrete. In lieu of oiling, forms of unexposed surfaces may be thoroughly wetted immediately before placing the concrete.

3.04 CONSTRUCTION JOINTS: Make and locate generally as indicated on drawings and so as not to impair the strength of the structure and only at locations approved by the ENGINEER. Form keys in cold joints shown on the drawings.

3.05 FORM REMOVAL

A. Notify ENGINEER prior to removing framework.

B. Do not remove forms, shoring and bracing until concrete has gained sufficient strength to carry its own weight, and construction and design loads that are liable to be imposed upon it. Verify strength of concrete by compressive test results.

C. Remove formwork progressively and in accordance with code requirements and so that no shock loads or unbalanced loads are imposed on the structure.

D. Loosen forms carefully. Do not wedge pry bars, hammers, or tools against new concrete surfaces.

E. On removal of forms adequate means to ensure quality curing of concrete shall be executed in accordance with Section 400-16 of the FDOT Specifications.

F. Re-shore structural members where required due to design requirements or construction conditions and as required to permit progressive construction. Remove load-supporting forms only when concrete has attained 75 percent of required 28 day compressive strength, or as required by paragraph 3.05 B, whichever results in the greatest strength requirement.

G. Remove forms not directly supporting weight of concrete after concrete has cured sufficiently to resist stripping operations without causing damage. Cure concrete in accordance with the requirements of the section entitled, “CAST-IN-PLACE CONCRETE.”

3.06 PAYMENT

Payment for concrete formwork shall be incidental to construction and will not be compensated separately.

END OF SECTION

SECTION 03200

CONCRETE REINFORCEMENT

PART 1 – GENERAL

1.01 DESCRIPTION: The CONTRACTOR shall supply and install reinforcing steel as shown on the drawings and as specified.

1.02 APPLICABLE CODES, STANDARDS AND SPECIFICATIONS: The installation of concrete reinforcement shall be in accordance with the following codes and standards:

A. Local building code

B. Concrete Reinforcing Steel Institute (CRSI)

C. American Concrete Institute (ACI)

D. American Society for Testing and Materials (ASTM)

E. American Welding Society (AWS)

1.03 SHOP DRAWINGS: The CONTRACTOR shall provide complete bar schedules, placing lists and fabrication drawings for all steel reinforcing for ENGINEER's review prior to fabrication or delivery. The CONTRACTOR shall include a sketch of typical mill-marks and deformations on reinforcing bars.

1.04 STORAGE: Reinforcing steel shall be clean, new stock, properly marked and tagged for identification prior to placing. Reinforcing shall be stored to avoid excessive rusting or coating with grease, oil, dirt or other objectionable materials.

PART 2 – PRODUCTS

2.01 REINFORCEMENT

A. Reinforcing Bars: Shall be deformed bars conforming to ASTM A615 Grade 60, unless otherwise shown on the drawings.

B. Welded Wire Fabric: Shall conform to requirements of ASTM A185 for non-deformed, ASTM A497 for deformed. Gauges and dimensions shall be as shown on the drawings.

C. Chairs: Shall be standard Class B or C as specified in ACI 315. For slabs poured on grade, the reinforcement shall be supported by suitably sized dense precast concrete blocks. Plastic chairs, approved by the ENGINEER, may be used.

D. Tie Wires: Shall be No. 16 gauge minimum, fully annealed, black steel wire.

E. Dowels for Footings to Wall and Columns: Shall be same size and spacing as wall and column reinforcing above. The lap for the dowels shall be in conformance with ACI 318 unless otherwise shown on the drawings.

F. Hooks and Bends in Reinforcing: Shall conform to ACI 315 unless shown otherwise on the drawings.

PART 3 – EXECUTION

3.01 PLACING REINFORCING STEEL

A. Fabrication, detailing and placement of reinforcing steel shall conform to CRSI Manual of Standard Practice, ACI 315 and ACI 318.

B. Reinforcement shall be accurately placed and securely tied at intersections with 16 gauge black annealed wire. It shall be maintained in proper position by chairs, bar supports, or other devices approved by the ENGINEER.

C. All splices shall be in conformance with ACI 318 unless otherwise shown on the drawings.

D. Concrete protection of reinforcing shall be not less than the following:

- Three inches where concrete is poured against ground or exposed to corrosive environment unless otherwise noted on the plans.
- Two inches for al other cast-in-place concrete unless otherwise noted on the plans.

E. The minimum clear distance between parallel bars in a layer shall be the nominal diameter of the bar, and the size of the large aggregate, but not less than one inch. Wherever conduits, piping, inserts or sleeves interfere with the placing of reinforcing steel as shown, the CONTRACTOR shall consult with the ENGINEER before

pouring concrete. The bending or field cutting of bars around openings or sleeves will be permitted at the ENGINEER's discretion. Prior approval is required.

F. Clean bars or loose scale, heavy deposits of rust and oil, wax or other coatings that may reduce or destroy bonding, before placing. Check and clean again if necessary immediately before concrete is poured.

3.02 COORDINATION: Coordinate work with other trades in order to eliminate interference before concrete is poured.

3.03 PAYMENT

Payment for concrete reinforcement shall be paid under Items #14 & #16 for Endwalls per Each (EA) at structures S-1, S-3 & S-5.

END OF SECTION

SECTION 03300

CAST-IN-PLACE CONCRETE

PART 1 – GENERAL

1.01 DESCRIPTION: Supply and install all cast-in-place concrete as shown on the drawings and as specified.

1.02 APPLICABLE CODES, STANDARDS AND SPECIFICATIONS: The installation of cast-in-place concrete shall be in accordance with the following codes and standards:

A. Local building code

B. Portland Cement Association (PCA)

C. American Concrete Institute (ACI)

D. Concrete Reinforcing Steel Institute (CRSI)

E. American Society for Testing and Materials (ASTM)

F. Federal Specifications

G. FDOT

1.03 TESTS AND INSPECTIONS

A. Testing Agency: A professional, independent testing laboratory, approved by the ENGINEER, shall perform all testing and inspection procedures specified.

B. Payment: The CONTRACTOR shall bear all costs of sampling and testing of concrete cylinders, as noted. Additional special tests may be ordered by the ENGINEER if there is a question as to compliance with the Contract Documents. Contractor shall pay for cost of additional testing and retesting.

C. Reports: Execute immediately after completion of each procedure or inspection and forward promptly to the ENGINEER five copies of each.

D. Molded Concrete Compression Cylinders: One set of four cylinders for each 50 cubic yards, or fraction thereof, for each day's placement of each mix design. Sample according to ASTM C172, process and cure in accordance with ASTM C31, and prepare test in accordance with ASTM C39. Test one cylinder at age three days or seven days, as required by job conditions, and two cylinders for one valid test at 28 days. Fourth cylinder is to be cured and held for testing at 42 days if 28 day test indicated deficient results, or as a spare in case of cylinder damage.

1.04 SUBMITTALS

A. Mix Designs: Submit mix designs prepared in accordance with ACI 318 and ACI 211.1 indicating conformance to specified requirements.

B. Field Test Reports: Submit field test reports for cylinder tests.

PART 2 – PRODUCTS

2.01 PORTLAND CEMENT: Conform to ASTM C150, Type I. Type III may be used when approved by the ENGINEER in writing.

2.02 WATER: From domestic sources, free of harmful acids, alkalis, oil, organic or other deleterious materials.

2.03 CONCRETE AGGREGATES: Conform to ASTM C33 or ASTM C330 (lightweight aggregates).

A. Conform to ASTM C33: Local aggregates not complying with this standard may be used provided it can be shown by special test or a record of past performance that these aggregates produce concrete of adequate strength and durability.

B. Fine Aggregate: Clean, washed, sand of hard, sound, uncoated grains. Screenings are not acceptable.

C. Coarse Aggregates: Clean, washed, sound and crushed.

D. Aggregate Size Requirements: Use largest practicable aggregate size for each condition of placement subject to limitations stipulated in paragraph 3.3, ACI Code 318.

2.04 CONCRETE ADMIXTURES: Only admixtures specified and acceptable to the ENGINEER prior to use shall be included in mix designs.

A. Water Reducing Agent: A water reducing agent conforming to ASTM C494 shall be used. The following are acceptable:

1. Pozzolith - Master Builders Company
2. Plastocrete - Sika Chemical Company
3. WRDA - Grace Construction Materials

B. Air Entertainment: All concrete shall entrain from two to four percent air, whether batched with or without other admixtures. One of the following, conforming to ASTM C260, may be used:

1. MB-VR - Master Builders Company
2. Sike-AER - Sika Chemical Company
3. Darex AER - Grace Construction Materials

C. The use of fly ash is not permitted.

2.05 CURING MATERIALS

A. Chemical Curing: Liquid Compound, membrane forming, shall conform to ASTM C309, as approved by the ENGINEER. The liquid compound shall not reduce the adhesion of tile, paint, roofing, waterproofing or other material to be applied to the concrete. No liquid compound shall be allowed to cure a first pour of concrete which will receive a second pair.

B. Impervious Membrane Sheeting: Kraft paper of 4 mil polyethylene sheeting, in accordance with ASTM C171 may be used with approval of the ENGINEER.

2.06 CONCRETE MIX DESIGNS AND PROPORTIONS

A. Mix Design: Prepared according to ACI 211 and ACI 318, and submitted to the ENGINEER for review prior to batching any concrete, and based on previously tested and qualified component materials. Provide mix design for each mix required on the project. Pump mixes, when used, shall be approved in writing by the ENGINEER prior to use on the job. Historical, statistical data on each mix design shall be submitted to indicate performance conformance.

B. Admixtures: Enter specific brands into mix designs where they are required or used. All admixtures shall be approved in writing by the ENGINEER prior to use.

C. Mix: Concrete shall be composed of Portland Cement, coarse aggregate, fine aggregate, admixtures, and water. Location or use of any of the following mixes will be shown on the drawings, or as stated herein.

D. Compressive Strength - Paving and Drainage Construction Elements:

1. Provide concrete of the compressive strengths as shown.
2. Mix designs for the compressive strength specified shall have the following minimum properties.

Specified	Maximum	Minimum
28-day Compressive	Water-Cement	Cement Content

Strength (f'c) (psi)	Ratio by Weight	(lbs/cubic yard)
5000	Determined by Mix Design, Not to Exceed 0.40	611
4000	0.45	564
3000	0.50	470
2000	0.65	376

3. The optimum water-cement ratio for mix designs in excess of 4000 psi 28-day compressive strength shall be determined by various mix designs, not to exceed 0.40.

E. Compressive Strength - Bridge Construction Elements:

Location	Minimum 28-day Compressive Strength	Minimum Cement Content (Sacks) Per cubic yard
General structural applications and slabs	3,400 psi	5.5
Pre-stressed	5,000 psi	7.5

F. Slump Limits: Concrete, when placed at the forms, shall have a slump within the following limits as measured in accordance with ASTM C143.

1. Structural Slabs: Minimum 1 inch/maximum 4 inches
2. Mass Concrete: Minimum 2 inches/maximum 4 inches
3. Reinforced Concrete: Minimum 3 inches/maximum 5 inches

2.07 CEMENT GROUT AND EPOXY GROUT

A. Cement Grout: In accordance with FDOT Section 450-11.

B. Epoxy Grout: Mix 1 volume of approved epoxy, 2 volumes of dry concrete sand meeting the requirements of FDOT Section 9.02.

C. materials shall be factory produced, ready mixed, non-shrinking, high strength, capable of application from fluid to damp pack.

2.08 EXPANSION JOINTS: Performed joint fillers and hot-poured joint sealers shall conform to requirements of Section 932-1 of the FDOT Standard Specifications.

2.09 CONSTRUCTION JOINTS: Shall be formed with tongue and groove wood members of galvanized metal keyed forms.

2.10 SEALING MATERIALS: Material for sealing and filling joints and for sealing pre-molded filler strip, shall conform to ASTM D1190 for "Concrete Joint Sealer; Hot-Poured Elastic Type."

PART 3 – EXECUTION

3.01 BATCHING, MIXING ND PLACING CONCRETE

A. Use Ready-Mixed Concrete: Conform to ASTM C94. Plant and truck mixers subject to examination by ENGINEER.

B. Water and Mixing: Mix concrete at lest 10 minutes, 5 minutes of which is at the job after last addition of water. Re-tempering in truck is prohibited. Any concrete in truck longer than 1.5 hours after the water has been added, or any that has become harsh or non-plastic, shall be rejected.

C. When concrete arrives at the project with slump below that specified, water may be added if neither the maximum permissible water-cement ratio nor the maximum slump is exceeded. The water shall be incorporated by additional mixing equal to at least half of the total mixing required. An addition of water shall be accompanied by a quantity of cement sufficient to maintain the proper water-cement ratio. Such addition may be authorized by the CONTRACTOR, who shall then assume total responsibility for concrete quality and strength.

D. Load Tickets: Shall include all information required by ASTM C94 and be legible, showing quantities of all constituents in the batch, and bearing signature of plant inspector or bonded weighmaster. Maintain all tickets on file for inspection by the ENGINEER.

E. Slumps: At point of delivery to forms, the slumps shall conform to those specified in this section of the Specifications.

F. Placing: the concrete shall be placed by suitable equipment as nearly as possible in its final location and without any segregation of the aggregate. Any free vertical drop shall not exceed 4.5 feet. Prior to placing concrete, the forms shall be clean and free of debris with all surfaces wetted lightly. Slabs shall be cast in a "checkerboard" pattern allowing two days between adjacent casts. Before depositing new concrete on or against concrete which has set, the existing surfaces shall be cleaned of all laitance, foreign matter and loose particles and slushed with a neat cement grout. No concrete shall be placed without prior approval of forms and reinforcing by the ENGINEER.

