TECHNICAL SPECIFICATIONS

for

Palm River Restoration
East McKay Bay Stormwater and
Habitat Restoration Sites (W367)

Southwest Florida
Water Management District

OWNER

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
SURFACE WATER MANAGEMENT PROGRAM (SWFWMD SWIM)
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TAMPA, FL 33637

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BID DOCUMENTS

JULY 2020

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Index for Professional Registrations
Sign and Seal Sheet
for

Palm River Restoration
East McKay Bay Stormwater and Habitat Restoration Sites (W367)

SPECIFICATIONS

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SECTION 01005

GENERAL REQUIREMENTS

PART I – GENERAL

1.01 SCOPE OF WORK

A. Description

The work to be completed consists of the furnishing of all labor, materials and equipment, and the performance of all Work included in this Contract.

B. Work Included

The Contractor shall furnish all labor, superintendence, materials, plant, power, light, heat, fuel, water, tools, appliances, equipment, supplies and other means of construction necessary or proper for performing and completing the Work. The Contractor shall perform and complete the Work in the manner best calculated to promote rapid construction consistent with safety of life and property and to the satisfaction of the District Representative, and in strict accordance with the Contract Documents. The Contractor shall clean up the Work and maintain it during and after construction, until accepted, and shall do all work and pay all costs incidental thereto. The Contractor shall repair or restore all structures and property that may be damaged or disturbed during performance of the Work.

The cost of incidental work described in these General Requirements, for which there are no specific Contract Pay Items, shall be considered as part of the general cost of doing the work and shall be included in the prices for the various Contract Pay Items. No additional payment will be made therefore.

The Contractor shall provide and maintain such modern plant, tools, and equipment as may be necessary, in the opinion of the District Representative, to perform in a satisfactory and acceptable manner all the work required by this Contract. Only equipment of established reputation and proven efficiency shall be used. The Contractor shall be solely responsible for the adequacy of workmanship, materials and equipment, prior approval of the District Representative notwithstanding.

C. Public Utility Installation and Structures

Public utility installations and structures shall be understood to include all poles, tracks, pipes, wires, conduits, house service connections, vaults,

manholes and all other appurtenances and facilities pertaining thereto whether owned or controlled by the District, other governmental bodies or privately owned by individuals, firms or corporations, used to serve the public with transportation, traffic control, gas, electricity, telephone, sewerage, drainage, water or other public or private property which may be affected by the work shall be deemed included hereunder.

The Contractor shall protect all public utility installations and structures from damage during the work in accordance with Section 01530. Access across any buried public utility installation, or structure, shall be made only in such locations and by means in accordance with utility owner requirements and as approved by the District Representative. The Contractor shall so arrange operations as to avoid any damage to these facilities. All required protective devices and construction shall be provided at the Contractor's expense. All existing public utilities damaged by the Contractor, which are shown on the Plans or have been located in the field by the utility, shall be repaired by the Contractor, at the Contractor's expense, as approved by the utility owner. No separate payment shall be made for such protection or repairs to public utility installations or structures.

Public utility installations or structures owned or controlled by the District or other governmental body, which are shown on the Plans to be removed, relocated, replaced or rebuilt by the Contractor shall be considered as a part of the general cost of doing the Work and shall be included in the prices bid for the various Contract Pay Items. No separate payment shall be made therefore.

Where public utility installations or structures owned or controlled by the District or other governmental body are encountered during the course of the Work, and are not indicated on the Plans or in the Specifications, and when, in the opinion of the District Representative, removal, relocation, replacement or rebuilding is necessary to complete the work under this Contract, such work shall be accomplished by the utility having jurisdiction, or such work may be ordered, in writing by the District Representative, for the Contractor to accomplish. If such work is accomplished by the utility having jurisdiction it will be carried out expeditiously and the Contractor shall give full cooperation to permit the utility to complete the removal, relocation, replacement or rebuilding as required. If such work is accomplished by the Contractor, it will be in accordance with a written authorization.

The Contractor shall give written notice to District and other governmental utility departments and other owners of public utilities of the locations of proposed construction operations, at least forty-eight hours in advance of breaking ground in any area or on any unit of the work.

The maintenance, repair, removal, relocation or rebuilding of public utility installations and structures, when accomplished by the Contractor as herein provided, shall be done by methods approved by the District Representative.

1.02 DRAWINGS AND SPECIFICATIONS

A. Drawings

When obtaining data and information from the Construction Drawings, figures shall be used in preference to scaled dimensions, and large scale drawings in preference to small scale drawings.

B. Copies Furnished to Contractor

The Contractor shall furnish each of the subcontractors, manufacturers, and suppliers such copies of the Contract Documents as may be required for their work.

C. Supplementary Drawings

When, in the opinion of the District Representative, it becomes necessary to explain more fully the work to be done or to illustrate the work further or to show any changes which may be required, Drawings known as Supplementary Drawings, with Specifications pertaining thereto, will be prepared by the District Representative and prints thereof will be given to the Contractor.

D. Contractor to Check Drawings and Data

The Contractor shall verify all dimensions, quantities and details shown on the Shop Drawings, Construction Drawings, Supplementary Drawings, Schedules, Specifications or other data received from the District Representative and shall notify the District Representative of any errors, omissions, conflicts and discrepancies found therein. The Contractor shall submit to the District Representative a Request for Information (RFI), consecutively numbered in a format provided by or acceptable to the District Representative, detailing all errors, omissions, conflicts and discrepancies. District Representative shall promptly provide a response to all RFIs submitted by the Contractor. Contractor will not be allowed to take advantage of any errors or omissions, as full instructions will be furnished by the District Representative, should such errors or omissions be discovered.

E. Specifications

The Technical Specifications consist of three parts: General, Products and Execution. The General Section contains General Requirements that govern the work. Products and Execution modify and supplement these by detailed requirements for the work and shall always govern whenever there appears to be a conflict.

F. Intent

All Work called for in the Specifications applicable to this Contract, but not shown on the Construction Drawings in their present form, or vice verse, shall be of like effect as if shown or mentioned in both. Work not specified in either the Construction Drawings or in the Specifications, but involved in carrying out their intent or in the complete and proper execution of the work, is required and shall be performed by the Contractor as though it were specifically delineated or described, and shall be in accordance with the project's Construction Drawings and Specifications as well as District and FDOT Standards. If there is any discrepancy between these documents, the most stringent requirements will apply.

The apparent silence of the Specifications as to any detail, or the apparent omission from them of a detailed description concerning any work to be done and materials to be furnished, shall be regarded as meaning that only the best general practice is to prevail and that only material and workmanship of the best quality is to be used, and interpretation of these Specifications shall be made upon that basis.

The inclusion of the Related Requirements (or work specified elsewhere) in the General part of the specifications is only for the convenience of the Contractor, and shall not be interpreted as a complete list of all related Specification Sections.

1.03 INSPECTION AND TESTING

A. General

For tests specified to be made by the Contractor, the testing personnel shall make the necessary inspections and tests and the reports thereof shall be in such form as will facilitate checking to determine compliance with the Contract Documents. Geotechnical test reports shall be submitted to the District in either hard copy or electronic form. If a hard copy format is elected, two signed and sealed copies shall be provided to the District

Representative as a prerequisite for the acceptance of any material or equipment.

If, in the making of any test of any material or equipment, it is ascertained by the District Representative that the material or equipment does not comply with the Contract, the Contractor will be notified thereof and will be directed to refrain from delivering said material or equipment, or to remove it promptly from the site or from the work and replace it with acceptable material, without cost to the District.

The Contractor shall be fully responsible for the proper operation of equipment during tests and instruction periods and shall neither have nor make any claim for damage that may occur to equipment prior to the time when the District formally takes over the operation thereof.

B. Costs

All inspection and testing of materials furnished under this Contract will be performed by the Contractor or duly authorized inspections engineers or inspection bureaus with all costs to the Contractor, unless otherwise expressly specified. The testing laboratory shall be approved by the District.

The cost of shop and field tests of equipment and of certain other tests specifically called for in the Contract Documents shall be borne by the Contractor and such costs shall be deemed to be included in the Contract Price.

C. Final Field Tests

Upon completion of the work and prior to final payment, all pavement and piping installed under this Contract shall be subjected to acceptance tests as specified or required to prove compliance with the Contract Documents.

The Contractor shall furnish labor, fuel, energy, water and all other materials, equipment and instruments necessary for all acceptance tests, at no additional cost to the District. The equipment supplier or appropriate subcontractor shall assist in the final field tests as applicable.

D. Failure of Tests

Any defects in the materials and equipment or their failure to meet the tests, guarantee or requirements of the Contract Documents shall be promptly corrected by the Contractor by replacements or otherwise as directed by the District Representative. The decision of the District

Representative as to whether or not the Contractor has fulfilled his obligations under the Contract shall be final and conclusive. If the Contractor fails to make these corrections or if the improved materials and equipment, when tested, shall again fail to meet the guarantees or specified requirements, the District, notwithstanding its partial payment for work, and materials and equipment, may reject the materials and equipment and may order the Contractor to remove them from the site at his own expense.

E. Final Inspection

During such final inspections, the work shall be clean and free from water. In no case will the final estimate be prepared until the Contractor has complied with all requirements set forth and the District Representative has made his final inspection of the entire work and is satisfied that the entire work is properly and satisfactorily constructed in accordance with the requirements of the Contract Documents.

1.04 TEMPORARY STRUCTURES

A. Temporary Fences

If, during the course of the work, it is necessary to remove or disturb any fence or part thereof, the Contractor shall, at his own expense, if so ordered by the District Representative, provide a suitable temporary fence, which shall be maintained until the permanent fence is replaced. The District Representative shall be solely responsible for the determination of the necessity for providing a temporary fence and the type of temporary fence to be used.

B. Temporary Driveways

At its own expense, the Contractor shall furnish, install, maintain and remove all temporary driveways and access roads and be responsible for the permitting as required to provide access to the work and through the site of the work to maintain existing operations and to allow construction of other projects in the area. The Contractor shall fully cooperate with the District in providing this access.

1.05 LINES AND GRADE

A. Grade

All work under this Contract shall be constructed in accordance with the lines and grades shown on the Construction Drawings, or as given by the

District Representative. The full responsibility for keeping alignment and grade rests upon the Contractor.

The Contractor, prior to commencing of construction, shall have established bench marks and base line controlling points. The Contractor shall so place excavation and other materials as to cause no inconvenience in the use of the reference marks provided. He shall remove any obstructions placed by him contrary to this provision.

B. Surveys

The Contractor shall furnish and maintain, at his own expense, stakes and other such materials to establish all working or construction lines and grades, as required, and shall be solely responsible for the accuracy thereof. All surveying shall be performed in accordance with Specification 01050.