G. Vibration: All concrete shall be placed with the aid of mechanical vibrating equipment supplemented by hand forking or spading. Vibration shall be transmitted directly to the concrete and not through the forms.

H. Concrete may be placed by tremie when approved by ENGINEER.

3.02 CURING

A. General: The concrete shall be kept moist for seven days after pouring. Vertical forms may be left in place and horizontal surfaces moistened with water. If forms are removed, impervious membrane sheeting or chemical curing may be used.

B. Chemical Curing: Apply curing compound as soon as surface water has disappeared from concrete surfaces. Apply material with approved pressure spraying equipment, as per manufacturer's directions, in sufficient thickness to form effective water seal.

C. Impervious Membrane Sheeting: The entire exposed surface shall be wetted thoroughly with a fine spray of water and then covered with polyethylene sheeting or plastic-coated materials laid directly on the concrete surface. Overlap a minimum of 12 inches when a continuous sheet is not used.

3.03 CONSTRUCTION JOINTS

A. Place general paving slab construction joints so that the maximum area for each cast shall not exceed 600 square feet. Length to width ratios shall not exceed 2 to 1.

B. Place structural slab construction joints where indicated or directed by ENGINEER.

3.04 FINISHES

A. Slab Finish: Except where otherwise shown on the drawings, the concrete for slabs shall be screened and floated with straight edges to bring the surface to the required finish level with no coarse aggregate visible. After the surface moisture has disappeared, surfaces shall be steel-troweled to a smooth, even, dense finish, free from blemishes including trowel marks. Provide a Class 4 grooved finish on slabs on grade, pedestrian and vehicular traveled surfaces, in accordance with FDOT Article 400-15.2.5, unless otherwise shown on the drawings.

B. Form Finish: Hone down fins, ridges, and high spots with abrasive brick or power grinders while concrete is green, immediately after form removal.

C. Rubbed Finish: Provide a smooth rubbed finish for the exterior surfaces of all concrete surfaces not specifically designated to receive a Class 5 applied coating.

D. Concrete Curbs and Handrails: A Class 5 applied sprayed finish coating in accordance with FDOT Standard Specifications for Road and Bridge Construction shall be applied to all exposed surfaces.

E. Form Tie Holes and Deep Depressions: Flush thoroughly with clean water, tamp to overall with dry-pack, cure and hone flush.

F. Rock pockets, Honeycomb and Sand Streaks: Cut out at least 1 inch deep with sides perpendicular to surface, flush out, coat with neat cement paste, fill with dry-pack in

at least two layers to overfill, cure and then hone to final correct surface line or corner.

G. Chamfers: All exposed edges of concrete shall have a minimum .75 inch chamfer except as shown on the drawings.

3.05 SURFACE FINISHES

A. Brush Finish:

1. Drag brush or broom across concrete on all horizontal surfaces.

B. Burlap Finish:

1. Apply burlap surface treatment to exposed vertical surfaces.
2. Wet and fill all voids using mortar with the same sand cement ratio as original concrete. Use approximately 20 percent white cement to match concrete color.
3. Strike off all excess mortar flush with the surface using a burlap or canvas cloth with a circular motion.
4. Remove all rough spots and rub with cloth to leave a surface of uniform texture and appearance.
5. Finish shall result in a coating of mortar that will fill all small voids and air holes, leaving a smooth surface.
6. Cure as specified under "Curing Concrete".

C. Defective Surface Treatments:

1. After removal of forms, remove all fins, projections and form ties.
2. Grout and cure all voids, damaged areas, and tie holes.

D. All exposed concrete surfaces as indicated on the drawings shall have a Class 5 finish coating in accordance with FDOT Specification Section 400-15.2.6.

3.06 CLEANUP: In accordance with General Conditions.

3.07 PAYMENT

Payment for cast-in-place concrete shall be paid under Items #14 through #17 per Each (EA) structure.

END OF SECTION

SECTION 03400

CONCRETE PIPE

PART 1 - GENERAL

A. All reinforced concrete pipe (RCP) and all elliptical reinforced concrete pipe (ERCP) shall be in accordance with Section 430 of the Florida Department of Transportation Standard Specifications for Road and Bridge Construction, Latest Edition, and the Florida Department of Transportation Roadway and Traffic Design Standards.

B. All concrete pipe shall meet the design requirements of Class III Wall B of ASTM C76. The process of manufacture and the details of the pipe design including the strength of the concrete will be inspected or checked at the Engineer's option.

PART 2 - DESCRIPTION

A. The work specified in this section consists of furnishing drainage pipe and mitered end sections, conforming to these specifications and of the particular types, sizes and dimensions shown in the Contract Drawings. This work shall include the installation of the pipe and mitered end sections at the locations called for, in conformity with the lines and grades given, and the furnishing and construction of such joints and connections to existing pipes, catch basins, inlets, manholes, walls, etc., as may be required to complete the work as indicated in the Contract Drawings.

PART 3 - FILTER FABRIC JACKET

A. The Contractor is reminded that elliptical and round concrete pipe joints ALL JOINTS (and lifting holes, if any) shall receive a filter fabric jacket. Filter fabric jacket shall wrap entirely around the pipe joint with a minimum overlap of at least 12” on each side of the joint. In accordance with Index No. 199 and 280 of the Florida Department of Transportation Roadway and Traffic Design Standards, latest edition.

PART 4 - PAYMENT

A. Payment for the concrete pipe shall be included in Items #12 and #13 of the Schedule of Values per Lineal Foot (LF) of actual concrete pipe installed.

END OF SECTION

SECTION 03500

CONCRETE SIDEWALK

PART I – GENERAL

A. CONTRACTOR shall provide all labor, equipment, and materials necessary to install a six-inch concrete sidewalk/platform as shown on the plans and in accordance with FDOT Standard Specifications.

PART II - PAYMENT

A. Payment for the CONCRETE SIDEWALK shall be included in Item #24 of the Schedule of Values per Square Yard (SY) of concrete used to make the size and type of sidewalk specified in accordance with the plans and FDOT Standard Specifications Section 522 (Concrete Sidewalk and Driveways).

END OF SECTION

SECTION 03600

FILTER POINT FABRIC FORMED CONCRETE

PART I – GENERAL

A. CONTRACTOR shall furnish and install all materials, equipment, and labor and perform all operations for placing fabric-formed concrete riprap (8” nominal thickness) as per manufacturer's specifications, as specified herein, in accordance with the lines, grades and dimensions shown on the drawings.

B. Provide a “filter point” type of fabric-formed concrete riprap as provided by armorform, texicon, hydrotex, fabriform or engineer-approved equal.

C. Prior to placing the fabric-formed concrete revetment mat, adjust the existing bank by removing vegetation, cut/fill the bank as required, and use select fill material with 4" thickness compacted fine sand and filter fabric to achieve the proposed bank cross slopes.

D. Provide a 24” deep trench at the begin/end limits of the fabric-formed concrete riprap, parallel to the slope to anchor the riprap.

E. Anchor embedment shall be a minimum of 24” into the soil. position the woven fabric envelope in a mat configuration over the slope surface and fill with a pumpable fine aggregate concrete in a way that forms a stable mat of suitable weight, thickness, and configuration

PART II - PAYMENT

A. Payment for the FILTER POINT FABRIC-FORMED CONCRETE RIP-RAP shall be included in Item #23 of the Schedule of Values per Square Feet (SF).

END OF SECTION

DIVISION 4
MASONRY
(NOT USED)

DIVISION 5
METALS

SECTION 05120

I-BEAMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections apply to this Section.

1.2 SUMMARY

A. Section Includes:
   1. Steel I-Beams for attachment of Staff Gauges

B. Related Sections:
   1. Division 9 - “Painting”.
   2. Division 13 - Special Construction “Staff Gauges”.

1.3 PERFORMANCE REQUIREMENTS

A. I-Beams shall consist of a grade A36 material with an S 5x10 structural shape. They shall be installed according to the plans and as directed by LA-MSID staff. Typical length of each I-Beam shall be 24 LF, but it will be up to the contractor to ensure that each I-Beam is long enough to show a staff gauge from the bottom of the canal to the top of the canal bank at each location.

B. Steel I-Beams must be coated prior to installation with a Class 9 Coating System (Metals Exterior Exposure) in accordance with Specification Section 09900.

1.4 PAYMENT

A. Payment for I-BEAMS shall be included in Item #33 of the Schedule of Values Each (EA) number of I-Beam’s installed.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 05500

ALUMINUM HANDRAILING

PART I – GENERAL

1.01 DEFINITION AND SCOPE

A. Railings utilize the Speed Rail System (or owner-approved equivalent) and shall meet OSHA standards including height and strength criteria.

B. The handrailing shall be fabricated to allow for the proper placement of the actuator enclosure boxes and the telemetry equipment box.

C. Work under this item shall include any field cutting, all mounting channels, supports, miscellaneous hardware, concrete work, field welding, touch-up painting, etc.

1.02 PAYMENT

A. Payment for the ALUMINUM HANDRAILING shall be included in Item #25 of the Schedule of Values per Lineal Foot (LF) of actual railing installed.

END OF SECTION

DIVISION 6
WOODS, PLASTICS, AND COMPOSITES
(NOT USED)

DIVISION 7
THERMAL AND MOISTURE PROTECTION
(NOT USED)

DIVISION 8
OPENINGS
(NOT USED)

DIVISION 9
FINISHES

SECTION 09900

PAINTING

PART 1 – GENERAL

1.01 DESCRIPTION OF WORK

A. The Contractor shall furnish all materials, labor, equipment and incidentals required to provide a protective coating system for the surfaces listed herein and not otherwise excluded. All surfaces described herein, whether new or existing (attached to new construction), shall be included within the scope of this section. All preparation of surfaces and protection of other surfaces not being painted shall be included under this section.

B. The work includes prepping and painting exposed concrete and metal surfaces such as poured Concrete Endwalls & Concrete Mitered End Sections, steel I-Beams (staff gauges), and all metal hardware and attachment fasteners that are not stainless steel, aluminum or hot-dip galvanized.

1.02 QUALITY ASSURANCE

A. STANDARD REFERENCES: The latest edition of the following standard references shall apply to the WORK of this section.
   1. American Society for Testing and Materials, (ASTM).
   2. Steel Structures Painting Council, (SSPC).
   3. American National Standards Institute, (ANSI).

B. Painting shall be performed by experienced painters specializing in industrial and commercial applications required for this project. Work shall be done in a neat, safe and workmanlike manner.

C. Acceptable Manufacturers:
   1. Tnemec Company, Inc.
   2. Carboline Company

3. Keeler & Long, Inc.
4. Porter International
5. Crawford Laboratories, Inc. (Florock)

1.03 SUBMITTALS

A. The CONTRACTOR shall submit complete engineering data of the paint products proposed for use for review and approval by the ENGINEER. Submittal shall include each proposed paint system to be used along with detailed surface preparation instructions, recommended application procedures and minimum/maximum dry film thicknesses (DFT).

B. Color Samples: Submit Manufacturer's standard color charts for color selection by the Owner.

C. Request for substitutions shall be made within ten (10) days of the Agreement and shall include all of the information required above, along with test result submittals certified by a licensed testing laboratory. Only quality paints that have been tested using ASTM/Federal test procedures will be considered.

The results from the following testing procedures shall be submitted for determining quality:

a. Abrasion: Federal Test Method Std. No. 141, Method 6192, CS-17 Wheel, 1,000 gram load.
b. Adhesion: Elcometer Adhesion Tester (0 to 1000 psi).
c. Exterior Exposure: Exposed at 45 degrees facing ocean (South Florida Marine Exposures).
d. Hardness: ASTM D-3363, latest revision.
e. Humidity: ASTM D-2247, latest revision.
f. Salt Spray (Fog): ASTM B-117, latest revision.

1.04 DELIVERY, HANDLING AND STORAGE

A. Deliver all material to the job site in original, unopened packages and containers bearing manufacturer's name and label in accordance with Section 01600: Materials and Equipment.

1. Provide labels on each container with the following information:
    a. Name or title of material.
    b. Fed. Spec. number if applicable.
    c. Manufacturer's stock number, date of manufacture and expiration date (shelf life).
    d. Manufacturer's formula or specification number.
    e. Manufacturer's batch number.
    f. Manufacturer's name.
    g. Generic type.
    h. Contents by volume, for major pigment and vehicle constituents.
    i. Application instructions: thinning, ambient conditions, etc.
    j. Color name and number.

2. Containers shall be clearly marked to indicate any hazards connected with the use of the paint and steps which should be taken to prevent injury to those handling the product. Material Safety Data Sheets shall be kept on-site and made readily available for all personnel.

B. All containers shall be handled and stored in such a manner as to prevent damage or loss of labels or containers. Containers shall be kept sealed and ready for use.

C. All materials shall be stored in a cool, dry area out of direct sunlight and away from any ignition source. The contractor shall refer to the manufacturer's literature and material safety data sheets for additional storage requirements.

D. The Owner shall designate areas for storage and mixing of all painting materials. Store only acceptable product materials on project site. Restrict storage to paint materials and related equipment. Storage of paint materials and related equipment shall comply with the requirements or pertinent codes and fire regulations. In addition, all safety precautions noted on the manufacturer's Material Safety Data Sheets and other literature shall be strictly followed. Proper containers outside of buildings shall be provided by the Contractor and used for painting wastes. No plumbing fixtures shall be used for this purpose.

E. Used rags shall be removed from the buildings every night and every precaution taken against spontaneous combustion.

1.05 WARRANTY AND GUARANTEES

A. Refer to Section 01210: Warranties and Bonds.

B. All paint and coatings work performed under these specifications shall be guaranteed by the coatings applicator for 100 percent of the total coated area for both materials and labor against failures during the warranty period.

C. Failure under this warranty shall include flaking, peeling, or delaminating of the coating due to aging, chemical attack, or poor workmanship; but it shall not include areas which have been damaged by unusual chemical, thermal, or mechanical abuse.

PART 2 – PRODUCTS

2.01 MATERIALS

A. All paint shall be manufactured by one of the suppliers listed in Paragraph 1.02C herein, and shall be their highest grade of paint.

B. The following coating systems list a product by name to establish a standard of quality; other products of the same generic types may be submitted to the Engineer for approval as described in Paragraph 1.04., herein. When other than the specified coating system is proposed, the Contractor shall submit on a typewritten list giving the proposed coatings, brand, trade name, generic type and catalog number of the proposed system for the Engineer’s approval.

C. Paint used in successive field coats shall be produced by the same manufacturer. Paint used in the first field coat over shop painted or previously painted surfaces shall cause no wrinkling, lifting, or other damage to underlying paint. Shop paint shall be of the same type and manufacture as used for field painting by the Contractor.

D. Emulsion and alkyd paints shall contain a mildewcide and both the paint and mildewcide shall conform to OSHA and Federal requirements, including Federal Specification TT-P- 19.

E. Finish coats containing lead shall not be allowed. Oil shall be pure boiled linseed oil.

F. Rags shall be clean painter's rags, completely sterilized.

2.02 COATING SYSTEMS

A. Class 4 Exposures – Concrete and Masonry, Exterior, Non-Immersion

1. Class 4 exposures consist of exposed exterior concrete and masonry surfaces of new buildings and structures subjected to normal exterior elements and not subjected to water immersion. Class 4 exposures shall include the following:

    a. Exterior, aboveground concrete surfaces of new structures.

2. Surface Preparation: As specified in Paragraph 3.02 herein and in addition the following:

    a. New masonry surfaces shall be prepared by filling cracks, voids and other surface imperfections, removing mortar droppings, cleaning and high-pressure water blasting.

    b. New concrete surfaces shall be prepared as required for Class 2 exposure surface preparation specified in Paragraph 2.02.B.2 above.

    c. Existing concrete surfaces shall be prepared by high-pressure water blasting or abrasive blast cleaning to remove existing deteriorated or disbanded coatings as required for adhesion of the new coating system.

3. Class 4 Coating System (Required for new Concrete Endwalls & Concrete Mitered End Sections).

a. Surface Prep: Abrasive blasting is recommended for immersion service. If this is not an option, the next best thing would be to high pressure water clean it using potable water (5000 psi, 3-5 gallons per minute, using an oscillating tip). Prime: Series 66 @ 4.0 – 6.0 mils. Intermediate: Series 66 @ 4.0 – 6.0 mils. Finish: Series 1096 (eggshell) @ 2.5 – 5.0 mils

b. Finish coat shall be an eggshell finish and the color shall be a shade off from the primer/intermediate to easily identify missed spots (Series 1095). Should the Owner desire a semi-gloss finish, Series 1096 may be substituted for Series 1095. Series 66 is ordered in multiples of 2.

B. Class 9 Exposures – Metals Exterior Exposed (Steel I-Beams)

1. Class 9 exposures consist of exterior metal surfaces exposed to the weather and environment:

a. Pumps, motors, equipment, and appurtenances

b. Above ground piping, fittings, valves, and metal conduit

c. Miscellaneous metal surfaces

d. Ladders, stairways, structural steel

e. Galvanized and non-ferrous metal surfaces

f. Other surfaces obviously requiring field painting

2. Surface Preparation: As specified in paragraph 3.02 herein and, in addition, the following:

a. All bare metals or areas that were shop primed that have been damaged shall be abrasive blast cleaned to SPC-SP6, commercial blast cleaning standards.

b. Shop primed items, stored on sited for a prolonged period prior to coating, shall be prepared for coating following the coating

manufacturer's recommendations prior to applying touch-up and subsequent coats. Surface preparation may include brush-off abrasive blasting or spot blasting to SSPC-SP6, commercial blast cleaning standards, for area where the primer has been damaged and bare metal is showing.

c. Non-ferrous metals shall be degreased and cleaned by washing with a water based dispersant such as Carboline Surface Cleaner #3. Rinse thoroughly with clean water after cleaning.

3. Class 9 Coating System

a. Prime coat for ferrous and non-ferrous metal: Two part epoxy primer.
Tnemec Series 69 Hi-Build Epoxoline II (Gray) at 4.0 mils DFT.

b. Intermediate coat for ferrous metal: Two part epoxy.
Tnemec Series 69 Hi-Build Epoxoline (White) at 3.0 mils DFT.

c. Finish coat for ferrous and non-ferrous metal: High Build Acrylic Polyurethane.
Tnemec Series 73 Endura-Shield (White) at 3.0 mils DFT.

d. Total minimum system finish shall be 7.0 mils for non-ferrous metal and 10.0 mils for ferrous metal surfaces.

PART 3 – EXECUTION

3.01 SHOP PAINTING

A. Surface Preparation – All ferrous metal to be primed in the shop shall have all rust, dust and scale, as well as all other foreign substances, removed by sandblasting or pickling in accordance with SSPC-SP5 or SP8, respectively. Cleaned metal shall be primed or pretreated immediately after cleaning to prevent new rusting. Under no circumstances will cleaned metal be allowed to sit overnight before priming, or pretreatment and priming. All nonferrous metals shall be solvent cleaned prior to the

application of primer. In addition, galvanized surfaces which are to be top coated shall first be degreased then primed. All non-ferrous metal surfaces shall also be scarified prior to top coating.

B. Materials Preparations:

1. Mix and prepare painting materials in strict accordance with manufacturer's recommendations and directions, stirring materials before and during application to maintain a mixture of uniform density, free of film, dirt and other foreign materials.

2. No thinners shall be used except those specifically mentioned and only in such quantity as directed by the manufacturer in his instructions. If thinning is used, sufficient additional coats shall be applied to assure the required dry film thickness is achieved. The manufacturer's recommended thinner or cleanup solvent shall be used for all clean-up. Application by brush, spray, airless spray or roller shall be as recommended by the manufacturer for optimum performance and appearance.

C. Applications

1. All painting shall be done by skilled and experiences craftsmen and shall be of highest quality workmanship. Coating systems shall be as specified herein.

2. Apply paint in accordance with the manufacturer's directions. Use applicators and techniques best suited for the type of material being applied.

3. All paint and coatings materials shall be stored under cover and at a temperature within 10°F of the anticipated application temperature and at least 5°F above the dew point.

4. Apply additional coats when undercoats, stains or other conditions show through the final coat of paint, until the paint film is of uniform finish, color and appearance.

5. Paint shall be applied in a neat manner with finished surfaces free of runs, sags, ridges, laps and brush marks. Each coat shall be applied in a manner that will produce an even film of uniform and proper thickness.

6. Paint back sides of access panels and removable or hinged covers to match the exposed surfaces.

7. Equipment manufacturer or supplier shall provide touch-up paint for items with shop applied finish coats.

8. Where specified in the individual sections, primer coat(s) shall be applied in the shop by the equipment manufacturer. The shop coats shall be as specified and shall be compatible with the field coat or coats.

D. Certification: The Contractor shall obtain from the equipment manufacturer or supplier, prior to shipment of equipment, a written certification that surface preparation, coating brand, material, DFT and application method complied with this Section.

3.02 SURFACE PREPARATION

A. All dirt, rust, scale, splinters, loose particles, disintegrated paint, grease oil and other deleterious substances shall be removed from all surfaces which are to be coated.

B. Hardware, hardware accessories, machined surfaces, plates, lighting fixtures and similar items and surfaces not to be painted which are in contact with or nearby surfaces to be painted shall be removed, masked, or otherwise protected prior to surface preparation and painting operations. Refer to Paragraph 3.09B

C. Before commencing work, the painter must make certain that surfaces to be covered are in perfect condition and must obtain Engineer’s approval to proceed. Should the painter find such surfaces impossible of acceptance, he shall report such fact to the Engineer. The application of paint shall be held as an acceptance of the surfaces and working conditions and the painter will be held responsible for the results reasonably expected from the materials and processes specified.

D. Program the cleaning and painting so contaminants from the cleaning process will not fall onto wet, newly-painted surfaces.

E. Concrete Surfaces:

1. All efflorescence, laitance, chalk, dust, dirt, oils, grease, concrete curing agents, form release agents, sealers, old coatings and other chemical contaminants shall be removed either by steam cleaning with detergent, by scrubbing with a hot tri-sodium phosphate solution consisting of 2 pounds of tri-sodium phosphate to each gallon of hot water (160°F), or by high pressure water blasting (3,000 psi or higher). Multiple cleaning operations may be required to remove all contaminants. Repeat the cleaning operation until the contamination is removed and flush the area with clean water to remove residual cleaning solution. Allow to dry thoroughly before coating.

2. All concrete surfaces to be coated shall be clean and dry. “Dry” is defined for new concrete as free of moisture and fully cured which is a minimum of 30 days at 75°F and 50 percent Relative Humidity or some equivalent cure time at other conditions (7 days minimum for stucco). Moisture content of concrete shall be determined by using both of the following methods.

    a. The presence of moisture shall be checked by taping a one-foot square piece of 20 mil thick minimum plastic film on the surface. Pieces of test plastic film should be places at various locations that are likely to be slow drying out, such as below grade, low spots in floors, inside corners and lower wall areas. The plastic film should be carefully sealed with tape to prevent the escape of any moisture or vapor that would be trapped behind the film. The film should be left in place over night or longer to allow sufficient time for moisture migration. After 16 hours minimum remove and examine the backside for moisture condensation and inspect the concrete surface for darkened areas. The source of the moisture, if present, shall be located, and the cause corrected prior to coating.

a. The presence of moisture shall also be determined with a moisture detection device such as a Delmhorst Model DLM2E. Moisture determined by this method shall be less than 14 percent moisture content before coating operations shall be allowed to proceed.

3. Old paint and unremoved tar stains shall be solvent-cleaned with naphtha, trichloroethylene, or perchloroethylene. Proper safety precautions shall be observed if this step is necessary. The surface shall be flushed with fresh water and dried.

4. Do not use form oils incompatible with coating, concrete curing agents or concrete hardeners on concrete surfaces to be coated.

5. Concrete and/or cinder block walls to receive a coating shall be air-blasted with 100 psi clean, dry, oil-free air to remove dust, etc., and wire brushed to remove all loose and/or weak mortar. See requirements for sumps, tanks and other water-bearing structures below.

F. Galvanized Steel, and Non-Ferrous Metal:

1. Galvanized steel and aluminum will only be coated when specified.

2. Surfaces shall be clean and dry. Remove dust and dirt by blowing off the surface with high pressure air or wiping clean with dry rags. Oil, grease and protective mill coatings should be removed by solvent cleaning in accordance with SSPC-SPI.

3. White rust should be removed from galvanized steel or aluminum by hand or power brushing. Care should be taken not to damage or remove the galvanizing. Rust should be removed from old galvanized steel by Hand or Power Tool Cleaning in accordance with SSPC-SP2 or SP3.

4. All surfaces shall be scarified by brush blasting for immersion service or hand sanding for non-immersion service.

5. Other surface preparation as outlined in the coating manufacturer's latest written Application Instructions shall be observed for more demanding exposures.

G. Stainless Steel:

1. Stainless steel will only be coated when so specified, or when it is adjacent to areas to be coated such as piping supports, anchor bolts or flange bolts.

2. Stainless steel requires only solvent cleaning prior to coating using any one of the methods in SSPC-SP1. Only solvents and cleaning solutions containing less than 200 ppm of halogens should be used to prevent stress corrosion cracking.

3. Stainless steel may be whip-blasted to provide a surface profile to increase the mechanical bond of the coating system. The height of the profile and the texture required should be defined for the operator and as a standard for the acceptance of the work. Pictorial standards for the surface cleanliness of carbon steel are not applicable to stainless steel, since there are no corrosion products or mill scale to remove from the surface.

4. Abrasive blast cleaning procedures outlined by Steel Structures Painting Council for carbon steel may also be used for stainless steel. Only very hard silica sand or other abrasive media should be used for a fast cutting action and to obtain a sharp angular profile.

3.03 APPLICATION

A. Paint all exposed surfaces in rooms scheduled for painting whether or not colors are designated in schedules, except where the natural finish of material is obviously intended and specifically noted as a surface not be painted. Where items or surfaces are not specifically mentioned, paint these the same as adjacent similar materials or areas. If color of finish is not designated, the Engineer will select these from standard colors available for the materials systems as specified.

B. Color Selection

1. Colors for Multi-coat Systems: Each coat shall be applied in a different color or shade from the preceding coat to aid in determining the uniformity and coverage of the coating. The finish coat color shall be selected by the Owner or Engineer. When a white finish coat is specified, the last two (2) coats shall be white.

C. All painting shall be done by skilled and experienced craftsmen and shall be of highest quality workmanship.

D. Apply paint in accordance with the manufacturer's directions. Use applicators and techniques best suited for the type of material being applied. All equipment shall be maintained in good working order and shall be comparable to that described in the coating manufacturer's most recent Application Instructions. It shall be thoroughly cleaned and inspected daily. Worn spray nozzles, tips, etc., shall be replaced regularly. Effective oil and water separators shall be used and serviced on all air lines.