C. Safeguarding Marks

The Contractor shall safeguard all points, stakes, grade marks, monuments and bench marks made or established on the work, bear the cost of re-establishing them if disturbed, and bear the entire expense of rectifying work improperly installed due to not maintaining, protecting, or removing without authorization such established points, stakes, and marks.

The Contractor shall safeguard all existing and known property corners, monuments and marks adjacent to but not related to the work and, if required, shall bear the cost of re-establishing them if disturbed or destroyed.

1.06 ADJACENT STRUCTURES AND LANDSCAPING

A. The Contractor shall also be entirely responsible and liable for all damage or injury as a result of his operations to all other adjacent public and private property, structures of any kind and appurtenances thereto met with during the progress of the work. The cost of protection, replacement in their original locations and conditions or payment of damages for injuries to such adjacent public and private property and structures affected by the work, whether or not shown on the Construction Drawings or specified shall be included in the various Contract Items and no separate payments will be made therefore. Where such public and private property or structures of any kind and appurtenances thereto are not shown on the Construction Drawings and in the opinion of the District Representative are damaged or required to be removed in order to avoid

interference with the work, payment will be made as provided for in the construction contingency.

Contractor is expressly advised that the protection of any buildings, structures, tunnels, tanks, pipelines, etc. and related work adjacent to and in the vicinity of his operations, wherever they may be, is solely his responsibility. Conditional inspection of buildings or structures in the immediate vicinity of the project which may reasonably be expected to be affected by the Work shall be performed by and be the responsibility of the Contractor. Contractor shall, before starting operations, make an examination of the interior and exterior of the adjacent structures, buildings, facilities, etc., and record by noting, measurements, photographs, etc., conditions which might be aggravated by open excavation and construction. Repairs or replacement of all conditions disturbed by the construction shall be made to the satisfaction of the District Representative. This does not preclude conforming to the requirements of the insurance underwriters. Copies of surveys, photographs, reports, etc., shall be given to the District Representative.

Prior to the beginning of any excavations, the Contractor shall advise the District Representative of all building or structures on which he intends to perform work or which performance of the project work will affect.

B. Protection of Trees

1. The Contractor shall adequately protect all trees and shrubs with boxes or otherwise in accordance with ordinances governing the protection of trees. No excavated materials shall be placed so as to injure such trees or shrubs. Trees or shrubs destroyed through negligence of the Contractor or his employees shall be replaced with new stock of similar size and age, in the proper season and at the sole expense of the Contractor.

2. Beneath trees or other surface structures, where possible, pipelines may be built in short tunnels, backfilled with excavated materials, except as otherwise specified, or the trees or structures carefully supported and protected from damage.

3. The District may order the Contractor, for the convenience of the District, to remove trees in the area(s) of the work. If so ordered, the Contractor will obtain any permits required for removal of trees.

C. Lawn Areas

Lawn areas shall be left in as good condition as before the starting of the work. Where sod is to be removed, it shall be carefully removed, and later

replaced, or the area where sod has been removed shall be restored with new sod in the manner described in the Division II of these Contract Documents.

D. Restoration of Fences

Any fence, or part thereof, that is damaged or removed during the course of the work shall be replaced or repaired by the Contractor and shall be left in as good a condition as before the starting of the work. The manner in which the fence is repaired or replaced and the materials used in such work shall be subject to the approval of the District Representative. The cost of all labor, materials, equipment, and work for the replacement or repair of any fence shall be deemed included in the appropriate Contract Item or items, or if no specific Item is provided therefore, as part of the overhead cost of the work, and no additional payment will be made therefore.

1.07 PROTECTION OF WORK AND PUBLIC

A. Barriers and Lights

During the prosecution of the work, the Contractor shall put up and maintain at all times such barriers and lights as will effectively prevent accidents. The Contractor shall provide suitable barricades, red lights, "danger" or "caution" or "street closed" signs and watchmen at all places where the work causes obstructions to the normal traffic or constitutes in any way a hazard to the public.

B. Smoke Prevention

The Contractor shall use hard coal, coke, oil or gas as fuel for equipment generating steam. A strict compliance with ordinances regulating the production of emission of smoke will be required. Unless called for in the Construction Drawings, no open fires will be permitted.

C. Noise

The Contractor shall eliminate noise to as great an extent as practicable at all times. Air compressing plants shall be equipped with silencers and the exhaust of all gasoline motors or other power equipment shall be provided with mufflers. In the vicinity of hospitals and schools, special care shall be used to avoid noise or other nuisances. The Contractor shall strictly observe all local regulations and ordinances covering noise control.

Except in the event of an emergency, no work shall be done between the hours of 7:00 P.M. and 7:00 A.M., or on Sundays. If the proper and efficient prosecution of the work requires operations during the night, the

written permission of the District Representative shall be obtained before starting such items of the work.

D. Access to Public Services

Neither the materials excavated nor the materials or plant used in the construction of the work shall be so placed as to prevent free access to all fire hydrants, valves or manholes.

E. Dust Prevention

The Contractor shall prevent dust nuisance from his operations or from traffic by keeping the roads and/or construction areas sprinkled with water at all times. Water for dust prevention shall be provided by the Contractor.

1.08 CUTTING AND PATCHING

A. The Contractor shall do all cutting, fitting or patching of his portion of the work that may be required to make the several parts thereof join and coordinate in a manner satisfactory to the District Representative and in accordance with the Construction Drawings and Specifications. The work shall be performed by competent workmen skilled in the trade required by the restoration.

1.09 CLEANING

A. During construction of the work, the Contractor shall, at all times, keep the site of the work and adjacent premises as free from material, debris and rubbish as is practicable and shall remove the same from any portion of the site if, in the opinion of the District Representative, such material, debris, or rubbish constitutes a nuisance or is objectionable.

The Contractor shall remove from the site all of his surplus materials and temporary structures when no further need therefore develops.

B. Final Clearing

At the conclusion of the work, all erection plant, tools, temporary structures and materials belonging to the Contractor shall be promptly taken away, and he shall remove and promptly dispose of all water, dirt, rubbish or any other foreign substances.

The Contractor shall thoroughly clean all equipment and materials installed by him and shall deliver such materials and equipment undamaged in a bright, clean, polished and new operating condition.

1.10 MISCELLANEOUS

A. Protection Against Siltation and Bank Erosion

1. The Contractor shall arrange his operations to minimize siltation and bank erosion on the construction site(s) and on existing or proposed water courses, drainage ditches, wetlands and other areas of concern.

2. The Contractor, at his own expense, shall remove any siltation deposits and correct any erosion problems as directed by the District Representative that results from his construction operations.

3. The Contractor shall be solely responsible for paying any fines resulting from the encroachment of any environmentally protected areas not previously permitted or shown on the construction plans.

B. Protection of Wetland Areas

The Contractor shall properly dispose of all surplus material, including soil, in accordance with Local, State and Federal regulations and the permits issued for this project. Under no circumstances shall surplus material be disposed of in wetland areas as defined by the Florida Department of Environmental Protection, Southwest Florida Water Management District, U.S. Army Corps of Engineers, etc.

C. Protection of Archeological Areas

Under no circumstances shall any portions of the archeological areas be mechanically disturbed. The only work within these sites shall be selective treatment of non-native (exotic) and nuisance species.

D. Existing Facilities

The work shall be so conducted to maintain existing facilities in operation insofar as is possible. Requirements and schedules of operations for maintaining existing facilities in service during construction shall be as described in the Specific Provisions.

E. Use of Chemicals

All chemicals used during project construction or furnished for project operation, whether herbicide, pesticide, disinfectant, polymer, reactant, or of other classification, must show approval of either EPA or USDA. Use of all such chemicals and disposal of residues shall be in strict conformance with manufacturer’s instructions.

F. Tree Removal

The Contractor shall be required to notify the District Representative forty-eight (48) hours in advance of any removal of trees on the project. No clearing shall occur and no earth moving equipment shall be placed on-site until after the notice has been issued. The Contractor shall provide maintenance of tree barricades and other preventive measures to protect the trees that are to remain. The Contractor shall conform to all local ordinances, rules and regulations in the removal of any trees from the site of the work.

G. Storm Sewer Systems

The Contractor shall be entirely responsible for the satisfactory installation of storm sewer in conformance to the approved Construction Drawings, Specifications and Shop Drawings. All storm sewer invert grades shall be verified in the field by the District Representative. The required testing of lines and verification of elevations in no way absolves the Contractor from any of his contractual obligations, including re-testing of these lines upon completion of backfilling and compaction.

H. Related Permits

The Contractor recognizes that the District has applied for, and may have received, certain permits pertaining to the work as outlined in Section 01065. At the sole discretion of the District, the District may assign said permits to the Contractor and the Contractor shall accept said assignments upon such request from the District.

All work in the vicinity of open waters, wetlands or any jurisdictional area is to be performed in strict accordance with the environmental permits and their conditions. Erosion barriers, when shown on the construction Drawings, are the minimum required. If the Contractor's construction methods require that additional erosion control is necessary to satisfy these permits, such controls shall be supplied, installed and maintained throughout the construction process by the Contractor at no additional cost to the District.

It is the sole responsibility of the Contractor to submit, in a timely manner, any information, data, etc. that is required as a condition of a permit. Required information, data, etc. shall be submitted directly to the permitting agency by the Contractor with copies to the District

Representative. The Contractor will be held responsible for any fine(s) or other action resulting from a violation of permit conditions.

1.11 RESTORATION OF PROPERTY

A. Responsibility. All damage resulting from construction work on, but not limited to, existing structures, wetland areas, roadway pavement, driveways, other paved areas, fences, utilities, traffic control devices and any other obstruction not specifically named herein, shall be repaired, restored or replaced by the Contractor unless otherwise specified.

B. Temporary Repairs. All damage named in Paragraph A above shall be at least temporarily repaired, restored or replaced immediately following construction efforts at that location. Temporary restoration shall mean putting the affected area back into a safe, usable condition.

C. Permanent Repairs. All damage shall be permanently repaired, restored, or replaced not later than the 30th calendar day following the completion of construction at that location unless otherwise stipulated. Permanent repairs will be accomplished in a professional workmanship-like manner in accordance with Specifications contained herein, or contract documents, if addressed. The Contractor may be relieved of the 30-day time limit above only by specific written agreement with the District Representative.

PART II - PRODUCTS

(Not Used)

PART III - EXECUTION

(Not Used)

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SECTION 01015

CONTROL OF WORK

PART I - GENERAL

1.01 WORK PROGRESS

The Contractor shall provide equipment which will be efficient, appropriate and large enough to secure a satisfactory quality of work and a rate of progress which will ensure the completion of the work within the time stipulated in the Proposal. If at any time such facilities appear to the District Representative to be inefficient, inappropriate, or insufficient for securing the quality of work required or for producing the rate of progress aforesaid, District may require the Contractor to provide a plan of action to address work progress and meet the schedule and work quality required. Failure of the District Representative to give such order shall in no way relieve the Contractor of his obligations to secure the quality of the work and rate of progress required.