E. All paints and coating materials shall be stored under cover and at a temperature within 10°F of the anticipated application temperature and at least 5°F above the dew point.

F. Apply additional coats when undercoats, stains or other conditions show through the final coat or paint, until the paint film is of uniform finish, color and appearance.

G. Paint shall be applied in a neat manner with finished surfaces free of runs, sags, ridges, laps and brush marks. Each coat shall be applied in a manner that will produce an even film of uniform and proper thickness. Allow each coat to dry thoroughly before applying the next coat; follow manufacturer's recommendations taking into account temperature and relative humidity.

H. All interior surfaces of structures shall be finish coated prior to installation of equipment, conduit and other exposed items by Mechanical, Electrical or Instrumentation.

I. Paint back sides of access panels and removable or hinged covers to match the exposed surfaces.

J. Finish exterior doors on tops, bottoms, and side edges the same as the exterior faces, unless otherwise indicated.

K. Sand lightly between each succeeding enamel or varnish coat.

L. Omit the first coat (primer) on metal surfaces which have been shop-primed and touch-up painted, unless otherwise specified.

M. Retouching Existing Painted Surfaces: Existing painted surfaces damaged by the modification work or other operations of the Contractor shall be retouched to conform to the above coating systems and blend in with the new and existing work. Damaged surfaces shall be repainted with not less than two (2) coats, and other existing surfaces that are listed shall be repainted with the coating system specified.

N. The prime and intermediate coats as specified for the various coating systems may be applied in the shop by the manufacturer. The shop coats shall be of the type specified and shall be compatible with the field coat or coats. Such items as pumps, motors, equipment, electrical panels, etc. shall be given at least one touch-up coat with the intermediate coat material and one complete finish coat in the field.

3.04 APLICATION RESTRICTIONS

A. Environmental Requirements:

1. Comply with manufacturer’s recommendations as to environmental conditions under which coatings and coating systems can be applied.

a. The conditions below shall be adhered to even if manufacturer’s recommendations are less stringent. If manufacturer’s recommendations are more stringent, they shall apply.

b. No coatings shall be applied when the air, surface, and material temperature is below 55°F or above 95°F for 24 hours prior to and 24 hours after coating application. Surface temperature shall be at

least 5°F above the dew point for 24 hours prior to and 24 hours after coating application. The dew point shall be determined by use of a sling psychrometer in conjunction with U.S. Weather Bureau psychometric tables. Do not apply coatings when the relative humidity exceeds 85 percent or to damp or wet surfaces, unless otherwise permitted by the coating manufacturer's printed instructions. No painting shall be done when the surfaces may become damaged by rain, fog or condensation or when it is anticipated that these conditions will prevail during the drying period, unless suitable enclosures to protect the surface are used. Where heat is necessary, it shall be supplied by the painting applicator and shall be of such type that it will maintain an air and coated surface temperature of 55°F minimum prior to and after the coating application as described above, and 90°F minimum during the cure stage if hot air forced curing is recommended by the coating manufacturer for special coatings. Further, this heater shall be of such type as not to contaminate the surface area to be or being coated with combustion products. The Contractor shall supply utilities to run electric or gas heaters. Any surface coating damaged by moisture or rain shall be removed and redone as directed by the Owner or Engineer.

2. Do not apply finish in areas where dust is being or will be generated during application through full cure.

3. All exterior painting shall be done only in dry weather.

4. Spray application shall occur only when wind velocities, including gusts, are less than 10 miles per hour. All materials, equipment, etc. in the vicinity of spray application shall be protected from overspray.

B. Application of materials shall be done only on properly prepared surfaces as herein specified. Between any two coats of material, unless specifically cover in the coating manufacturer's most recent printed application instructions, if more than one (1) week passes between subsequent coats, the coating manufacturer will be contacted for his recommended preparation of the surface prior to application

of the next coat. This preparation might include brush-off blasting, steam cleaning, or solvent wiping (with an indicated solvent) and shall be specified in writing by the material supplier and followed by the applicator. Any surface coating damaged by moisture or rain shall be removed and redone as directed by the Owner or Engineer.

C. In no case shall paint be applied to surfaces which show a moisture content greater than 14 percent. The presence of moisture shall be determined prior to coating by testing with a moisture device such as a Delmhorst Model DLM2E.

3.05 MINIMUM COATING THICKNESS

A. Coating thickness shall meet or exceed the specified minimum dry film thickness (DFT) in all areas. The average coating thickness as determined by multiple representative DFT measurements shall meet or exceed the mid-point of DFT range. If below this DFT value, the surface shall be recoated with at least the minimum DFT until the total DFT meets or exceeds the mid-point DFT.

B. Coverage rates are theoretical as calculated by the coating manufacturer and are, therefore, the maximum allowable.

C. Apply a prime coat to material which is required to be painted or finished, and which has not been prime coated by others.

D. On masonry, application rates will vary according to surface texture; however, in no case shall the manufacturer’s stated coverage rate be exceeded. On porous surfaces, is shall be the painter’s responsibility to achieve a protective and decorative finish either by decreasing the coverage rate or by applying additional coats of paint.

C. Recoat primed and sealed walls and ceilings where there is evidence of suction spots or unsealed areas in first coat, to assure a finish coat with no burn-through or other defects due to insufficient sealing.

3.06 FINISHES

A. Pigmented (Opaque) Finishes: Completely cover to provide an opaque, smooth surface of uniform finish, color, appearance and coverage. Cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness or other surface imperfections will not be acceptable.

B. Complete Work: Match approved samples for color, texture and coverage. Remove, refinish or repaint work not in compliance with specific requirements.

3.07 FIELD QUALITY CONTROL

A. The Contractor shall request acceptance of each coat by the Owner's representative before applying the next coat; and the Contractor shall provide the necessary properly calibrated gauges. All nonferrous surfaces shall be checked for number of coats and thickness by use of a Tooke gauge. All ferrous surfaces shall be checked for film thickness by use of an Elcometer or Micro-Test magnetic dry film gauge properly calibrated. In addition, submerged tank linings and metals shall be tested for freedom from holidays and pinholes by use of a Tinker-Rasor or K-D Bird Dog Holiday Detector. All defects shall be corrected to the satisfaction of the Owner.

3.08 PROTECTION

A. All other surfaces shall be protected while painting.

B. Protection of furniture and other movable objects, equipment, fittings, and accessories shall be provided throughout the paining operation. Remove all electric plates, surface hardware, etc., before painting; protect and replace when completed. Mask all machinery nameplates and all machined parts not to receive paint. Lay drop cloths in all area where painting is being done to adequately protect flooring and other work from all damage.

3.09 CLEANING

A. The Contractor shall perform the work under this Section while keeping the premises free from accumulation of dust, debris and rubbish and shall remove all scaffolding, paint cloths, paint, empty paint containers, and brushes from buildings and the project site when completed.

B. Cleaning: All paint brushed, splattered, spilled or splashed on any surface not specified to be painted shall be removed.

C. The Contractor shall insure that all glass throughout that portion of the facility in which he worked is cleaned of dirt and paint before he leaves the job site. Further, the Contractor shall insure that all glass in this area is thoroughly washed and polished.

D. Upon completion of the project, the job site shall be left neat and clean.

3.10 EXTRA STOCK

A. Paint To Be Supplied To Owner: Upon completion of painting work, the Owner shall be furnished at no additional cost, unopened containers providing a minimum of one (1) gallon of each type and color of finish paint for touching up. Multi-component coatings shall have each component supplied in separate containers boxed together. Paint container labels shall be complete with manufacturer's name, generic type, number, color and location where used.

3.20 PAYMENT

Payment for painting shall be incidental to construction and will not be compensated separately.

END OF SECTION

DIVISION 10
SPECIALTIES

SECTION 10100

LANDSCAPING

PART 1 – GENERAL

1.01 DEFINITION AND SCOPE

A. The designated planted areas shall be planted with appropriate native species. Natural recruitment of native vegetation has already occurred and will continue; however, any exotic vegetation encroachment shall be removed.

B. Plants provided by the Contractor must meet the Florida Plant Industry Grades & Standards (1015) for Wetland Plants. Specimens shall be free of other plants considered nuisance or exotic species.

C. A detailed planting schematic is provided in the plan sheets to the Contractor at the time of bidding. The Contractor shall verify with the Owner as well as the Engineer the species availability and selection and plant spacing/orientation prior to installation.

D. The Contractor shall install the plant material only after the Owner has given the approval to proceed with any plantings to ensure final grading has been accomplished. Substitutions, if any, to the plant lists shall be reviewed and approved by Lee County.

E. An 80 percent survival rate of planted material is required and shall be guaranteed for a one (1) year period.

1.02 PAYMENT

A. Payment shall be made for materials and work specified in connection with littoral, ground cover and tree plantings of the created components as shown on the plans and all other appropriate costs in connection therewith or incidental thereto; which shall also include all other items of cost required by the contract for which separate payment is not provided for herein.

B. This work shall be included in the applicable contract “Each” (EA) price for the LANDSCAPING / PLANTED AREA Bid Items #27 through #32. The Contractor shall furnish receipts for plant purchase and delivery to the site.

DIVISION 11
EQUIPMENT

SECTION 11100

ALUMINUM SLIDE/WEIR GATES AND OPERATORS

PART I – GENERAL

A. CONTRACTOR shall provide all labor, equipment and materials to install operable aluminum slide gates of the size and type called for on the plans, including: Gearbox manufactured by EIM Controls, Inc., AUMA, or Engineer Approved Equivalent; slide gates, frames, stem connectors, stem guides, adapter plates, anchors, brackets, etc. manufactured by Whipps, Inc., Golden Harvest, Inc., or Engineer approved equivalents.

    a. Supplied actuator gearbox to be designed for future electric actuator installation without removing the gearbox.

B. Instead of a grouted seal between the gate frame and endwall, a rubber gasket material shall be suppled and used by the contractor to seal around the gate frame perimeter with two-part epoxy bead on the inside and outside of the gasket material. Goodyear Rubber Products, Inc. 60 D Neoprene Strips (or owner approved equivalent) 5” wide x 0.5” thick cut to length shall be utilized.

C. Work under this item shall include providing the gates, actuators, mounting hardware and optional features required to complete the intended operational system, and installing the same according to the manufacturer’s recommendations to provide a complete working system.

PAYMENT

Payment for ALUMINUM SLIDE GATE AND ACTUATOR shall be included in Items #18 and #19 of the Schedule of Values per Each (EA) and shall include all labor, equipment, materials, coordination and permits necessary to complete this item of work.

END OF SECTION

DIVISION 12
FURNISHINGS
(NOT USED)

DIVISION 13
SPECIAL CONSTRUCTION

SECTION 13100

STAFF GAUGES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Staff Gauges

B. Related Sections:

1. Division 5 - “Metals, I-Beams”.
2. Division 9 – “Finishes”.

1.3 PERFORMANCE REQUIREMENTS

A. Staff Gauges must be installed by the contractor at elevations established and then checked by a Florida Licensed Professional Surveyor. Elevations shall be established in N.G.V.D. 1929 Datum.

B. Staff Gauges must extend from the bottom of the I-Beams to the top of the I-Beams and all fasteners must be stainless steel with plastic spacers in direct contact with the Staff Gauge and the steel I-Beam.

1.4 PAYMENT

Payment for staff gauge shall be made under Item #33 of the Schedule of Values per “each” (EA) I-Beam/Staff Gauge installed.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 13300

PERMANENT BRONZE BENCHMARKS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Permanent 4” Bronze Benchmarks

B. Related Sections:

1. Division 13 - Special Construction “Staff Gauges”.

1.3 PERFORMANCE REQUIREMENTS

A. Contractor shall provide all labor, materials and equipment to install a permanent benchmark with a 4” bronze survey disk at the proposed structure location.

B. Contractor shall install the benchmark in accordance with the detail provided on the plans and at a location approved by LA-MSID staff.

C. Contractor shall hire a State of Florida Licensed Professional Surveyor for establishing the benchmark elevations in NGVD 29 datum.

1.4 PAYMENT

Payment for PERMANENT 4” BRONZE BENCHMARK shall be included in Item #22 of the Schedule of Values per Each (EA).

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

DIVISION 14
CONVEYING EQUIPTMENT
(NOT USED)

DIVISION 15
(RESERVED)

DIVISION 16
(RESERVED)

DIVISION 17
(RESERVED)

DIVISION 18
(RESERVED)

DIVISION 19
(RESERVED)

DIVISION 20
MECHANICAL SUPPORT
(NOT USED)

DIVISION 21
FIRE SUPPRESSION
(NOT USED)

DIVISION 22
PLUMBING
(NOT USED)

DIVISION 23
HEATING, VENTILATING AND AC
(NOT USED)

DIVISION 24
(RESERVED)

DIVISION 25
INTEGRATED AUTMOATION
(NOT USED)

DIVISION 27
COMMUNICATIONS
(NOT USED)

DIVISION 28
ELECTRIC SAFETY AND SECURITY
(NOT USED)

DIVISION 29
(RESERVED)

DIVISION 30
(RESERVED)

DIVISION 31
EARTHWORK

SECTION 31100

SITE PREPARATION

PART 1 – GENERAL

1.01 WORK INCLUDED

A. This Section covers clearing, grubbing, and stripping for the construction as shown on the Drawings, and the removal and disposal of materials and debris resulting from the clearing and grubbing operations.

B. Unless otherwise shown on the Drawings, all clearing and grubbing shall be done within the canal rights-of-way, including where excavated materials are to be deposited, where embankment is to be constructed, and where pipe culverts and structures are to be constructed.

C. The CONTRACTOR is expected to visit the Site of the work and determine the extent of the clearing and grubbing necessary for construction purposes.

PART 2 – PRODUCTS (Not Applicable)

PART 3 – EXECUTION

3.01 CLEARING

A. The surface of the ground, for the area to be cleared and grubbed shall be completely cleared of all timber, brush, stumps, roots, grass, weeds, rubbish and all other objectionable obstructions resting on or protruding through the surface of the ground. However, those trees which are designated by the ENGINEER shall be preserved as hereinafter specified. Clearing operations shall be conducted so as to prevent damage to existing facilities, installations or vegetation, so as to provide for the safety of employees and others.

B. For selective clearing, the ENGINEER shall select and mark, or otherwise designate, the trees or other vegetation to be removed.

3.02 GRUBBING

A. Grubbing shall consist of the complete removal of all stumps, roots larger than 1.5 inches in diameter, matted roots, brush, timber, logs and any other organic or metallic debris resting on, under or protruding through the surface of the ground to a depth of 18 inches below the subgrade. All depressions excavated below the original ground surface for or by the removal of such objects, shall be refilled with suitable materials and compacted to a density conforming to the surrounding ground surface.

3.03 DEMUCKING

A. When encountered, organic material (muck) shall be excavated and removed. This material may be stockpiled temporarily but must be disposed of as directed by the ENGINEER or OWNER.

3.04 DISPOSAL OF CLEARED AND GRUBBED MATERIAL

A. The CONTRACTOR shall dispose of all material and debris from the clearing and grubbing operation by burning or chipping such material and debris and disposing of such material properly or as specified in the construction sequence. It shall be the CONTRACTOR's responsibility to obtain permits for burning in areas where such permits are required and shall be responsible for any and all damage to surrounding property or area caused by the burning operations.

B. Deep burial shall not be permitted. In no case shall debris from the clearing and grubbing operations remain on site. The cost of disposal of material (including hauling) shall be considered a subsidiary obligation of the CONTRACTOR, the cost of which shall be included in the contract prices.

3.05 PRESERVATION OF TREES

A. Those trees which the ENGINEER deems preserved shall be carefully protected from damage. The CONTRACTOR shall obtain prior approval from the ENGINEER before damaging or removing any trees. The CONTRACTOR shall erect such barricades, guards, and enclosures as may be considered necessary for the protection of the trees during all construction operations.

3.06 PRESERVATION OF PRIVATE PROPERTY

A. The CONTRACTOR shall exercise extreme care to avoid any disturbance of private property as applicable. Trees, shrubbery, gardens, lawn and other landscaping, which in the opinion of the ENGINEER must be removed, shall be replaced and replanted to restore the property to the condition existing prior to construction.

B. All soil preparation procedures and replanting operations shall be under the supervision of nurseryman experienced in such operations.

C. Improvements to the land such as fences, walls, outbuildings, etc., which of necessity must be removed shall be replaced with equal quality materials and workmanship.

D. The CONTRACTOR shall clean up the construction site across private property immediately after construction is complete upon approval of the ENGINEER.

3.07 PRESERVATION OF PUBLIC PROPERTY

A. The appropriate paragraphs of Articles 3.05 and 3.06 of these specifications shall apply to the preservation and restoration of all damaged areas of public lands, rights of way, easements, etc.

3.08 PAYMENT

Payment for Site Preparation shall be included in Item #2 (GENERAL REQUIREMENTS) of the Schedule of Values per Lump Sum (LS) and will not be compensated separately.

END OF SECTION

SECTION 31110

CLEARING, GRUBBING AND STRIPPING

PART 1 - GENERAL

1.01 REGULATORY REFERENCE

A. Clearing and grubbing shall be in accordance with Section 110 of the Florida Department of Transportation Standard Specifications for Road and Bridge Construction, Latest Edition.

1.02 REQUIREMENTS

A. Clearing and grubbing shall include the complete removal and disposal of all timber, brush, stumps, roots, grass, weeds and fencing as indicated on the plans, rubbish and all other obstructions resting on or protruding through the surface of the existing ground or located under the surface of the excavated areas whether or not they are shown on the plans.

B. Unless otherwise provided, the Work shall also include, but not be limited to, saw cutting, removal and disposal of existing fill, asphalt or concrete pavement, sidewalks, culverts, pipe, etc.

1.03 AREAS COVERED

A. Unless otherwise shown on the plans or specified herein, clearing and grubbing shall be done within the following areas:

1. All areas where necessary to accomplish this project as directed by these plans and specifications.
2. All excavation areas included in the designated work area.
3. All areas where structures will be constructed, including drainage pipes, proposed walkway bridge, telemetry platforms, etc.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 DEPTHS OF REMOVAL OF ROOTS, STUMPS AND OTHER DEBRIS

A. In areas where excavation is to be done and where the excavated material is to be used in the construction of asphalt facilities, sidewalks, concrete benches/pads, or base or pavement, all stumps, roots and other debris shall be removed to a depth

of at least two feet below finished grade or not to interfere with bottom of the base course of any facility.

3.02 DISPOSAL OF PAVING MATERIALS

A. Paving materials excavated in the removal of existing pavements, such as paving brick, asphalt block, concrete slab, limerock, sidewalk, curb and gutter, etc., shall be disposed of at the Contractor's expense whether or not they are shown on the plans.

3.03 REGULATORY REQUIREMENTS

A. Conform to applicable local, state and federal codes for disposal of debris.

B. Coordinate clearing of Work with utility companies and facility owner.

C. Burning of combustible material on site shall be in accordance with Section 01060 (Permits and Fees) and all regulations and requirements of all local, state and federal agencies having jurisdiction.

3.04 VEGETATION PROTECTION

A. All trees not cleared or designated to remain shall be protected by the Contractor from damage by vehicles, equipment and machinery. Trees designated to remain shall not be removed unless directed by the Engineer.

B. Excavated dirt shall not be piled around the base of the trees designated to remain. The Contractor shall not bury or burn any refuse around or near said trees and the Contractor shall proceed with caution when excavating in the vicinity of the root structure of any such tree. Excavation shall be by hand if necessary.

C. The Contractor shall be required to clear and grub around those areas identified on the drawings or by the Owner's Representative as 'Existing Vegetation To Remain'. These limits of clearing should be strictly adhered to.

D. As an exception to the above provisions, where so directed by the Engineer, desirable trees within the roadway area shall be trimmed, protected and left standing in accordance with these Specifications.

E. Protect existing trees indicated to remain, against unnecessary cutting, breaking, skinning or bruising of bark, smothering of trees by stockpiling construction materials or excavated material within protection zone and drip line, excess foot or vehicular traffic, or parking of vehicles during construction.

3.05 PRE-CONSTRUCTION

A. Prior to land disturbance, mark trees to remain with ribbon. Engineer will approve all marked trees prior to pruning or removal.

B. Install silt fencing and erosion control prior to any land disturbance.

C. Erect tree protection at outer limits of tree branching.

3.06 TREE REMOVAL

A. Backfill all depressions resulting from any stump or root removal with suitable soil and compact.

3.07 EXCAVATION AROUND TREES TO REMAIN

A. Not applicable.

3.08 PAYMENT

A. Payment for clearing, grubbing, and stripping shall be included in Item #2 (GENERAL REQUIREMENTS) of the Schedule of Values per Lump Sum (LS) and will not be compensated separately.

END OF SECTION

SECTION 31140

DEWATERING

PART 1 - GENERAL

1.01 REQUIREMENTS

A. Dewatering shall comply with the South Florida Water Management District requirements. Contractor shall obtain a SFWMD dewatering permit if deemed necessary by SFWMD.

1. The Contractor shall take all steps that it considers necessary to familiarize themselves with the site conditions, the ground conditions and the groundwater conditions. It is expressly understood that neither the Owner nor the Engineer will be held responsible for any interpretations or conclusions drawn by the Contractor.

2. The Contractor shall promptly dispose of all water removed from the excavations in such a manner as will not endanger public health, damage public or private property, or affect adversely any portion of the work under construction or completed by the contractor. Contractor shall obtain written permission from the Owner of any property involved before digging ditches or constructing water courses for the removal of water.

3. The Contractor shall file a NOI to FDEP for erosion control in accordance with the National Pollution Discharge Elimination System. Contractor shall install silt fencing, turbidity barriers, and any other erosion control device necessary to prevent discharge from the site.

1.02 PAYMENT

A. Payment for dewatering shall be included in Item #2 (GENERAL REQUIREMENTS) of the Schedule of Values per Lump Sum (LS) and will not be compensated separately.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 31200

EARTHWORK

PART 1 - GENERAL

1.01 WORK INCLUDED

A. Excavation of canal banks, perimeter berms, existing river channel, sub-bases, storm drain lines, and other areas shown on the Drawings.

B. Filling of embankments, berms and other areas shown on the Drawings.

C. Grading (including final grading) site to elevations, lines, slopes, depths and cross-sections shown on the Drawings.

D. Compaction and testing of fill as specified in this Section.

1.02 REFERENCES

A. ANSI/ASTM D698 (AASHTO T-99) – Moisture-Density Relations of Soils and Soil Aggregate Mixture Using 5.5 lb. (2.49 kg) Rammer and 12 inch (305mm) Drop.

B. ANSI/ASTM D1557 (AASHTO T-180) – Moisture-Density Relations of Soils and Soil Aggregate Mixture Using 10 lb. (4.54 kg) Rammer and 18 inch (457 mm) Drop.

C. ASTM D2922 – Density of Soil and Soil Aggregate in Place by Nuclear Method (Shallow Depth).

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

E. AASHTO M-145: Designation M-145 “Classification of Soils and Soil Aggregate Material for Highway Construction Purposes.

1.03 QUALITY ASSURANCE

A. All contractors and subcontractors: Company specializing in respective field of testing work with five years of documented experience in SW Florida.

1.04 REGULATORY REQUIREMENTS

A. Conform to Lee County Permit(s), Hendry County Permit(s) and South Florida Water Management District Water Management Permit(s) for project.

B. Obtain De-watering Permit from South Florida Water Management District prior to de-watering of any areas.

1.05 SUBMITTALS

A. Submit Shop Drawings under provisions of the specifications herein.

B. Shop Drawings shall include information submitted in conjunction with requirements in Section 1.04 above.

PART 2 - PRODUCTS

2.01 Suitable Material: Clean sand or sand/rock fill, containing not more than 20% rock with maximum rock size less than two inches and free from organic soil, peat or muck.

2.02 Unsuitable Material: Topsoil from ground surface to a depth of six inches or as determined by Engineer; material classified as A-8 in accordance with AASHTO Designation M145-73 or material considered to be highly organic soil (peat or muck) as determined by Engineer.

2.03 Rock: Material which by actual demonstration cannot, in the Engineer's opinion, be reasonably excavated with a backhoe or ¾ cubic yard capacity excavator equipped with two rippers, or similarly approved equipment and which is, in fact, systematically drilled and blasted or broken by power operated hand tools. Engineer may waive demonstration requirement if material encountered is well-defined rock.

2.04 Explosives: Prohibited.

2.05 Delay Devices: Not applicable.

2.06 Blasting Mat Materials: Not applicable.

PART 3 - EXECUTION

3.01 INSPECTION

A. Verify site conditions and note irregularities affecting work of this section.

B. Beginning work of this section means acceptance of existing conditions.

3.02 EXCAVATION

A. Perform excavation work in accordance with Section 120 of FDOT Standard Specifications, in the locations shown on the Drawings.

B. Strip existing surfaces to be excavated to a depth of six inches unless otherwise directed by Engineer to remove grass, roots and other vegetation. Use this stripped material only as topsoil as it is considered unsuitable for general fill purposes.

C. Located all underground structures and utilities in the areas of work to avoid conflicts with existing facilities. Where conflicts are unavoidable, perform work so as to cause as little interference as possible with the service rendered or the facility disturbed. Repair all facilities or structures damaged in the prosecution of the work immediately to pre-construction condition.

D. Use all suitable materials removed from excavation areas as far as practicable in the formation of embankment, sub-grades, shoulders, structure pads and other places as directed. Waste no excavated material without permission, and where necessary, dispose of material as directed by engineer. Stockpile all topsoil and all other suitable materials in areas as directed by Engineer. All excavated material is considered property of Owner and shall be disposed of on the project unless agreed to otherwise by the Owner.

3.03 ROCK EXCAVATION

A. If solid rock is encountered, notify Engineer and Owner for further direction.

3.04 FILL

A. Perform filling work in accordance with Section 120 of FDOT Standard Specifications, in the locations shown on the Drawings.

B. Use only suitable materials in the formation of embankments, sub-grades, shoulders, structure pads and other places as directed.

C. Fill roadway embankments and building pads in twelve-inch maximum layers and compact to density of at least 98% of maximum dry density as determined by AASHTO T-180. Compact materials at a moisture content within 2% of the optimum. If necessary, add water or allow material to dry until the proper moisture content for the specified compaction is obtained. Allow testing of each compacted fill layer, in place, prior to placement of succeeding fill layers.

3.05 TESTING

A. Retain a laboratory approved by Engineer to make Field Density Tests as specified below.

B. Retain a laboratory approved by Engineer to make Proctor Tests as specified below.

C. Contractor will pay the cost of the initial density test(s) and each Proctor Test(s).

D. Contractor shall pay costs for any additional testing that is required as a result of failure of any initial test.

E. Perform one Proctor Test according to ASTM D698 or D1557 for each source of fill, as determined by Engineer, used on the project.