1.02 PRIVATE LAND

The Contractor shall not enter or occupy private land outside of easements, except by permission of the District and land owner.

1.03 WORK LOCATIONS

Construction limits shall be located specifically in the locations indicated on the Drawings. The District Representative reserves the right to make such modifications in those locations as may be found desirable to avoid interference with existing structures, facilities, other construction activities or for other reasons not specifically addressed herein.

1.04 OPEN EXCAVATIONS

A. All open excavations shall be adequately safeguarded by providing temporary barricades, caution signs, lights and other means to prevent accidents to persons, and damage to property. The Contractor shall, at his own expense, provide suitable and safe bridges and other crossings for accommodating travel by District's personnel, pedestrians and workmen. Bridges provided for access to private property during construction shall be removed when no longer required. The length of open trench will be controlled by the particular surrounding conditions, but shall always be confined to limits which minimize interference with surrounding properties and does not endanger existing facilities. If the excavation becomes a hazard, or if it excessively restricts traffic, construction procedures such as limiting the length of open trench, prohibiting stacking excavated material in the street or access road, and

requiring that the trench shall not remain open overnight shall be completed by the Contractor.

B. The Contractor shall take precautions to prevent injury to the public due to open trenches. All trenches, excavated material, equipment, of other obstacles, which could be dangerous to the public, shall be well lighted at night.

1.05 TEST PITS

A. Test pits for the purpose of locating underground pipeline or structures in advance of the construction shall be excavated and backfilled by the Contractor so as not to create a hazardous area. Test pits shall be backfilled immediately after their purpose has been satisfied and the surface restored and maintained in a manner satisfactory to the District Representative.

1.06 MAINTENANCE OF TRAFFIC

A. Unless permission to close a street is received in writing from the proper authority, all excavated material shall be placed so that vehicular and pedestrian traffic may be maintained at all times. If the Contractor's operations cause traffic hazards, the Contractor shall repair the road surface, provide temporary ways, erect wheel guards or fences, or take other measures for safety satisfactory to the jurisdictional agency.

B. Contractor shall obtain any necessary permits for maintenance of traffic. Detours around construction will be subject to the approval of the County. Where detours are permitted, the Contractor shall provide all necessary barricades and signs as required to divert the flow of traffic. While traffic is detoured, the Contractor shall expedite construction operations and those periods when traffic is being detoured will be strictly controlled by the jurisdictional agency.

C. The Contractor shall take precautions to prevent injury to the public due to open trenches. Night watchmen may be required where special hazards exist, or police protection provided for traffic while work is in progress. The Contractor shall be fully responsible for damage or injuries whether or not police protection has been provided.

1.07 CARE AND PROTECTION OF PROPERTY

A. The Contractor shall be responsible for the preservation of all public and private property, and shall use every precaution necessary to prevent damage thereto. If any direct or indirect damage is done to public or private property by or on account of any act, omission, neglect, or misconduct in the execution of the work on the part of the Contractor, such

property shall be restored by the Contractor, at the Contractor's expense, to a condition equal to or better than that existing before the damage was done, or the Contractor shall make good the damage in other manner acceptable to the District Representative.

B. All sidewalks that are disturbed by the Contractor's operations shall be restored to their original condition with the use of similar or comparable materials. All curbing shall be restored in a condition equal to the original construction and in accordance with the best modern practice.

C. Along the location of the work all fences, walks, bushes, trees, shrubbery, and other physical features shall be protected and restored in a thoroughly workmanlike manner. Fences and other features removed by the Contractor shall be replaced in the location indicated by the District Representative as soon as conditions permit. All grass areas beyond the limits of construction that have been damaged by the Contractor shall be restored to original conditions.

D. Trees close to the work shall be boxed or otherwise protected against injury. The Contractor shall trim all branches that are susceptible to damage because of Contractor's operations, but in no case shall any tree be cut or removed without prior notification of the appropriate tree authority. All injuries to bark, trunk, limbs, and roots of trees shall be repaired by dressing, cutting, and painting in accordance with approved methods, using only approved tools and materials.

E. The protection, removal, and replacement of existing physical features shall be part of the work under the Contract and all costs in connection therewith shall be included in the unit and/or lump sum prices established.

1.08 PROTECTION AND RELOCATION OF EXISTING STRUCTURES AND UTILITIES

A. The Contractor shall assume full responsibility for the protection of all buildings, structures, and utilities, public or private, including poles, signs, services to buildings, utilities in the street, gas pipes, water pipes, hydrants, sewers, drains, and electric and telephone cables, whether or not they are shown on the Drawings. The Contractor shall carefully support and protect all such structures and utilities from injury of any kind. Any damage resulting from the Contractor's operations shall be repaired by him at his expense.

B. The Contractor shall bear full responsibility for obtaining all locations of underground structures and utilities (including existing water services, drain lines, and sewers). Services shall be maintained and all costs or charges resulting from damage thereto shall be paid by the Contractor.

C. If, in the opinion of the District Representative, permanent relocation of a utility owned by the District is required, the District Representative may direct the Contractor in writing, to perform the work. Work so ordered will be paid for at the bid prices in the Proposal, if applicable, or as extra work under the construction contingency. If relocation of a privately owned utility is required, the District will notify the Utility to perform the work as expeditiously as possible. The Contractor shall fully cooperate with the District and Utility, and shall have no claim for delay due to such relocation.

1.09 DISTRIBUTION SYSTEMS AND SERVICES

A. The Contractor shall interrupt water, telephone, cable TV, sewer, gas, or other related utility services and disrupt the normal functioning of the system as little as possible, and shall notify the District Representative and public well in advance of any requirement for dewatering, isolating, or relocating a section of a utility, so that necessary arrangements may be made with the appropriate agency.

B. If it appears that utility service will be interrupted for an extended period, the District Representative may order the Contractor to provide temporary service lines. Inconvenience of the users shall be the minimum, consistent with the existing conditions. The safety and integrity of the system is of prime importance in scheduling work.

1.10 PROTECTION OF CONSTRUCTION AND EQUIPMENT

A. All newly constructed work shall be carefully protected from injury or damage in any way. No wheeling or walking or placing of heavy loads shall be allowed. Any portion of the work injured or damaged shall be reconstructed by the Contractor at his own expense.

B. All structures shall be protected in a manner approved by the District Representative. Should any of the floors or other parts of the structures become heaved, cracked, or otherwise damaged, all such damaged portions of the work shall be completely repaired by the Contractor at his own expense and to the satisfaction of the District Representative. If, in the final inspection of the work, any defects, faults, or omissions are found, the Contractor shall cause the same to be repaired or removed and replaced by proper materials and workmanship without extra compensation for the materials and labor required. Further, the Contractor shall be fully responsible for the satisfactory maintenance and repair of the construction and other work undertaken herein, for the guarantee period.

C. Further, the Contractor shall take all necessary precautions to prevent damage to any structure due to water pressure during and after construction and until such structure is accepted by the District.

1.11 WATER FOR CONSTRUCTION PURPOSES

A. The Contractor is responsible for providing all water required for construction purposes. The Contractor shall make all connections and other provisions necessary to obtain said water from local potable and/or reclaimed water system, as required by the County's standard procedures. The Contractor shall pay for all water used for construction purposes. Bid prices shall include the anticipated costs to be incurred for water usage.

1.12 MAINTENANCE OF FLOW

A. The Contractor shall, at Contractor's own cost, provide for the flow of sewers, drains, and water courses interrupted during the progress of the work, and shall immediately remove all offensive matter. The entire procedure for maintaining existing flows shall be approved by the District Representative in advance of the interruption of any flow.

1.13 COOPERATION WITHIN THIS CONTRACT

A. All firms or persons authorized to perform any work under this Contract shall cooperate with the General Contractor and his subcontractors or trades, and shall assist in incorporating the work of other trades where necessary or required.

B. Cutting and patching, drilling and fitting shall be carried out where required by the trade or subcontractor having jurisdiction, unless otherwise indicated herein or directed by the District Representative.

1.14 CLEAN-UP

A. During the course of the work, the Contractor shall keep the site of operations in as clean and neat a condition as possible. Contractor shall dispose of all residue resulting from the construction work and, at the conclusion of the work, Contractor shall remove and haul away any surplus excavation, broken pavement, lumber, equipment, temporary structures, and any other refuse remaining from the construction operation, and shall leave the entire site of the work in a neat and orderly condition.

PART II – PRODUCTS
(Not Used)

PART III – EXECUTION
(Not Used)

END OF SECTION

SECTION 01030

SPECIAL PROJECT PROCEDURES

PART I - GENERAL

1.01 WORKMANSHIP, MATERIAL AND EQUIPMENT

A. When a particular product is specified or called for, it is intended and shall be understood that the proposal tendered by the Contractor included those products in his bid. Should the Contractor desire products equal to those specified, the Contractor shall furnish information as described in the 01300 submittals. The alternate product or products submitted by the Contractor shall meet the requirements of the Specifications and shall, in all respects, be equal to the products specified by name herein.

B. All apparatus, mechanism, equipment, machinery and manufactured articles for incorporation into the Work shall be the new standard products of recognized reputable manufacturers.

C. Contractor shall dispose of all excess materials from the site.

1.02 CONNECTIONS TO EXISTING SYSTEMS

A. The Contractor shall perform all work necessary to locate, excavate and prepare for connections to the existing systems, as shown on the Construction Drawings. The cost for this work and for the actual connection to the existing systems shall be included in the price(s) bid for the Work and shall not result in any additional cost to the District.

1.03 PROVISIONS FOR CONTROL OF EROSION

A. Sufficient precautions shall be taken during construction to minimize the run-off of polluting substances such as silt, clay, fuels, oils, bitumens, calcium chloride, or other polluting materials harmful to humans, fish, or other life, into the supplies and surface waters of the state. Control measures must be adequate to assure that turbidity in the receiving water will not be increased more than 29 nephelometric turbidity units (NTU) above natural background conditions, or as otherwise required by the state or other controlling body. Special precautions shall be taken in the use of construction equipment to prevent operations that promote erosion.

B. The Contractor shall apply for, and comply with the requirements of the EPA-NPDES general permit for stormwater discharges and the stormwater pollution prevention plan in which Contractor shall develop for

the project. This includes taking baseline turbidity and water quality readings before the start of construction.

1.04 HURRICANE PREPAREDNESS PLAN

A. Within 30 days of the date of Notice to Proceed, the Contractor shall submit to the District Representative a Hurricane Preparedness Plan. The Plan should outline the necessary measures that the Contractor proposes to perform at no additional cost to the District in case of a hurricane warning.