F. Test the density of each compacted fill layer in place by field density test ASTM D 2922. Perform at least one test per layer for every 600 feet of roadway or every 1,000 square feet of building, or fraction thereof.

G. Additional field tests will be required for each test that does not meet the required density.

H. Allow for inspection of import fill by Engineer at the source before delivery to site.

I. Allow for inspection and cross-sectioning of all excavated and fill areas by Engineer as required to determine conformance of the final earthwork with the Drawings.

3.06 PAYMENT

A. Payment for all earthwork excavation and embankment including fill testing shall be included in Item #6 EXCAVATION / EMBANKMENT in the Schedule of Values per Cubic Yards (CY).

END OF SECTION

SECTION 31210

SITE GRADING

PART 1 - GENERAL

1.01 WORK INCLUDED

A. Site work outside structural earthwork.

1.02 REFERENCES

A. ANSI/ASTM D698 (AASHTO T-99) – Moisture-Density Relations of Soils and Soil-Aggregate Mixture Using 5.5 lb (2.49 kg) Rammer and 12-inch (305 mm) Drop.

B. ANSI/ASTM D1556 – Density of Soil in Place by the Sand-Cone Method.

C. ANSI/ASTM D1557 (AASHTO T-180) – Moisture-Density Relations of Soils and Soul-Aggregate Mixture Using 10 lb. (4.54 kg) Rammer and 18-inch (457 mm) Drop.

D. ASTM D2922 – Density of Soil and Soil aggregate in Place by Nuclear Method (Shallow Depth).

1.03 PROJECT RECORD DOCUMENTS

A. Submit documents under provisions of required Sections herein.

B. Accurately record location of utilities remaining, rerouted utilities, new utilities by horizontal dimensions, elevations or inverts, and slope gradients.

1.04 PROTECTION

A. Protect trees, shrubs, lawns, and other features remaining as portion of final landscaping.

B. Protect benchmarks, existing structures, fences, roads, sidewalks, and paving and curbs.

C. Protect above or below grade utilities which are to remain.

D. Repair damage.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Topsoil: Excavated material, graded free of roots, rocks, subsoil, debris, and large weeds.

B. Fill: Excavated material (excluding top six inches) or imported material shall be clean sand or sand rock. Material shall contain not more than 15 percent of material passing sieve #200 and not more than 20 percent rock with maximum rock size of two inches, free from organic material.

PART 3 - EXECUTION

3.01 PREPARATION

A. Clear areas required for access to site and execution of Work.

B. Remove trees and shrubs within marked areas. Grub out stumps, roots, and surface rock to a depth of two feet below existing grade.

C. Clear undergrowth and deadwood without disturbing subsoil.

D. Strip grass and roots to a depth of six inches from proposed site.

E. Identify required lines, levels, contours, and datum.

F. Identify known below grade utilities. Stake and flag locations.

G. Identify and flag above grade utilities.

H. Maintain and protect existing utilities remaining which pass through work area.

I. Notify utility company to remove and relocate utilities.

J. Upon discovery of unknown utility or concealed conditions, discontinue affected work and notify Engineer.

3.02 TOPSOIL EXCAVATION

A. Excavate topsoil from entire site and store all topsoil for reuse on site.

B. Do not excavate wet topsoil.

C. Stockpile topsoil to depth not exceeding 8 feet. Cover to protect from erosion.

3.03 DEBRIS REMOVAL

A. Remove from the site all trash, brush, trees, weeds, grass and all unearthed underground material obtained from the site preparation operation.

3.04 FILLING

A. Fill areas to be filled in 8 to 12-inch maximum layers and compact to a density of at least 95 percent of maximum density as determined by AASHTO T-180.

B. Compact materials at a moisture content within +2% of the optimum. If required, add water or permit material to dry until the proper moisture content for specified compaction is obtained.

C. Field test density of compacted fill layer by Field Density Test ASTM D1556 or D2922 prior to placement of succeeding lifts. Follow guidelines of Geotechnical Engineering Report. At a minimum, make at least one test per layer for every 2,000 square feet of non-structural area.

D. Field test density of compacted fill layer by Field Density Test ASTM D1556 or D2922 prior to placement of succeeding lifts. Follow guidelines of Geotechnical Engineering Report. At a minimum, make at least one test per layer for every 2,000 square feet of non-structural area.

E. A laboratory retained by Contractor and approved by Engineer shall make field density tests as specified. One Proctor Test (ASTM D698 or ASTM D1557) for each source of fill used shall be made by laboratory. Additional field tests will be required for each test not meeting required density. Costs of all tests will be paid by Contractor and included in Contract price.

3.05 GRADING

A. Grade to meet proposed elevations as shown on the Drawings and include all work in bringing excavation to required grade, alignment and cross-section. Any excess excavated material shall remain the property of the Owner and disposed of as directed by Engineer.

3.06 PAYMENT

A. Payment for site grading shall be incidental to construction and will not be compensated separately.

END OF SECTION

SECTION 31220

EXCAVATION, BACKFILLING AND COMPACTING

PART 1 - GENERAL

1.01 WORK INCLUDED

A. Furnish labor, materials, equipment, and incidentals necessary to perform all excavation, backfill, fill, grading and slope protection required to complete the WORK shown on the Drawings and specified herein. The WORK shall include, but not necessarily be limited to: all bedding, backfilling, fill and required borrow; grading and disposal of surplus and unsuitable materials; dewatering activities; and all related work such as sheeting, bracing and water handling.

1.02 EXCAVATION PROTECTION

A. The CONTRACTOR shall construct and maintain sheeting and bracing if required to support the sides of excavations, to prevent any movement which could in any way diminish the width of the excavation below that necessary for proper construction, and to protect adjacent structures, existing piping and foundation material from disturbance, undermining, or other damage. Care shall be taken to prevent voids outside the sheeting, but if voids are formed they shall be immediately filled and compacted.

B. All sheeting and bracing, not left in place, shall be carefully removed in such a manner as not to endanger the construction or other structures, utilities, and existing piping. All voids left or caused by the withdrawal of sheeting shall immediately be refilled with sand or ramming with tools specially adapted for that purpose, by watering or otherwise as may be directed by the ENGINEER.

C. The right of the ENGINEER to order sheeting and bracing left in place shall not be construed as creating any obligation on his part to issue such orders, and his failure to exercise his right to do so shall not relieve the CONTRACTOR from liability for damages to persons or property occurring from or upon the work occasioned by negligence or otherwise, growing out of a failure on the part of the CONTRACTOR to leave in place sufficient sheeting and bracing to prevent any caving or moving of the ground.

1.03 JOB CONDITIONS

A. The CONTRACTOR shall examine the site and review the available test borings or undertake his own soil borings prior to execution of the Agreement, taking into consideration all conditions that may affect his work. The OWNER and

ENGINEER will not assume responsibility for variations of sub-soil quality or conditions at locations other than places shown and at the time the investigation was made.

B. Existing Utilities and Improvements:

1. General: The CONTRACTOR shall protect all Utilities and other improvements which may be impaired during construction operations. It shall be the CONTRACTOR's responsibility to ascertain the actual location of all existing utilities and other improvements that will be encountered in its construction operations and to see that such utilities or other improvements are adequately protected from damage due to such operations. The CONTRACTOR shall take all possible precautions for the protection of unforeseen utility lines to provide for uninterrupted service and to provide such special protection as may be necessary.

2. Utilities to be Moved: In case it shall be necessary to move the property of any public utility or franchise holder, such utility company or franchise holder will, upon request of the CONTRACTOR, be notified by the OWNER to move such property within a specified reasonable time. When utility lines that are to be removed are encountered within the area of operations, the CONTRACTOR shall notify the ENGINEER a sufficient time in advance for the necessary measures to be taken to prevent interruption of service.

3. Where the proper completion of the WORK requires the temporary or permanent removal and/or relocation of an existing utility or other improvement which is indicated, the CONTRACTOR shall remove and, without unnecessary delay, temporarily replace or relocate such utility or improvement in a manner satisfactory to the ENGINEER and the owner of the facility. In all cases of such temporary removal or relocation, restoration to former location shall be accomplished by the CONTRACTOR in a manner that will restore or replace the utility or improvement as nearly as possible to its former locations and to as good or better condition than found prior to removal.

4. OWNER's Right of Access: The right is reserved to the OWNER and to the owners of public utilities and franchises to enter at any time upon any public street, alley, right-of-way, or easement for the purpose of making changes in their property made necessary by the WORK of this Contract.

5. Underground Utilities Indicated: The locations of existing subaqueous utility lines as shown identify the general vicinity in which these lines are located. The CONTRACTOR shall be responsible for identifying the exact locations of these lines prior to construction.

a. Identified locations shall be marked. Existing utility lines that are indicated or the locations of which are made known to the CONTRACTOR prior to excavation and that are to be retained, and all utility lines that are constructed during excavation operations shall be protected from damage during excavation and backfilling and, if damaged, shall be immediately repaired or replaced by the CONTRACTOR.

6. Underground Utilities Not Indicated: In the event that the CONTRACTOR damages any existing utility lines that are not indicated or the locations of which are not made known to the CONTRACTOR prior to excavation, a written report thereof shall be made immediately to the ENGINEER. If directed by the ENGINEER, repairs shall be made by the CONTRACTOR under the provisions for changes and extra work contained in Articles 11 & 12 of the General Conditions.

7. All costs of locating, repairing damage not due to failure of the CONTRACTOR to exercise reasonable care, and removing or relocating such utility facilities not shown in the Contract Documents with reasonable accuracy, and for equipment on the project which was actually working on that portion of the work which was interrupted or idled by removal or relocation of such utility facilities, and which was necessarily idled during such work will be paid for as extra work in accordance with the provisions of Articles 11 & 12 of the General Conditions.

8. Approval of Repairs: All repairs to a damaged utility or improvement are subject to inspection and approval by an authorized representative of the utility or improvement owner before being concealed by backfill or other work.

9. Maintaining in Service: All oil and gasoline pipelines, power, and telephone or the communication cable ducts, gas and water mains, irrigation lines, sewer lines, storm drain lines, poles, and overhead power and communication wires and cables encountered along the line of the WORK shall remain continuously in service during all the operations under the Contract, unless other arrangements satisfactory to the ENGINEER are made with the owner of said pipelines, duct, main, irrigation line, sewer, storm drain, pole, or wire or cable. The CONTRACTOR shall be responsible for and shall repair all damage due to its operations, and the provisions of this Section shall not be abated even in the event such damage occurs after backfilling or is not discovered until after completion of the backfilling.

C. Protection of Persons and Property: Barricade open excavations occurring as part of this work and post with warning signs.

1. Protect structures, utilities, sidewalks, pavements, and other facilities from damaged caused by settlement, lateral movement, undermining, washout and other hazards created by earthwork operations.

PART 2 - PRODUCTS

2.01 MATERIALS

A. General:

1. Materials for use as base, fill and backfill are designated and defined as follows:

a. Suitable soil materials are defined as those complying with American Association of State Highway and Transportation Officials (AASHTO) M-145, soil classification Groups A-1, A-2-4, A-2-5, and A-3.
b. Unsuitable soils for fill material are those defined in AASHTO M-145 soil classification Groups A-2-6, A-2-7, A-4, A-5, A-6, and A-7 along with peat and other highly organic soils.
c. In addition, any soil which cannot be compacted sufficiently to achieve the percentage of maximum density specified for the intended use, shall be classed as unsuitable material.

B. Structural Fill:

1. Structural fill material shall be a well graded, suitable soil material consisting of a minimum of 60 percent clean medium fine grain sized quartz sand, free or organic, deleterious and/or compressible percent clean medium fine grain sized quartz sand, free of organic, deleterious and/or compressed material. Rock greater than 2.50 inches in diameter shall not be used in the fill material. Structural fill shall not contain hardpan, stones, rocks, cobbles or other similar materials.

C. Common Fill:

1. Common fill material shall be satisfactory soil material containing no more than 20 percent by weight finer than No. 200 mesh sieve. Fill material shall be free from organic matter, muck, marl, and rock exceeding 2.50 inches in diameter. Common fill material shall not contain broken concrete, masonry, rubble or other similar materials.

2. Fill materials that are encountered during excavation and meet specifications, may be stored in segregated stockpiles for reuse. All

material which, in the opinion of the ENGINEER, is not suitable for reuse shall be spoiled as specified herein for disposal of unsuitable materials.

D. Rock Bedding:

1. Rock bedding material shall range in size from 0.375 inches to 0.750 inches washed and graded limerock. Rock bedding material shall be graded so that 99 percent will pass a 0.750-inch screen and 80 percent will be retained on a No. 8 screen.

PART 3 - EXECUTION

3.01 GENERAL

A. All excavation backfill and grading necessary to complete the WORK shall be made by the CONTRACTOR and the cost thereof shall be included in the Contract price.

B. The CONTRACTOR shall furnish all materials as required from off-site sources.

C. The CONTRACTOR shall take all necessary precautions to maintain the work area in a safe and workable condition.

D. The CONTRACTOR shall protect his work at all times by flagging, marking, lighting and barricading. The CONTRACTOR shall be responsible for protecting and preserving all above and underground structures, pipelines, conduits, cables, drains, or utilities which are existing at the time encountered. Failure of the Drawings to show the existence of these obstructions shall not relieve the CONTRACTOR from this responsibility. The cost of repair of damage that occurs to these obstructions during or as a result of construction shall be borne by the CONTRACTOR without additional cost to the OWNER.