B. In the event of inclement weather, or whenever District Representative shall direct; the Contractor shall carefully protect the Work and materials against damage or injury from the weather. If, in the opinion of District Representative, any portion of Work or materials shall have been damaged or injured by reason of failure on the part of the Contractor or subcontractors to so protect the Work, such Work and materials shall be removed and replaced at the expense of the Contractor.

1.05 WARRANTIES

A. The Contractor and the equipment manufacturers shall warranty all materials supplied under these Specifications for a minimum period of one (1) year unless otherwise specified. Warranty period shall commence on the date that the Work is accepted by the District as substantially complete.

B. The materials shall be warranted to be free from defects in workmanship, design and materials. If any part of the equipment should fail during the warranty period, it shall be replaced and returned to service at no expense to the District.

C. If, within the guarantee period, repairs or changes are required in connection with work which, in the opinion of the District Representative, is rendered necessary as the result of the use of materials, equipment or workmanship which are inferior, defective, or not in accordance with the terms of the Contract, the Contractor shall, promptly upon receipt of notice from the District and without expense to the District, do the following:

1. Place in satisfactory condition in every particular all of such work and correct all defects herein.

2. Repair or replace all damage to buildings, the site, or equipment or contents thereof, which, in the opinion of the District Representative, is the result of the use of materials, equipment or

workmanship which are inferior, defective, or not in accordance with the terms of the Contract.

3. Repair or replace any work or material or equipment disturbed in fulfilling any such guarantee.

E. All special guarantees or warranties applicable to specific parts of the work, as may be stipulated in the Contract Documents, shall be subject to the terms of this paragraph during the first year following acceptance. All special guarantees and manufacturers' warranties shall be assembled by the Contractor and delivered to the District Representative, along with a summary list thereof, before the acceptance of the Work.

F. The manufacturer's warranty period shall run concurrently with the Contractor's warranty or guarantee period. No exception to this provision shall be allowed. The Contractor shall be responsible for obtaining material warranties from each of the respective suppliers or manufacturers for all specified. The form of warranty may be included in the Contract Documents, or shall otherwise be acceptable to the District.

G. In the event that the manufacturer is unwilling to provide a one-year warranty commencing at the time of District acceptance, the Contractor shall obtain from the manufacturer a two (2) year warranty starting at the time of delivery to the job site. This two-year warranty shall not relieve the Contractor of the one-year warranty commencing upon District acceptance.

H. The Contractor's one-year warranty or guarantee period shall be part of the project performance bond.

1.06 CONSTRUCTION CONDITIONS

A. The Contractor shall strictly adhere to the specific requirements of the governmental unit or agencies having jurisdiction over the work. Wherever there is a difference in the requirements of a jurisdictional body and these Specifications, the more stringent shall apply.

1.07 PUBLIC NUISANCE

A. The Contractor shall not create a public nuisance including, but not limited to, encroachment on adjacent lands, flooding of adjacent lands, or excessive noise.

B. Sounds generated from construction activities shall be regulated as set forth by the local governing body.

C. No extra charge may be made for time lost due to work stoppage resulting from the creation of a public nuisance.

1.08 HAZARDOUS LOCATIONS

A. Contractor shall perform work in accordance with OSHA, state and local safety requirements.

1.09 SUSPENSION OF WORK DUE TO WEATHER

A. During inclement weather, all work that could be damaged or rendered inferior by such weather conditions shall be suspended. The orders and decisions of the District as to suspensions shall be final and binding. The ability to issue such an order shall not be interpreted as a requirement to do so. During suspension of the work for any cause, the work shall be suitably covered and protected so as to preserve it from injury by the weather or otherwise; and, if the District Representative shall so direct, rubbish and surplus materials shall be removed.

1.10 RELOCATIONS

A. The Contractor shall be responsible for the relocation of structures, including but not limited to light poles, signs, sign poles, fences, piping, conduits and drains that interfere with the positioning of the work as set out on the Construction Drawings. The cost of all such relocations shall be borne by the Contractor at no additional cost to the District.

1.11 SALVAGE

A. Any existing equipment or material including, but not limited to, surplus excavated soil, valves, pipes, fittings, couplings, etc., which is removed or replaced as a result of construction under this project may be designated as necessary and delivered, to the District at a location directed by the District, at the Contractor's expense.

1.12 PERMITS

A. Upon Notice of Award, the Contractor shall immediately apply for all applicable permits required by the Contractor and not previously obtained by the District, from the appropriate governmental agency or agencies. No work shall commence until all applicable permits have been obtained

and copies delivered to the District Representative. The costs for obtaining all permits shall be borne by the Contractor.

1.13 PUMPING

A. The Contractor with his own equipment shall do all pumping necessary to prevent flotation of any part of the structures during construction operations.

B. The Contractor shall, for the duration of the contract and with his own equipment, pump out water that may seep or leak into the excavations or structures. Below grade galleries and other operating areas shall be kept dry at all times. The extent of pumping required in tanks, channels and other non-operating areas will be determined by the District.

1.14 NOTIFICATION OF WORK ON EXISTING FACILITIES

A. Before commencing work on any of the existing structures or equipment, the Contractor shall notify the District, in writing, at least 10 calendar days in advance of the date he proposed to commence such work.

PART II – PRODUCTS
(Not Used)

PART III – EXECUTION
(Not Used)

END OF SECTION

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SECTION 01040

COORDINATION

PART I - GENERAL

1.1 PROJECT COORDINATION

A. The Contractor shall provide for the complete coordination of the construction efforts. This shall include, but not necessarily be limited to, coordination of the following:

1. The work of subcontractors.

2. The flow of material and equipment from suppliers.

3. The effort of equipment manufacturers during testing and checkout.

4. The interrelated work with public and private utilities companies.

5. The interrelated work with the District where tie-ins to existing facilities are required.

6. The effort of independent testing agencies.

7. The Contractor shall coordinate with the District regarding inspections of the Work or site visits.

PART II – Product
(Not Used)

PART III – EXECUTION
(Not Used)

END OF SECTION

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SECTION 01050

FIELD ENGINEERING AND SURVEYING

PART I - GENERAL

1.01 REQUIREMENTS INCLUDED

A. The Contractor shall provide and pay for field engineering and survey service required. Such work shall include survey work to establish in the field right of way lines, base lines, bench marks (elev.), center lines, stationing, and grades and to locate and lay out site improvements, structures, and controlling lines and levels required for the construction of the work. Also included are such engineering services as are specified or required to execute the Contractor's construction methods. Engineers and surveyors shall be licensed professionals registered in the State of Florida.

B. The accuracy of any method of staking shall be the responsibility of the Contractor. All surveying for vertical and horizontal control shall be the responsibility of the Contractor.

C. The Contractor shall be held responsible for the preservation of all stakes and marks. If any stakes or marks are carelessly or willfully disturbed by the Contractor, the Contractor shall not proceed with any work until he has established such points, marks, lines and elevations as may be necessary for the prosecution of the work.

E. Once the project is complete, the Contractor shall provide the District with a complete Record Drawing survey of all project improvements.

1.02 SURVEY REFERENCE POINTS

A. Existing basic horizontal and vertical control points for the project are those designated on the Construction Drawings. The Contractor shall locate and protect control points prior to starting site work and shall preserve all permanent reference points during construction. In working near any permanent property corners or reference markers, the Contractor shall use care not to remove or disturb any such markers. In the event that markers must be removed or are disturbed due to the proximity of construction work, the Contractor shall have them referenced and reset by a Registered Land Surveyor.

B. Contractor shall verify horizontal and vertical control point locations and elevations prior to start of work or use of control points.

1.03 PROJECT SURVEY REQUIREMENTS

A. The Contractor shall engage the services of a Florida Registered Land Surveyor to establish all lines and grades on the Drawings necessary to fully construct the work in accordance with Chapter 61G17-6 of the Florida Administrative Code.

B. The Registered Land Surveyor shall establish a temporary benchmark system in accordance with Chapter 61G17-6 F.A.C. and shall provide a written list to the Contractor for his use.

1.04 RECORDS

A. Maintain a complete, accurate log of all control and survey work as construction progresses. Survey notes indicating the information and measurements used in establishing locations and grades shall be kept in notebooks and furnished to the District with the Record Drawings.

1.05 SUBMITTALS

A. Submit name and address of surveyor to the District Representative.

B. On request of the District Representative, submit documentation to verify accuracy of field engineering work.

PART II – PRODUCTS
(Not Used)

PART III – EXECUTION
(Not Used)

END OF SECTION

SECTION 01065

PERMITS

PART I - GENERAL

1.01 REQUIREMENTS INCLUDED

A. The Contractor shall be responsible to ensure that the construction of the project adheres to, County, State, and Federal standards and regulations, and to all permits and easements acquired for the project.

B. The Contractor shall coordinate all work within rights-of-way with the agency having jurisdiction, including all road/lane closures, road/lane narrowing and detours.

C. Copies of all Permits obtained are included in the bid documents. Copies of all Deeds, Easement Agreements or License Agreements that the District has obtained will be provided to the bid awardee. The Contractor shall conduct all operations in accordance with the requirements of all Permits, Easements and License Agreements.

D. Where Permits, Deeds, Easement Agreements, or License Agreements require that certain Work is to be performed only in the presence of a representative of the permitting entity, the Contractor shall provide all coordination and notification required to assure full compliance with the permit conditions.

E. The District has obtained or will obtain certain Permits, Deeds, Easement Agreements, or License Agreements required for construction of the project. A listing of those Permits, Deeds, Easement Agreements, or License Agreements that the District has obtained or applied for is listed below. The Contractor shall be responsible for obtaining all other Permits, Easement Agreements, or License Agreements necessary for the proper execution of the Work not specifically noted to be obtained by the District.

F. The Contractor shall comply with all terms, conditions, provisions and requirements of all permits issued or to be issued for the Project. Should the Contractor's failure to comply with said permits lead to enforcement action by any of the permitting or jurisdictional agencies, any resultant costs in the forms of repairs, fines, penalties, administrative costs, attorney's fees or consultant fees shall be deducted from the Contract Price or shall be otherwise collectible from the Contractor and its Surety, jointly and severally.

G. The Contractor shall notify the District a minimum of 30 days prior to the

expiration of a permit if said expiration occurs prior to completion of the Work.

H. Prior to any land clearing or tree removal, the Contractor shall construct a soil tracking device in accordance with current Florida Department of Transportation (FDOT) design standards.

1.02 PERMITS

A. Permits obtained by, or applied for by, the District are as follows:

Permit Title	Agency	Permit/File Number	Expiration Date
General Permit	Florida Department of Environmental Protection (FDEP)	29-03225543-002 EG	3/12/2025
Nationwide-27 Verification	U.S. Army Corp. of Engineers	SAJ-2013-03249 (NW-RGH)	3/18/2022
Miscellaneous Activities in Wetlands	Environmental Protection Commission Hillsborough County (EPCHC)	MAIM Approval No. 56541	10/05/2021

B. Each bidder shall be familiar with the requirements of the permit conditions that relate to construction activities and shall include the cost of satisfying these permit conditions in developing a bid for the project.

C. At a minimum, the Contractor shall register with appropriate authorities, obtain the following permits and comply with their respective conditions and submit copies of all applications and final permits to the District:

D. The Contractor shall obtain all construction permits required including those necessary for work with the County right-of-way. No clearing shall occur and no earth-moving equipment shall be placed on-site until all the permits have been issued.

E. The Contractor shall obtain, implement and comply with all local and state permits required for dewatering, including consumptive or water use permitting, if required for construction from the Southwest Florida Water Management District.

F. The Contractor shall be responsible for obtaining, and complying with, all required permits relating to discharges from dewatering shall obtain a State of Florida Department of Environmental Protection Generic Permit for the Discharge of Produced Ground Water From Any Non-Contaminated Site Activity in accordance with 62-621.300(2) FAC.

G. The Contractor shall obtain, implement and comply with the requirements of a Generic Permit for Storm Water Discharge from Large and Small Construction Activities (CGP), in accordance with 62-621.300(4) FAC. The Contractor shall submit a CGP Notice of Intent (NOI) to the Florida Department of Environmental Protection (FDEP) and develop and submit a Storm Water Pollution Prevention Plan (SWPPP) as part of the CGP. The Contactor shall:

1. Obtain the CGP form and NOI Application Form from the FDEP or its website, DEP Documents 62-621.300(4)(a) and 62-621.300(4)(b), respectively.

2. Develop an SWPPP in compliance with FDEP storm water permitting rules that shall include, at a minimum, the following:
   a. A site evaluation of how and where pollutants may be mobilized by storm water.
   b. A site plan for managing storm water runoff.
   c. Identification of appropriate erosion and sediment controls including Best Management Practices to reduce erosion, sedimentation, and storm water pollution.
   d. A maintenance and inspection schedule.
   e. Plan and procedures for record keeping.
   f. A map depicting storm water exit areas.

3. Complete and submit the NOI Application, including all attachments, to the local FDEP office along with the appropriate application fee.

4. The Contractor shall furnish a copy of the FDEP Notice of Permit, along with a copy of the SWPPP, to the District.

PART II – PRODUCTS
(NOT USED)

PART III – EXECUTION
(NOT USED)

END OF SECTION

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SECTION 01070

ABBREVIATIONS AND SYMBOLS

PART I - GENERAL

A. Referenced Standards: Any reference to published specifications or standards of any organization or association shall comply with the requirements of the specification or standard which is current on the date of Advertisement for Bids. In case of a conflict between the referenced specifications or standards, the one having the more stringent requirements shall govern. However, no provision of any referenced standard specification, manual or code (whether or not specifically incorporated by reference in the Contract Documents) shall be effective to change the duties and responsibilities of the District or, or any of their consultants, agents or employees from those set forth in the Contract Documents.

In case of conflict between the referenced specifications or standards and the Contract Documents, the Contract Documents shall govern.

B. Abbreviations:

AA	Aluminum Association
AASHTO	American Association of State Highway & Transportation Officials
AASHO	American Association of State Highway Officials (now AASHTO)
ABPA	Acoustical and Board Products Association
ACI	American Concrete Institute
ACOE	Army Corps of Engineers
AGA	American Gas Association
AGMA	American Gear Manufacturers Association
AI	The Asphalt Institute
AIEE	American Institute of Electrical Engineers (now IEEE)
AIMA	Acoustical and Insulating Materials Association
AISC	American Institute of Steel Construction
AISI	American Iron and Steel Institute
ANSI	American National Standard Institute
API	American Petroleum Institute
APWA	American Public Works Association
AREA	American Railway Engineering Association
ASA	American Standards Association (now ANSI)
ASCE	American Society of Civil Engineers
ASHRAE	American Society of Heating, Refrigerating and Air Conditioning Engineers
ASME	American Society of Mechanical Engineers

ASSCBC	American Standard Safety Code for Building Construction
ASTM	American Society for Testing and Materials
AWPA	American Wood Preservers Association
AWPB	American Wood Preservers Bureau
AWS	American Welding Society
AWWA	American Water Works Association
CHPSP	Charlotte Harbor Preserve State Park- FDEP Division of Parks
CRSI	Concrete Reinforcing Steel Institute
CS	Commercial Standard
DOT Spec	Standard Specification for Road and Bridge Construction, latest edition Florida Department of Transportation, 1986
E/A	Engineer and/or Architect
EPA	Environmental Protection Agency
F'C	Concrete Compressive Strength
FDEP	Florida Department of Environmental Protection
FDER	(now FDEP - formerly Florida Department of Environmental Regulation)
FDOT	Florida Department of Transportation
FS	Federal Standard
FWC	Florida Fish and Wildlife Conservation Commission
GPM	Gallons Per Minute
GTAA	Gopher Tortoise Authorized Agent (FWC Approved)
HP	Horsepower
ID	Inside Diameter
IEEE	Institute of Electrical and Electronic Engineers
IPCEA	Insulated Power Cable Engineers Association
LBR	Limerock Bearing Ratio
NBFU	National Board of Fire Underwriters
NBS	National Bureau of Standards
NEC	National Electrical Code
NECA	National Electrical Contractors' Association
NEMA	National Electrical Manufacturers Association
NFPA	National Fire Protection Association
NPDES	National Pollution Discharge Elimination System
NPT	National Pipe Threads
NSF	National Science Foundation
OD	Outside Diameter
OSHA	U.S. Department of Labor, Occupational Safety and Health Association
PCA	Portland Cement Association
PCI	Prestressed Concrete Institute
PS	United States Products Standards
PSIG	Pounds Per Square Inch Gauge

RPM	Revolutions Per Minute
SAE	Society of Automotive Engineers
SDI	Steel Decks Institute
SHPO	State Historic Preservation Office
SJI	Steel Joists Institute
SMACNA	Sheet Metal and Air Conditioning Contractors' National Association
SSPC	Structural Steel Painting Council
STA	Station (100 feet)
SWFWMD	Southwest Florida Water Management District or District
TDH	Total Dynamic Head
UL	Underwriter's Laboratories, Inc.
USACOE	United States Army Corps of Engineers
USASI or USAS	United States of America Standards Institute (Now ANSI)
USDA	United State Department of Agriculture
USEPA	United States Environmental Protection Agency

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SECTION 01090

REFERENCE STANDARDS

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

A. Abbreviations and acronyms are used in the Contract Documents to identify reference standards.

1.02 QUALITY ASSURANCE

A. Application: When a standard or specification is specified by reference, comply with requirements and recommendations stated in that standard, except when requirements are modified by the Contract Documents, or applicable codes establish stricter standards.

B. Publication Date: The publication in effect on the date of issue of Contract Documents, except when a specific publication date is specified.

1.03 ABBREVIATIONS, NAMES, AND ADDRESSES OF ORGANIZATIONS

Obtain copies of referenced standards direct from publication source, when needed for proper performance of Work, or when required for submittal by Contract Documents.

AA	Aluminum Association 1525 Wilson Blvd. Arlington, VA 22209
AASHTO	American Association of State Highway and Transportation Officials 444 North Capitol Street, NW Suite 249 Washington, DC 20001
ACI	American Concrete Institute 38800 Country Club Drive Farmington Hills, MI 48331
AI	Asphalt Institute 2696 Research Park Drive Lexington KY 40511

AISC	American Institute of Steel Construction One East Wacker Drive Suite 700 Chicago, IL 60601-2001
AISI	American Iron and Steel Institute 1140 Connecticut Avenue Suite 705 Washington DC 20036
ANSI	American National Standards Institute 1819 L Street, NW, 11th Floor Washington, DC 20036
ASME	American Society of Mechanical Engineers Three Park Avenue New York, NY 10016-5990
ASTM	American Society for Testing and Materials 100 Barr Harbor Drive West Conshohoken, PA 19428
AWWA	American Water Works Association 6666 W. Quincy Avenue Denver, CO 80235
AWS	American Welding Society 550 N.W. LeJeune Road Miami, FL 33126
CRSI	Concrete Reinforcing Steel Institute 38800 Country Club Drive Farmington Hills, MI 48331
FS	Federal Specification General Services Administration Specifications and Consumer Information Distribution Section (WFSIS) 470 L'enfant Plaza – Suite 8100 Washington, DC 20407
NEMA	National Electrical Manufacturers' Association 1300 North 17th Street Suite 1752 Rosslyn, VA 22209

PCA	Portland Cement Association 5420 Old Orchard Road Skokie, IL 60077
PCI	Prestressed Concrete Institute 200 W. Adams Street, #2100 Chicago, IL 60606
SSPC	Society for Protective Coatings 40 24th Street,. 6th floor Pittsburgh, PA 15222
UL	Underwriters' Laboratories, Inc. 2600 NW Lake Road Camas, WA 98607-8542

PART 2 - PRODUCTS
(NOT USED)

PART 3 - EXECUTION
(NOT USED)

END OF SECTION

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SECTION 01150

MEASUREMENT AND PAYMENT

PART 1 - GENERAL

1.01 SCOPE

A. All pay items under this contract shall be lump sum.

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

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

D. Any work or items not included in a lump sum pay item on the Bid Form, but shown on the plans or required by the Contract Documents, shall be included as part of the lump sum bid price for Mobilization.

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

F. The Contractor shall prepare and submit a Schedule of Values and Progress Schedule to the District's representative for approval in accordance with the Contract Documents. The Schedule of Values and Progress Schedule shall be the primary means of control of the Work and will be the basis for scheduling all work and for determination of Contract progress payments. The Schedule of Values shall subdivide the total lump sum bid price for the Work into its component parts for each lump sum pay shown on the Bid Form in sufficient detail to serve as the basis for estimating percent complete to support progress payments during construction. The total sum of the individual values in the Schedule of Values for each of the activities shall equal the total lump sum Contract price minus contingency.

G. No extra payment will be made to the Contractor for construction extending over a greater area than authorized, nor for material moved from outside of stakes and data shown on the plans, except when such work is performed upon instructions of the District.

H. Whenever any change, or combination of changes, on the plans results in an increase or decrease in the original Contract quantities, and the work added or decreased/eliminated is of the same general character as that called for on the plans, the Contractor shall accept payment in full at the original Contract prices for the actual quantity of work performed, with no allowance for any loss or anticipated profits.