3.02 PLACEMENT OF EMBANKMENT FILL:

A. Embankments shall be constructed true to the lines, grades and cross sections shown on the Drawings or as directed by the ENGINEER. Embankments shall be placed in successive layers of not more than eight (8) 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 to a density of at least 95 percent of the maximum density as determined by AASHTO T-99, Method C. If any part of the embankment is found to be constructed of unsuitable material or other faulty construction evident, the CONTRACTOR shall cut out and remove that part as required and rebuild that portion of embankment in accordance with the Specifications at no additional cost to the DISTRICT. Any material placed outside the limits of the required embankment, shall be removed

and placed in the locations as specified herein, or as shown on the Drawings. The CONTRACTOR shall make adequate allowances for settlement and consolidation of the fill based on his method of operation.

3.03 GRADING

A. Grading shall be performed at such places as are indicated on the Drawings, to the lines, grades and elevations shown or as directed by the ENGINEER and shall be made in such manner that the requirements for formation of embankments can be followed. All unacceptable material encountered, of whatever nature within the limits indicated, shall be removed and disposed of as directed. During the process of excavation, the grade shall be maintained in such condition that it will be well drained at all times. When directed, temporary drains and drainage ditches shall be installed to intercept or divert surface water which may affect the prosecution or condition of the WORK.

B. If at the time of excavation, excavated material cannot be placed in its proper section of the permanent structure, it shall be stockpiled in approved areas for later use. No extras will be considered for the stockpiling or double handling of excavated material.

3.04 DRESSING

A. Embankments shall be brought to not less than the required grade shown on the Drawings. Unreasonable roughness of the surface shall be dressed out. Rocks and boulders shall not project above the finished surfaces. The embankments shall be dressed with a slight slope so that water will drain freely at all points after construction. Grading of the top of the embankments shall follow the placement of fill material as closely as practicable, and the surface shall be maintained until the embankments are finally dressed. After completion of all work, the CONTRACTOR shall grade, drag or otherwise work the surface so as to eliminate any ruts or depressions caused by settlement or by the operation of vehicles or equipment.

3.05 STOCKPILE OF EXCAVATED MATERIAL:

A. The OWNER/ENGINEER shall provide an area to stockpile excavated materials.

3.06 DISPOSAL OF UNSUITABLE AND SURPLUS MATERIAL

A. All surplus and unsuitable excavated material shall be disposed of at the CONTRACTOR’s cost in one of the following ways as directed by the ENGINEER.

1. Transport surplus excavated material to soil storage area within project limits and stockpile or spread as directed by the ENGINEER.

2. Transport unsuitable excavated material from project area and legally dispose of. Any permit required for the hauling and disposing of this material shall be obtained prior to commencing hauling operations. Copies of all required permits shall be provided to the ENGINEER.

3.07 PROTECTION AND MAINTENANCE

A. The CONTRACTOR shall maintain the embankments until final acceptance of all work. The maintenance shall include repairs of any erosion, slides, or other damages.

3.08 PAYMENT

A. Payment for EXCAVATION AND BACKFILL shall be included in Item #6 EXCAVATION / EMBANKMENT of the Schedule of Values per Cubic Yards (CY).

END OF SECTION

SECTION 31240

STABILIZED SUBGRADE

PART 1 - GENERAL

1.01 DESCRIPTION

A. Stabilization of the sub-grade at each water control structure and the entire maintenance access road shall be in accordance with Section 160 of the Florida Department of Transportation Standard Specifications for Road and Bridge Construction, Latest Edition.

1.02 REQUIREMENTS

A. The work specified in this section consists of the preparation of the firm and unyielding sub-grade having the required bearing value specified in the Contract Drawings and Specifications. It is intended that the desired bearing value be obtained regardless of the quality of the existing soil or materials available on the site.

1.03 PAYMENT

A. This work shall be included in the applicable contract “square yard” (SY) price for the STABILIZED SOIL Bid Item #20.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 31280

TEMPORARY EROSION AND SEDIMENTATION CONTROL

PART 1 – GENERAL

1.01 WORK INCLUDED

A. Designing, providing, maintaining and removing temporary erosion and sedimentation controls as necessary.

B. Temporary erosion controls may include, but are not limited to, mulching, netting, and watering, on site surfaces and spoil and borrow area surfaces and providing interceptor ditches at ends of berms and at those locations which will ensure that erosion during construction will be either eliminated or maintained within acceptable limits as established by the OWNER.

C. Temporary sedimentation controls include, but are not limited to, silt dams, traps, barriers, and appurtenances at the foot of sloped surfaces which will ensure that sedimentation pollution will be either eliminated or maintained within acceptable limits as established by the OWNER.

D. CONTRACTOR shall provide effective temporary erosion and sediment control measures during construction or until final controls become effective.

1.02 SUBMITTALS

A. Submit schedule for temporary erosion and sedimentation control.

PART 2 – PRODUCTS

2.01 EROSION CONTROL

A. Seeding and mulching, fertilization and watering shall be in accordance with Section 570-1 through 570-3 of the FDOT Specifications.

B. Netting: Fabricated material acceptable to the OWNER or ENGINEER.

2.02 SEDIMENTATION CONTROL

A. Bales: clean, seed-free cereal hay type

B. Netting: Fabricated of material acceptable to the OWNER or ENGINEER.

C. Filter stone: crushed stone conforming to FDOT Specifications.

PART 3 – EXECUTION

3.01 EROSION CONTROL

A. Seeding shall be in accordance with Section 570-4 through 570-5 of the FDOT Specifications. The CONTRACTOR shall insure that all seeded areas have sustained growth prior to acceptance.

B. Mulching shall be in accordance with Section 570-4.6 of the FDOT Specifications.

C. Minimum procedures for mulching and netting are:

1. Apply mulch loosely to a thickness of between 0.75 inch and 1.5 inches.

2. Apply netting over mulched areas on sloped surfaces.

3.02 SEDIMENTATION CONTROL

A. Install and maintain silt dams, traps and barriers as shown on the approved schedule. Hay bales which deteriorate and filter stone which is lodged shall be replaced as required.

3.03 PERFORMANCE

A. Should any of the temporary erosion and sediment control measures employed by the CONTRACTOR fail to produce results which comply with the requirements of the OWNER, CONTRACTOR shall immediately take whatever steps are necessary to correct the deficiency at his own expense.

3.03 PAYMENT

A. Payment for TEMPORARY EROSION AND SEDIMENTATION CONTROL shall be included in Items #4 & #5 of the Schedule of Values per Lineal Foot (LF) of actual silt fence and floating turbidity barrier installed.

END OF SECTION

SECTION 31290

SOLID SODDING

PART 1 - GENERAL

1.01 DESCRIPTION

A. Preparation of subsoil

B. Placing topsoil.

C. Fertilizing.

D. Sod installation.

E. Maintenance.

1.02 REFERENCES

A. ASPA (American Sod Producers Association) – Guideline Specifications to Sodding.

B. FS O-F-241 – Fertilizers, Mixed, Commercial.

1.03 DEFINITIONS

A. Weeds: Includes Dandelion, Jimsonweed, Quackgrass, Horsetail, Morning Glory, Rush Grass, Mustard, Lambsquarter, Chickweed, Cress, Crabgrass, Canadian Thistle, Nutgrass, Poison Oak, Blackberry, Tansy Ragwort, Bermuda Grass, Johnson Grass, Poison Ivy, Nut Sedge, Nimble Will, Bindweed, Bent Grass, Wild Garlic, Perennial Sorrel, and Brome Grass.

1.04 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. Submit sod certification for grass species and location of sod source.

1.05 REGULATORY REQUIREMENTS

A. Comply with regulatory agencies for fertilizer and herbicide composition.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Deliver products to site as defined in other provisions of Specifications.

B. Store and protect products as defined in other provisions of Specifications.

C. Deliver sod on pallets. Protect exposed roots from dehydration.

D. Do not deliver more sod than can be laid within 24 hours.

1.07 MAINTENANCE SERVICE

A. Maintain installed sod until Owner has accepted all work.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Sod: Nursery grown grade; cultivated grass sod; type indicated below; with strong fibrous root system, free of stones, burned or bare spots. Sod shall be as shown on plans.

B. Topsoil: Excavated from site and free of weeds.

C. Fertilizer: As recommended by sod producer.

D. Water: Clean, fresh, and free of substances or matter which could inhibit vigorous growth of grass.

2.02 ACCESSORIES

A. Wood Pegs: Softwood; sufficient size and length to ensure anchorage of sod on slope.

B. Wire Mesh: Interwoven hexagonal metal wire mesh of 2 size.

PART 3 - EXECUTION

3.01 HARVESTING SOD

A. Machine cut sod and load on pallets.

B. Cut sod in area not exceeding one sq yd with minimum ½ inch topsoil base.

3.02 INSPECTION

A. Verify that prepared soil base is ready to receive the work of this Section

B. Beginning of installation means acceptance of existing site conditions.

3.03 PREPARATION OF SUBSOIL

A. Prepare subsoil to eliminate uneven areas and low spots. Maintain lines, levels, profiles and contours. Make changes in grade gradual. Blend slopes into level areas.

B. Remove foreign materials and undesirable plants and their roots. Do not bury foreign material beneath areas to be sodded. Remove contaminated subsoil.

C. Scarify subsoil to a depth of 4 inches where topsoil is to be placed. Repeat cultivation in areas where equipment, used for hauling and spreading topsoil, has compacted subsoil.

3.04 PLACING TOPSOIL

A. Spread topsoil to a minimum depth of 2 inches over area to be sodded.

B. Place topsoil during dry weather and on dry, unfrozen subgrade.

C. Remove vegetable matter and foreign non-organic material while spreading.

D. Grade to eliminate rough, low, or soft areas, and to ensure positive drainage.

3.05 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.

3.06 LAYING SOD

A. Moisten prepared surface immediately prior to laying sod.

B. Lay sod within 24 hours after harvesting to prevent deterioration.

C. Lay sod tight with no open joints visible, and no overlapping; stagger end joints 12 Inches minimum. Do not stretch or overlap sod pieces.

D. Lay smooth. Align with adjoining grass areas. Place top elevation of sod ½ inch below adjoining paving or curbs.

E. On slopes 6 inches per foot and steeper, lay sod perpendicular to slope and secure every row with wooden pegs at maximum 2 feet on center. Drive pegs flush with soil portion of sod.

F. Prior to placing sod on slopes exceeding 8 inches per foot or where indicated, place wire mesh over topsoil. Securely anchor sod in place over wire mesh and topsoil with wood pegs sunk firmly into the ground.

G. Water sodded areas immediately after installation. Saturate sod to 4 inches of soil.

H. After sod and soil have dried, roll sodded areas to ensure good bond between sod and soil and to remove minor depressions and irregularities. Roll sodded areas with roller not exceeding 150 lbs per foot of roller width.

3.07 MAINTENANCE

A. Mow grass at regular intervals to maintain at a maximum height of 2-1/2 inches.

B. Neatly trim edges and hand clip where necessary.

C. Immediately remove clippings after mowing and trimming.

D. Water to prevent grass and soil from drying out.

E. Roll surface to remove minor depressions or irregularities.

F. Control growth of weeds. Apply herbicides in accordance with manufacturer’s instructions. Remedy damage resulting from improper use of herbicides.

G. Immediately replace sod to areas that show deterioration or bare spots.

H. Protect sodded areas with warning signs during maintenance period.

3.08 PAYMENT

A. Payment for sodding shall be included in Item #21 “RESTORATION SODDING” of the Schedule of Values per the actual Square Yards (SY) of Sod installed.

END OF SECTION

SECTION 31310

AGGREGATES

PART I – GENERAL

1.01 DEFINITION AND SCOPE

A. CONTRACTOR shall provide all labor, equipment and materials necessary to furnish and install three-inch Bedding Stone and No. 57 Stone as shown on the plans and in accordance.

B. The work in this section shall conform to FDOT Specification Section 901 (Course Aggregate). The work includes all equipment, labor, and materials required for a complete installation; including but not limited to dewatering, aggregate placement & grading, backfilling and restoring to surface grade, hauling off and disposal of excess materials, and restoration of surface features/ improvements not covered under a different bid item.

1.02 PAYMENT

Payment for the AGGREGATES shall be included in Item #7 (57 Stone) of the Schedule of Values per actual Square Yard (SY) installed.

END OF SECTION

DIVISION 32
EXTERIOR IMPROVEMENTS

SECTION 32200

CHAIN LINK FENCES AND GATES

PART 1 – GENERAL

1.1 DESCRIPTION

This work consists of all labor, materials, and equipment necessary for furnishing and installing chain link fence, gates and accessories in conformance with the lines, grades, and details as shown.

1.2 MANUFACTURER'S QUALIFICATIONS

Fence, gates, and accessories shall be products of manufacturers regularly engaged in manufacturing items of type specified.

1.3 SUBMITTALS

A. In accordance with Section 01110, SHOP DRAWINGS, PRODUCT DATA AND SAMPLES, furnish the following:
   1. Manufacturer's Literature and Data: Chain link fencing, gates and all accessories.
   2. Manufacturer's Certificates: Zinc-coating complies with complies with specifications.

1.4 APPLICABLE PUBLICATIONS

A. The publications listed below form a part of this specification to the extent referenced. The publications are referenced in the text by the basic designation only.