I. Restoration is considered an integral part of the Work, and all bid prices shall include the cost of restoration necessitated by the Work related to that bid item. All existing structures and property including, but not limited to, paving, stabilized roads, drainage piping and ditches, catch basins, head walls, yard culverts, lawns, fences, trees, shrubs, ground areas, walkways, sidewalks, driveways, alleys, curbs, gutters and irrigation systems that are altered, removed or damaged during construction shall be restored to the same or better condition than existed prior to construction at no additional cost to the District. The bidder shall hereby be advised that cleanup is an integral part of the restoration process.

J. The Contractor shall be responsible for all maintenance of traffic necessitated by the proposed Work. The cost for this shall be included as part of the lump sum quantity for Mobilization.

K. All required inspection and testing of materials shall be included in the Contract Price for each bid item

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.01 MEASUREMENT AND PAYMENT

A. Mobilization

1. Measurement: The work included under this section consists of the preparatory work and operations in mobilizing to begin site work components of the projects, including but not limited to operations necessary for the movement of personnel, equipment, supplies and incidentals to the project site, TECO safety training, project signage, audio-visual documentation of pre-construction project conditions, preparation of a Stormwater Pollution Prevention Plan (SWPPP), submittal of the SWPPP to ENGINEER for review, submittal of Notice of Intent (NOI) and Notice of Termination (NOT) to the state pursuant to federal NPDES regulations, obtaining miscellaneous permits, as needed, safety equipment and first aid supplies, sanitary and other facilities as required by the Contract

Documents, and state and local laws and regulations. The cost of bonds and required insurance, maintenance of traffic, any other pre-construction expenses necessary for the start of work, excluding the cost of construction materials, shall also be included in under this Bid Item.

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

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

The work specified under this section shall be paid for under the Lump Sum Pay Item:

Item 1: Mobilization

B. Erosion Control Devices and Turbidity Barrier

1. General: The work specified under this section shall include furnishing all labor and materials to install, inspect and maintain the erosion control and/or turbidity barriers surrounding project work as shown on the drawing or as required by the Florida Department of Environmental Protection ERP or the Army Corps of Engineers (ACOE) Permit. Separate pay items will be used for floating turbidity barriers vs. staked turbidity barriers. The work shall include anchoring either the floating or staked barrier by 4-inch posts at all ends.

2. Payment: The pay quantities for the work specified under this section shall be lump sum. The work specified under this section shall be paid for under the following Pay Items (and/or other similar project specific phasing):

Item 2: Turbidity Barrier
Item 3: Staked Silt Fence (Type III)
Item 4: Soil Tracking Prevention Device

C. Clearing and Grubbing

1. General: The work specified under this section shall consist of the removal

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

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

Item 5: Clearing and Grubbing

E. Earthwork

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

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

Item 6: Excavation
Item 7: Embankment

F. Storm Drainage and Road Construction

1. General: The work specified under this section shall include all grading, dewatering, sheeting/bracing, excavation, bedding material, concrete, backfilling and compacting, removing and replacing existing pavement, masonry plugs, patching, furnishing and installation of fittings, and the connection of storm sewers to the structures. Also included in this section is all permitting and coordination with local agencies for work in right of way.

The price paid for storm drainage and road construction shall include all labor, equipment and materials necessary for construction; dewatering;

cleaning; removing and disposing of existing abandoned pipe, structures or obstructions; tie-ins; excavating and backfilling, removing and replacing existing pavement, including any sloping, sheeting, and shielding to comply with OSHA or State Trench Safety Laws; compacting the backfill; materials and compaction testing required by the plans and specifications; and furnishing as-built plans and as-built certification.

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

No additional payment shall be made for work associated with trench safety.

No additional payment shall be made for that geotechnical information required to support those conditions set forth.

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

Item 8: 6-Inch Geoweb Cellular Confinement System (Rock-Filled)
Item 9: 6-Inch Geoweb Cellular Confinement System (Concrete-Filled)
Item 10: 8-Inch Geoweb Cellular Confinement System (Rock-Filled)
Item 11: Mill Existing Asphalt (1” Average Depth)
Item 12: 12” Limerock (LBR 100)
Item 13: Superpave Asphaltic Concrete
Item 14: Endwall (Class I Concrete)
Item 15: Type E Ditch Bottom Inlet, <10’
Item 16: 30-inch RCP
Item 17: 42-inch RCP
Item 18: 14”x23” Elliptical RCP
Item 19: Flared End Section (30”)
Item 20: Flared End Section (42”)
Item 21: Mitered End Section (14”x23”)
Item 22: Sheet Pile/Concrete Weir Structure (S200)
Item 23: 4” Concrete Ditch Pavement, Reinforced
Item 24: Riprap – Rubble, Ditch Lining

G. Grassing

1. General: The work specified under this section consists of furnishing all labor and materials to sod or hydroseed areas as shown on the plans. Also included in this section is stabilization of all erodible surfaces disturbed by the construction activities. This item includes atering and maintenance until the project is accepted by the Owner.

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

   Item 25: Sod
   Item 26: Hydroseeding

H. Temporary Dewatering

1. General: The work specified under this section consists of all labor, materials, equipment, environmental protection, and permitting associated with temporary dewatering to conduct the work in accordance with the plans and specifications.

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

   Item 27: Temporary Dewatering

I. Vegetation Installation and Control

1. General: The work specified under this section consists of wetland planting and non-native vegetation removal in accordance with the plans and specifications. Survivorship and performance standards in accordance with the specifications are also included.

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

   Item 28: Wetland Planting
   Item 29: Selective Non-Native Vegetation Removal
   Item 30: Hand Removal Only Non-Native Vegetation Removal

J. Water Main Relocation

1. General: The work specified under this section consists of water main relocation shown on the plans. All work will be conducted in accordance with utility owner requirements and shall include all permitting, notifications, testing, traffic control, signage and certifications

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

   Item 31: Water Main Relocation

K. Vegetation Maintenance

1. General: The work specified under this section consists of maintenance of native plant species and exotic and nuisance vegetation control within the project boundaries and in accordance with the plans and specifications. Plant maintenance events will be conducted quarterly for two years.

2. Payment: Vegetation Maintenance shall be paid per quarterly event under the following Pay Items:

   Item 32: Year 1 Quarterly Maintenance
   Item 33: Year 2 Quarterly Maintenance

L. Frontier Relocation Allowance (Cable/Fiber Optic)

1. General: The work included under this section is to be completed by the utility company based on coordination with the Contractor.

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

   Item 34: Utility Relocation Allowance – Cable/Fiber Optic
   Payment shall be made to the Contractor at actual cost from Frontier. Contractor shall provide paid receipt as documentation. No markup will be allowed on the Frontier invoice.

M. Contingency

1. General: The work specified under this section consists of performing additional work beyond the original contract scope as directed by the Owner.

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

   Item 35: Contingency Allowance

END OF SECTION

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SECTION 01152

APPLICATIONS FOR PAYMENT

PART I - GENERAL

1.01 REQUIREMENTS INCLUDED

A. Submit Applications for Payment to the District in accordance with the schedule and format as established by the District.

B. Submit to the District for review, the proposed Application for Payment form, prior to the first Payment Request.

1.02 FORMAT AND DATA REQUIRED

A. Submit electronic copies in MS Excel format for review.

B. Submit approved, executed copies electronically in pdf format.

C. Provide itemized data on continuation sheets:

1. Format, schedules, line items and values: those of the Schedule of Values accepted by the District Representative.

1.03 PREPARATION OF APPLICATION FOR EACH PROGRESS PAYMENT

A. Application Form:

1. Fill in required information, including that for Contingency Work Requests executed prior to date of submittal of application.

2. Fill in summary of dollar values to agree with respective totals indicated on continuation sheets.

3. Execute certification with signature of a responsible officer of the Contractor.

B. Continuation Sheets:

1. Fill in total list of all scheduled component items of work, with item number and scheduled dollar value for each item.

2. Provide columns for Contract Amount, Amount Approved Previously, Amount Completed This Pay Application and Amount Remaining

a. Under each column heading, provide two columns, one for Percentage and one for Dollar Amount

3. To receive approval for payment on component material stored on site, submit copies of the original invoices with the Application for Payment. The application for payment must also include a table summarizing the amount of each invoice and the schedule of values line item to which the stored materials apply. No payment will be made for stored materials without prior written approval by the District Representative.

1.04 SUBSTANTIATING DATA FOR PROGRESS PAYMENTS

A. Provide substantiating data, containing suitable information for review of costs requested with a cover letter identifying:

1. Project.

2. Application number and date.

3. Detailed list of enclosures.

4. For stored products:

a. Item number and identification as shown on application.
b. Description of specific material.
c. Supplier invoices.
d. A table identifying stored material, amount stored, amount installed, and schedule of values item which the material applies.

B. Submit one copy of data and cover letter for each copy of Application.

C. The Contractor is to maintain an updated set of drawings to be used as record drawings. As a prerequisite for monthly progress payments, the Contractor is to exhibit the updated record drawings for review by the District.

D. Contractor shall maintain an updated construction schedule in accordance with the Specification. As a prerequisite for monthly progress payments, Contractor shall submit the updated construction schedule with the applications for progress payments. If the Contractor fails to submit the required updated schedule within the time prescribed, the District may withhold approval of progress payment estimates until such a time as the Contractor submits the required updated schedule.

1.05 PREPARATION OF APPLICATION FOR FINAL PAYMENT

A. Fill in application form as specified for progress payments.

B. Use continuation sheet for presenting the final statement of accounting as specified in the Specification.

C. All appropriate information must be entered on the application form.

1. The line title, "Application Period", must indicate the dates between which all work was completed during the pay period. These dates must be consecutive with the dates of the previous Payment Request and they must not overlap.

2. All blank lines within the "Contract Data" and "Summary of Project Status" section of the application must be completed. Also, if any contingency work requests have been approved, the contingency work requests section must include that information.

3. All calculations and arithmetic must be precise to the penny. In developing its Schedule of Values, the Contractor is advised to use whole numbers.

4. The Application must be signed and dated by an authorized representative of the Contractor.

1.06 SUBMITTAL PROCEDURE

A. Prior to submitting a completed Payment Request, the Contractor must arrange a field meeting with the District Representative to review and verify all installed quantities and/or stored material. Only when the District Representative and Contractor agree on installed quantities and percentages, should the Payment Request be submitted.

B. Submit pay application electronically to the District with copy to the engineer.

PART II – PRODUCTS
(NOT USED)

PART III – EXECUTION
(NOT USED)

END OF SECTION

SECTION 01153

CONTINGENCY WORK REQUEST PROCEDURES

PART I - GENERAL

1.01 REQUIREMENTS INCLUDED

A. Promptly implement Change Order procedures.

1. Provide full written data required to evaluate changes.

2. Maintain detailed records of work done on a time and material/force account basis.

3. Provide full documentation to District Representative on request.

B. Designate in writing the member of Contractor's organization:

1. Who is authorized to accept changes in the work.

2. Who is responsible for informing others in the Contractor's employ of the authorization of changes in the work.

1.02 DEFINITIONS

A. Change Order: A written authorization issued in accordance with the District’s Signature Authority that authorizes changes that affect the Contract Sum or the Contract Time.

B. Work Directive Change: A written order to the Contractor, signed by Contractor and the District, which amends the Contract Documents as described, and authorizes Contractor to proceed with a change that affects the Contract Sum or the Contract Time, for inclusion in a subsequent Change Order.

C. Engineer's Supplemental Instructions: A written order, instructions, or interpretations, signed by District Representative making minor changes in the Work not involving a change in Contract Sum or Contract Time.

D. Field Order: A written order to the Contractor, signed by the District Representative and the Contractor, which is issued to interpret/clarify the Contract Documents, order minor changes in the work. The work described by a Field Order is to be accomplished without change to the Contract Sum, Contract Time, and/or claims for other costs.

1.03 PRELIMINARY PROCEDURES

A. The District may initiate changes by submitting a Work Directive Change or a Contingency Work Request to the Contractor. Request will include:

1. Detailed description of the change, products, and location of the change in the Project.

2. Supplementary or revised Drawings and/or Specifications.

3. The projected time span for making the change, and a specific statement as to whether overtime work is or is not authorized.

4. A specific period of time during which the requested price will be considered valid.

B. Contractor may initiate changes by submitting a written notice to the District, prior to the work being performed, containing:

1. Description of the proposed changes.

2. Statement of the reason for making the changes.

3. Statement of the effect on the Contract Sum and the Contract Time.

4. Statement of the effect on the work of separate contractors.

5. Documentation supporting any change in Contract Sum or Contract Time, as appropriate.

1.04 CONSTRUCTION CHANGE AUTHORIZATION

A. Work Directive Change will describe changes in the Work, both additions and deletions, with attachments of revised Contract Documents to define details of the change and will designate the method of determining any change in the Contract Sum and any change in Contract Time.

B. The District will sign and date the Work Directive Change as authorization for the Contractor to proceed with the changes.

1.05 DOCUMENTATION OF PROPOSALS AND CLAIMS

A. Support each quotation for a lump sum proposal, and for each unit price which has not previously been established, with sufficient substantiating data to allow the District to evaluate the quotation.

B. On request, provide additional data to support time and cost computations:

1. Labor required.

2. Equipment required.

3. Products required.

a. Recommended source of purchase and unit cost.

b. Quantities required.

4. Taxes, insurance, and bonds.

5. Credit for work deleted from Contract, similarly documented.

6. Overhead and profit.

7. Justification for any change in Contract Time.

C. Support each claim for additional costs, and for work done on a time-and-material/force account basis, with documentation as required for a Lump Sum proposal, plus additional information:

1. Name of the District's authorized agent who ordered the work and date of the order.

2. Dates and times work was performed and by whom.

3. Time record, summary of hours worked, and hourly rates paid.

4. Receipts and invoices for:

a. Equipment used, listing dates, and times of use.

b. Products used, listing of quantities.

c. Subcontracts.

1.06 PREPARATION OF CONTINGENCY WORK REQUEST AND FIELD ORDERS

A. Project District Representative will prepare each Contingency Work Request and Field Order and Work Change Directives.

B. Contingency Work Request will describe changes in the Work, both additions and deletions, with attachments of revised Contract Documents to define details of the change.

C. Contingency Work Request will provide an accounting of the adjustment in the Contract Sum and in the Contract Time.

D. Field Order will describe interpretations or clarifications of Contract Documents, order minor changes in the Work, and/ or memorialize trade-off agreements.

E. Field Order work will be accomplished without change in the Contract Sum, Contract Time, and/or claims for other costs.

PART II – PRODUCTS
(NOT USED)

PART III – EXECUTION
(NOT USED)

END OF SECTION

SECTION 01200

MEETINGS AND CONFERENCES

PART I - GENERAL

1.01 PRE-CONSTRUCTION CONFERENCE

A. In accordance with the Contract Documents, prior to the commencement of Work, a preconstruction conference shall be held at a mutually agreed time at the Contractor's Office.

B. The purpose of the conference shall be to designate responsible personnel and establish a working relationship. Matters requiring coordination shall be discussed and procedures for handling such matters established. The agenda shall include as a minimum:

1. Contractor's Initial Construction Schedule

2. Procedures for Transmittal, Review and Distribution of Shop Drawings

3. Procedures for Submittal and Review of Monthly Pay Applications

4. Maintaining Record Drawings

5. Critical Work Sequencing and Construction Restrictions

6. Field Decisions and Contingency Work Requests

7. Field Office, Storage Areas and Security

8. Equipment and Material Deliveries

9. Safety Meetings and Program

10. Traffic Control Plan

11. Pre-construction Video / Pictures

12. Erosion Control Plan

13. Copy of permits applied for/obtained

C. The District Representative will preside at the conference and will arrange for keeping the minutes and distributing them to all persons in attendance.

D. The Contractor and the District shall be responsible for coordinating the pre-construction meeting with all necessary agencies and utilities. The Contractor shall submit the following:

1. Names, phone numbers, and emergency numbers for personnel involved, including but not limited to, Contractor and District Representative.

2. Emergency access plan for approval. This plan shall consist of access roads during all phases of construction.

3. A copy of the NPDES Storm Water Pollution Prevention Plan (SWPPP) and a copy of the response letter from the Florida Department of Environmental Protection stating that the Notice of Intent was received.

4. A copy of the dewatering plan and proof of acceptance by the FDEP along with all submitted test results.

1.02 PROGRESS MEETINGS

A. The District Representative will schedule and conduct regular project meetings at least bi-weekly and at other times as deemed necessary by the progress of the Work. The Contractor and the District will be represented at each meeting. The Contractor and/or the District may request attendance by representatives of material Supplier(s) and Subcontractor(s).

B. The District Representative or designee will preside at the progress meetings and will arrange for keeping the minutes and distributing them to all persons in attendance. The purpose of the meetings will include but not be limited to reviewing the progress of the Work, maintaining coordination of efforts, discussing changes in scheduling and resolving problems which may develop; claims review; and future scheduling.

1.03 TRAFFIC CONTROL MEETINGS

A. The District will schedule and conduct meetings as required with the Contractor to attend to matters of traffic control and associated public convenience and safety during the course of the Work.

B. The District Representative or designee will preside at the meetings and provide for keeping the minutes and distribution of minutes to the District, the Contractor and others. The purpose of the meetings shall be for the Contractor presentation of traffic control plans and any revisions required

during performance of the Work and to discuss related matters.

PART II – PRODUCT
(Not Used)

PART III – EXECUTION
(Not Used)

END OF SECTION

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SECTION 01300

SUBMITTALS

1.01 CONSTRUCTION SCHEDULE

A. Within ten (10) days after the Notice of Award, Contractor shall submit to the District Representative for review a schedule of the proposed construction operations. The construction schedule shall indicate the sequence of the Work, the time of starting and completion of each part, and the installation date for each major item of equipment, and the time for making connections to existing piping, structures, or facilities.

B. At least every 30 days the schedule shall be revised as necessary to reflect changes in the progress of the Work.

C. Contractor will increase equipment, or construction forces, as well as increase the working hours, as needed if operations fall behind schedule at any time during the construction period.

1.02 PRELIMINARY SUBMITTALS

A. Within ten (10) days after the Notice of Award, but prior to the pre-construction conference, the Contractor shall submit the following items to the District Representative for review.

1. A preliminary schedule of Shop Drawing submittals.

2. A preliminary list of all permits and licenses the Contractor shall obtain showing the permitting agency, the type of permit, the expected date of application for the permit, required date for receipt of the permit, and permit fee.

1.03 PROGRESS REPORTS

A. A progress report shall be furnished to the District Representative with each application for progress payment. If the Work falls behind schedule, Contractor shall submit additional progress reports at such intervals as District Representative may request.

B. Each progress report shall include sufficient narrative to describe current and anticipated delaying factors, their effect on the construction schedule, and proposed corrective actions. Any Work reported complete, but which is not readily apparent to the District Representative, must be substantiated with satisfactory evidence.

C. Each progress report shall also include the accepted graphic schedule marked to indicate actual progress.

1.04 SCHEDULE OF VALUES

A. Within ten (10) days after the Notice of Award, Contractor shall submit to the District Representative for review a schedule of values. The schedule of values will subdivide the work into its component parts in sufficient detail to serve as the basis for measuring quantities in place and calculating amounts for progress payments during construction.

B. The sum of the items listed in the schedule of values shall equal the Contract Price. Such items as Bond premium, temporary construction facilities, may be listed separately in the schedule of values, provided the amounts can be substantiated. Overhead and profit shall not be listed as separate items.

C. An unbalanced Schedule of Values providing for overpayment of Contractor on items of Work that would be performed first will not be accepted. The Schedule of Values shall be revised and resubmitted until acceptable to the District Representative. Final acceptance by the District Representative will indicate only consent to the Schedule of Values as a basis for preparation of applications for progress payments and shall not constitute an agreement as to the value of each indicated item.

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1.06 SHOP DRAWINGS AND ENGINEERING DATA

A. Shop Drawings and Engineering Data shall be submitted in accordance with specification 01340.

1.07 SURVEY DATA

A. All field books, notes, and other data developed or obtained by the Contractor in performing the surveys required by the Work shall be available to the District or Representative for examination throughout the construction period. All such data shall be submitted to the District with all other Project Record Documents required for Final Completion of the Work in accordance with Section 01720.

B. Survey data shall be submitted in digital electronic format and one hard

copy.

1.09 LAYOUT DATA

A. Contractor shall keep neat and legible notes of measurements and calculations made by him in connection with the layout of the Work. Copies of such data shall be furnished to the Resident Project Representative for use in checking

B. Contractor's layout as provided under Lines and Grades. All such data considered of value to District will be transmitted to District Representative with other records upon completion of the Work.

PART II – PRODUCT
(Not Used)

PART III – EXECUTION
(Not Used)

END OF SECTION

SECTION 01310

CONSTRUCTION SCHEDULES

PART I - GENERAL

1.01 GENERAL

A. Construction under this contract must be coordinated to assure that construction is completed within the time allowed by the Contract Documents. If applicable, the Contractor will also coordinate his activities with the other contractors to allow orderly and timely completion of all the work.