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

F668-11 .....Polyvinyl Chloride (PVC) and Other Organic Polymer-Coated Steel Chain Link Fence Material

F1664-08 .....Polyvinyl Chloride (PVC) and Other Conforming Organic Polymer Coated Steel Tension Wire used with Chain Link Fence

F1665-08.....Polyvinyl Chloride (PVC) and Other Conforming Organic Polymer Coated Steel Barbed Wire used with Chain Link Fence

C. Federal Specifications (Fed. Spec.):

FF-P-110J.....Padlock, Changeable Combination

PART 2 - PRODUCTS

2.1 GENERAL

Materials shall conform to the above referenced publications for ferrous metals, zinc-coated; and detailed specifications forming the various parts thereto; and other requirements specified herein. Zinc-coat metal members (including fabric, gates, posts, rails, hardware and other ferrous metal items) after fabrication shall be reasonably free of excessive roughness, blisters and sal-ammoniac spots.

2.2 CHAIN-LINK FABRIC

A. Polymer Coated Steel Tension Wire: 7 gauge (0.177 in.) (4.50 mm) wire. Wire gauge specified is the core wire gauge.

1. Class 1, extruded
2. Class 2a, extruded and adhered
3. Class 2b, fused and adhered,

2.3 BARBED WIRE

A. Metallic Coated Steel Barbed Wire: Double 12-½ gauge (0.099 in.) (2.51 mm) twisted strand wire, with 4 point 14 gauge (0.080 in.) (2.03 mm) round barbs spaced 5 inches (127 mm) on center.

1. Coating Type A - Aluminum-Coated (Aluminized): Strand wire coating Type A - 0.30 oz/ft² (90 g/m²) with aluminum alloy barbs.
2. Coating Type Z - Zinc-coated: Strand wire coating Type Z, Class 3, 0.80 oz/ft² (254 g/m²), barb coating 0.70 oz/ft² (215g/m²)

B. Polymer Coated Barbed Wire: 0.80 in (2.03 mm) double twisted strand wire; zinc coated four point, 14 gauge (0.080 in.) (2.03 mm) barbs spaced 5 inches (127 mm) on center

1. Class 1, extruded
2. Class 2a, extruded and adhered
3. Class 2b fused and adhered

2.6 FITTINGS

A. Tension and Brace Bands: Galvanized pressed steel, minimum steel thickness of 12 gauge (0.105 in.) (2.67 mm), minimum width of 3/4 in. (19 mm) and minimum zinc coating of 1.20 oz/ft² (366 g/m²). Bands supplied with 5/16 in. (7.94 mm) or 3/8 in. (9.53 mm) galvanized steel carriage bolts.

B. Terminal Post Caps, Line Post Loop Tops, Rail and Brace Ends, Boulevard Clamps, Rail Sleeves: Pressed steel galvanized after fabrication having a minimum zinc coating of 1.20 oz/ft² (366 g/m²).

C. Truss Rod Assembly: 3/8 in. (9.53 mm) diameter steel truss rod with a pressed steel tightener, minimum zinc coating of 1.2 oz/ft² (366 g/m²), assembly capable of withstanding a tension of 2,000 lbs. (970 kg).

D. Tension Bars: Galvanized steel one-piece length 2 in. (50 mm) less than the fabric height. Minimum zinc coating 1.2 oz. /ft² (366 g/m²).

1. Bars for 2 in. (50 mm) and 1 ¾ in. (44 mm) mesh shall have a minimum cross section of 3/16 in. (4.8 mm) by 3/4 in. (19 mm).
2. Bars for 1 in. (25 mm) mesh shall have a cross section of 1/4 in. (6.4 mm) by 3/8 in. (9.5 mm).
3. Bars for small mesh 3/8 in. (10 mm), 1/2 in. (13 mm) and 5/8 in. (16 mm) shall be attached (sandwiched) to the terminal post using a galvanized steel strap having a minimum cross section of 2 in. (51 mm) by 3/16 in. (4.8 mm) with holes spaced 15 in. (381 mm) on center to accommodate 5/16 in. (7.9 mm) carriage bolts which are to be thru bolted thru the strap the mesh and thru the terminal post.

E. Barbed Wire Arms: In compliance with ASTM F626, pressed steel galvanized after fabrication, minimum zinc coating of 1.20 oz. /ft² (366 g/m²), capable of supporting a vertical 250 lb (113 kg) load. F. Polymer Coated Color Fittings: Polymer coating minimum thickness 0.006 in. (0.152 mm) fused and adhered to zinc coated fittings and match color to fence system.

2.7 TIE WIRE and HOG RINGS

Tie Wire and Hog Rings: Galvanized minimum zinc coating 1.20 oz/ft² (366 g/m²) 9 gauge (0.148) (3.76 mm) steel wire. Polymer coated; match the coating, class and color to that of the chain link fabric.

2.8 SWING GATES

A. Swing Gates: Galvanized steel welded fabrication. Gate frame members 1.900 in. OD (48.3 mm) Frame members spaced no greater than 8 ft. (2440 mm) apart vertically and horizontally. Welded joints protected by applying zinc-rich paint. Positive locking gate latch fabricated of 5/16 in. (7.9 mm) thick by 1 ¾" (44.45 mm) pressed steel galvanized after fabrication. Galvanized malleable iron or heavy gauge pressed steel post and frame hinges. Match gate fabric to that of the fence system. Gateposts ___ OD, ___ lb/ft. Polymer coated gate frames and gateposts; match the coating type and color to that specified for the fence framework. Moveable parts such as hinges, latches and drop rods may be field coated using a liquid polymer touch up.

2.9 CONCRETE

Concrete for post footings shall have a 28-day compressive strength of 3,000 psi (25.8 MPa).

PART 3 EXECUTION

3.1 CLEARING FENCE LINE

Clearing: Surveying, clearing, grubbing, grading and removal of debris for the fence line or any required clear areas adjacent to the fence. Surveying, clearing, grubbing, grading and removal of debris for the fence line or any required clear areas adjacent to the fence is included in the earthwork contractor's contract. The contract drawings indicate the extent of the area to be cleared and grubbed.

3.2 FRAMEWORK INSTALLATION

A. Posts: Posts shall be set plumb in concrete footings. Minimum footing depth, 24 in. (609.6 mm). Minimum footing diameter four times the largest cross section of the post up to 4.00" (101.6mm) O.D. and three times the largest cross section of post greater than 4.00" (101.6mm). O.D. Gate posts require larger footings.

B. Top rail: When specified, install 21 ft. (6.4 m) lengths of rail continuous thru the line post or barb arm loop top. Splice rail using top rail sleeves minimum 6 in. (152 mm) long. The rail shall be secured to the terminal post by a brace band and rail end. Bottom rail or intermediate rail shall be field cut and secured to the line posts using boulevard bands or rail ends and brace bands. Fences 12 feet (3.66 m) high or higher require mid rail.

C. Terminal posts: End, corner, pull and gate posts shall be braced and trussed for fence 6 ft. (1.8 m) and higher and for fences 5 ft. (1.5 m) in height not having a top rail.

D. Tension wire: Shall be installed 4 in. (102 mm) up from the bottom of the fabric. Fences without top rail shall have a tension wire installed 4 in. (102 mm) down from the top of the fabric. Tension wire to be stretched taut, independently and prior to the fabric, between the terminal posts and secured to the terminal post using a brace band. Secure the tension wire to the chain link fabric with a 9 gauge hog rings 18 in. (457 mm) on center and to each line post with a tie wire. Install the top tension wire through the barb arm loop for fences having barbed wire and no top rail.

3.3 BARBED WIRE INSTALLATION

Barbed Wire: Stretched taut between terminal posts and secured in the slots provided on the line post barb arms. Attach each strand of barbed wire to the terminal post using a brace band.

3.4 GATE INSTALLATION

A. Swing Gates: Installation of swing gates and gateposts in compliance with ASTM F567. Gates shall be plumb in the closed position having a bottom clearance of 3 in. (76 mm) grade permitting. Hinge and latch offset opening space from the gate frame to the post shall be no greater than 3 in. (76 mm) in the closed position. Double gate drop bar receivers shall be set in a concrete footing minimum 6 in. (152 mm) diameter 24 in. (610

mm) deep. Gate leaf holdbacks shall be installed for all double gates. Electrically operated gates and accessories must be manufactured and installed in compliance with manufacturer's recommendations.

B. Horizontal Slide Gates: Installation varies by design and manufacturer, install according to manufacturer's instructions and in accordance with ASTM F567. Gates shall be plum in the closed position, installed to slide with an initial pull force no greater than 40 lbs. (18.14 kg). Double gate drop bar receivers to be installed in a concrete footing minimum 6 in. (152 mm) diameter, 24 in. (610 mm) deep. Ground clearance shall be 3 in. (76 mm), grade permitting. Electrically operated gates and accessories must be manufactured and installed in compliance with manufacturer's recommendations.

3.5 NUTS AND BOLTS

Bolts: Carriage bolts used for fittings shall be installed with the head on the secure side of the fence. All bolts shall be peened over to prevent removal of the nut.

3.6 ELECTRICAL GROUNDING

Grounding: Grounding, when required, shall be specified and included in Contract Sections 26100 & 48100. A licensed electrical contractor shall install grounding.

3.7 CLEAN UP

Clean Up: The area of the fence line shall be left neat and free of any debris caused by the installation of the fence.

3.8 PAYMENT

Payment for CHAIN LINK FENCE AND GATES shall be included in Bid Items #8 through #11 of the Schedule of Values per Lineal Foot (LF) of actual fencing installed, and per Each (EA) of actual fence gates installed.

END OF SECTION

DIVISION 33
UTILITIES
(NOT USED)

DIVISION 34
TRANSPORTATION

SECTION 34100

MAINTENANCE OF TRAFFIC

PART 1 - GENERAL

1.01 REFERENCES

A. Except as may otherwise be specified on the plans or herein, maintenance of traffic by Contractor shall be in accordance with Section 102 of the Florida Department of Transportation Standard Specifications for Road and Bridge Construction, Latest Edition, Florida Department of Transportation Standard Specifications for Roadway and Traffic Design Standards Index, Latest Edition, the Manual of Uniform Traffic Control Devices, Latest Edition and all other Federal, State, County or Local Laws and regulations.

B. The individual in charge of maintaining daily traffic control through the work zone shall be FDOT certified in work zone traffic control. The Contractor shall be required to furnish the names and phone numbers of at least two (2) individuals whom may be contacted 24 hours a day in the event of an emergency. Traffic control devices as required by the maintenance of traffic plan shall be always maintained by Contractor at Contractor’s sole cost and expense in proper order throughout the duration of the contract.

C. Improper traffic maintenance shall be grounds to stop construction until the proper devices and/or controls are implemented.

1.02 ACCESS

A. The Contractor shall not close any street, road or private way. If the Engineer determines any street or private way unsafe by the Contractor's operations, Contractor shall make such repairs or provide such temporary measures as shall be acceptable to the Engineer. Streets, roads, private ways and sidewalks shall be maintained passable by the Contractor at Contractor’s sole cost and expense, and the Contractor shall assume full responsibility for the adequacy and safety of provisions made.

B. Sidewalks that are impassable or unsafe shall be barricaded and signs posted noting that the sidewalk is closed. Ingress and egress shall be provided at all times for local residents.

C. The Contractor shall not close or obstruct any through access way.

1.03 SAFETY

A. It is the Contractor's responsibility to ensure that Work is properly lighted, barricaded, and in all respects safe in regard to public travel, to persons on or about the Work, or to public or private property.

1.04 TRAFFIC INTERFERENCE

A. The Contractor shall plan and coordinate Contractor’s Work with the Owner and Engineer so as to minimize traffic interferences. The rules and instructions of the Owner and Engineer shall be followed for the public benefit.

B. Construction operations shall be carefully planned and scheduled so that the normal flow of local traffic shall be maintained at all times. It is understandable that providing for such local traffic will require some inconvenience to the users, but such inconvenience must be kept at an absolute minimum. All Work subject to governing body rules and approval. All Work, including all maintenance of traffic, shall always be completed in accordance with all Laws and Regulations.

1.05 PAYMENT

A. Payment for maintenance of traffic shall be included in Item #1 (Mobilization) of the Schedule of Values per Lump Sum (LS) and will not be compensated separately.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 34200

SIGNAGE AND OBJECT MARKERS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Signage and Object Markers

B. Related Sections:

1. Division 34 - “Maintenance of Traffic”.

1.3 PERFORMANCE REQUIREMENTS

A. Object Markers shall by Type 4 (OM4-1, 18” x 18”) and shall meet the general requirements outlined in the Manual of Uniform Traffic Control Devices (MUTCD, latest edition).

1.4 PAYMENT

Payment for Object Marker installation shall be made under Bid Item #26 of the Schedule of Values per “Each” (EA) installed.

END OF SECTION

DIVISION 35
WATERWAYS AND MARINE CONSTRUCTION
(NOT USED)

DIVISION 36
(RESERVED)

DIVISION 37
(RESERVED)

DIVISION 38
(RESERVED)

DIVISION 39
(RESERVED)

DIVISION 40
PROCESS INTEGRATION
(NOT USED)

DIVISION 41
MATERIAL PROCESSING AND HANDLING EQUIPTMENT
(NOT USED)

DIVISION 42
PROCESS HEATING, COOLING, AND DRYING EQUIPTMENT
(NOT USED)

DIVISION 43
PROCESS GAS AND LIQUID HANDLING, PURIFICATION AND STORAGE EQUIPTMENT
(NOT USED)

DIVISION 44
POLUTION CONTROL EQUIPTMENT
(NOT USED)

DIVISION 45
INDUSTRY-SPECIFIC MANUFACTURING EQUIPTMENT
(NOT USED)

DIVISION 46
WATER AND WASTEWATER EQUIPTMENT
(NOT USED)

DIVISION 47
(RESERVED)

DIVISION 48
ELECTRICAL POWER GENERATION

DIVISION 49
(RESERVED)

DIVISION 50
(RESERVED)