B. All construction schedules shall be of the critical path method, bar chart type, and shall be prepared using SURETRACK, PRIMAVERA P3, or equal.

1.02 CONSTRUCTION SCHEDULING GENERAL PROVISIONS

A. Within ten (10) calendar days after the issuance of the Notice of Award, the Contractor shall prepare and submit to the District Representative a preliminary construction progress schedule. Partial payments will not be approved until an acceptable construction progress schedule has been approved by the District Representative.

B. The schedule shall be updated monthly reflecting the approved baseline schedule and the Contractor’s progress on each activity. No progress payment will be approved until the updated schedule is submitted and approved by the District Representative.

C. The Contractor shall designate an authorized representative of his firm who shall be responsible for development and maintenance of the schedule and of progress and payment reports. This representative of the Contractor shall have direct project control and complete authority to act on behalf of the Contractor in fulfilling the commitments of the Contractor's schedule.

1.03 PROGRESS OF THE WORK

A. The work shall be executed with such progress as may be required to prevent any delay to the general completion of the work. The work shall be executed at such times and in or on such parts of the project, and with such forces, materials and equipment to assure completion of the work in the time established by the Contract.

PART II - PROGRESS SCHEDULE SUBMITTALS

2.01 GENERAL REQUIREMENTS

A. The Contractor shall submit a critical path progress schedule as described herein. The schedule shall take into considerations all work phasing and restrictions as specified elsewhere in the Contract Documents.

B. The critical path progress schedule requirement will consist of a detailed schedule, monthly status reports (Monthly Reports), and revisions to the schedules and analyses as described. The planning, scheduling, management and execution of the work are the sole responsibilities of the Contractor. The progress schedule shall allow District Representative to review Contractor's planning, scheduling, management and execution of the work; to assist District Representative in evaluating work progress and make progress payments; to allow other contractors to cooperate and coordinate their activities with those of the Contractor; and to provide District Representative with information about "construction schedule" and "cumulative outlay schedule."

C. District Representative's review of the schedule submittals shall not relieve Contractor from responsibility for any deviations from the Contract Documents unless Contractor has in writing called District Representative's attention to such deviations at the time of submission and District Representative has given written concurrence to the specific deviations, nor shall any concurrence by District Representative relieve Contractor from responsibility for errors and omissions in the submittals.

D. District Representative's review of the schedule submittals shall be only for conformance with the information given in the Contract Documents and shall not extend to the means, methods, sequences and techniques or procedures of construction or to safety precautions or programs incident thereto. District Representative's review of the schedule submittals will be predicated on a Contractor's stamp of approval signed off by Contractor. Contractor's stamp of approval on any schedule submittals shall constitute a representation to District or Representative that Contractor, has either determined or verified all data on the submittal, or assumes full responsibility for doing so, and that Contractor and his subcontractors and suppliers have reviewed and coordinated the sequences shown in the submittal with the requirements of the work under the Contract Documents.

2.02 SUPPLEMENTARY REQUIREMENTS

A. Graphic network diagrams shall be on a time-scaled precedence network format. The graphic network diagram shall include the following format:

1. Description of each activity, or restraint, shall be brief but convey the scope of work described.

2. Activities shall identify all items of work that must be accomplished to achieve substantial completion, or any interim substantial completion, such as the major disciplines of work; items pertaining to the approval of regulatory agencies; contractor's time required for submittals, fabrication and deliveries; the time required by District Representative to review all submittals as set forth in the Contract Documents; items of work required of District to support pre-operational and start-up testing; time required for the relocation of utilities. Activities shall also identify interface milestones with the work of other contract work under separate contracts with District.

3. Any activities not shown on the graphic network diagram shall be considered to have no effect on the Contractor's ability to achieve substantial completion, or interim substantial completion, within the Contract Time. Any delays to activities that do not appear in the concurred detailed schedule shall give rise only to non-prejudicial delays. Attempts to impose after-the-fact logic constraints where none existed previously to justify time extensions will not be permitted.

4. Activity durations shall be in whole working days.

5. Graphic diagrams shall be time-scaled and sequenced by work areas. The Diagram of Activities shall show numerical values for total float and be shown on their early schedules. The diagram shall be neat and legible and submitted on sheets no larger than 24 inches by 36 inches on a medium suitable for reproduction.

PART III - EXECUTION

3.01 DETAILED SCHEDULE SUBMITTAL

A. Submittal shall include a time-scaled graphic diagram showing all Contract activities, computer printout reports, and a supporting narrative. The initial Detailed Schedule submittal shall be delivered within fifteen (15) calendar days after the Notice to Proceed, and shall use the Notice to Proceed as the “data date”. Upon receipt of the District Representative's comments, Contractor shall meet with the District Representative and discuss an appraisal and evaluation of the proposed work plan. Necessary revisions resulting from this review shall be made by Contractor and the detailed schedule resubmitted within fifteen (15) calendar days after the meeting. The re-submittal, if agreed to by the District, and unless subsequently changed with the concurrence of or at the direction of District, shall be the

work plan to be used by the Contractor for planning, scheduling, managing and executing the work. If Contractor fails to provide an acceptable Detailed Schedule submittal, he will be deemed not to have provided a basis upon which progress may be evaluated, which will further constitute reasons for refusing to recommend payment.

B. The graphic diagram shall be formatted in accordance with Article 2.02(A) above. The diagram shall include (1) all detailed activities grouped by major areas of work. The critical path activities shall be identified, including critical paths for interim dates, if applicable, by clearly highlighting the path on the graphics diagram.

C. This submittal shall include five copies of the graphic diagram, the printout reports and the narrative, in accordance with Article 2.02 of these scheduling requirements.

D. The narrative shall include sufficient data to explain the basis of Contractor's determination of durations, describe the contract conditions and restraints plugged into the schedule, and provide a "what-if" analysis pertaining to potential problems and practical steps to mitigate them. Should the District Representative require additional data, this information shall be supplied by Contractor within ten calendar days.

3.02 MONTHLY STATUS REPORTS

A. Beginning with the first month, and every month thereafter, Contractor shall submit to the District Representative, with each request for payment, a Monthly Status Report (based on the Detailed Schedule) with data as of the last day of the pay period. The monthly Status Report shall include a revised copy of the currently accepted graphic diagram, computer printouts and a narrative. The Monthly Status Report will be reviewed by the District Representative. The Contractor will address the District Representative's comments in the subsequent Monthly Status Report. If Contractor fails to provide acceptable Monthly Status Reports, he will be deemed not to have provided a basis upon which progress may be evaluated, which will be reason for refusing to recommend progress payments.

B. The revised diagram shall show, for the currently accepted detailed diagram, percentages of completion for all activities, actual start and finish dates, and remaining durations, as appropriate. Activities not previously included in the currently accepted detailed schedule shall be added, except that contractual dates will not be changed except by Change Order. Review of a revised diagram by the District Representative will not be construed to constitute concurrence with the time frames, duration, or sequencing for such added activities; instead the corresponding data as ultimately incorporated into an appropriate change order shall govern.

C. A narrative shall be included with the pay application and shall include the information shown in the following outline in a narrative form:

1. Construction progress (refer to activity number in the Detailed Schedule) including:

   a. Activities completed this reporting period;
   b. Activities in progress this reporting period;
   c. Activities scheduled to commence next reporting period.

2. Description of problem areas

3. Current and anticipated delays

   a. Cause of the delay;
   b. Corrective action and schedule adjustments to correct the delay;
   c. Impact of the delay on other activities, on milestones, and on completion dates.

4. Changes in construction sequence

5. Pending items and status thereof

   a. Permits
   b. Change Orders
   c. Time extensions
   d. Other

6. Contract completion date status

   a. Ahead of schedule and number of days
   b. Behind schedule and number of days

3.03 REVISIONS

A. All revised Detailed Schedule submittals shall be in the same form and detail as the initial submittal and shall be accompanied by an explanation of the reasons for such revisions, all of which shall be subject to review by the District Representative. The revision shall incorporate all previously made changes to reflect current as-built conditions. Minor changes to the submittal may be reviewed at monthly meetings. Changes to activities having adequate float shall be considered a minor change.

B. A revised detailed work plan submittal shall be submitted for review, when required by the District Representative, for one of the following reasons:

1. The District directs a change that affects the date(s) specified in the Agreement or alters the length of a critical path.

2. Contractor elects to change any sequence of activities so as to affect a critical path of the currently accepted detailed schedule documents.

C. If, prior to agreement on an equitable adjustment to the Contract Time, the District Representative requires revisions to the Detailed Schedule in order to evaluate planned progress, Contractor shall provide an interim revised submittal for review with change effect(s) incorporated as directed. Approved interim revisions to the documents will be incorporated during the first subsequent Monthly Status Report.

3.04 CONSTRUCTION PERIOD

A. Whenever it becomes apparent from the current monthly progress evaluation and updated schedule data that any milestone and/or Contract completion date will not be met, the Contractor shall take appropriate action to bring the work back on schedule. Actions could include:

1. Increase construction manpower in such quantities and crafts as to substantially eliminate the backlog of work;

2. Increase the number of working hours per shift, shifts per work day, work days per week, or the amount of construction equipment, or any combination of the foregoing sufficient to substantially eliminate the backlog of work; and

3. Reschedule work items to achieve concurrency of accomplishment.

B. The addition of equipment or construction forces, increasing the working hours or any other method, manner, or procedure to return to the current Detailed Schedule shall be at the Contractor's own cost and shall not be considered justification for a Change Order or treated as an acceleration order.

END SECTION

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SECTION 01340

SHOP DRAWINGS, PRODUCT DATA, WORKING DRAWINGS AND SAMPLES

PART I - GENERAL

1.01 REQUIREMENTS INCLUDED

A. The Contractor shall submit to the District Representative for review such working drawings, shop drawings, test reports and data on materials and equipment (hereinafter in this Section called data), and material samples (hereinafter in this Section called samples) as are required for the proper control of work, including but not limited to those working drawings, shop drawings, data and samples for materials and equipment specified elsewhere in the Specifications and in the Contract Drawings.

B. The Contractor shall note that there are specific submittal requirements in other sections of these Specifications.

1.02 SHOP DRAWINGS

A. When used in the Contract Documents, the term "shop drawings" shall be considered to mean Contractor's Drawings for material and equipment that become an integral part of the Project. These drawings shall be complete and detailed. Shop drawings shall consist of fabrication, erection and setting drawings and schedule drawings, manufacturer's scale drawings, bills of material, wiring and control diagrams, and inspection and test reports including performance curves and certifications as applicable to the Work.

B. All details on shop drawings submitted for review shall show clearly the elevations of the various parts to the main members and lines of the structure and/or equipment, and where correct fabrication of the work depends upon field measurements, such measurements shall be made and noted on the shop drawings before being submitted for review.

C. See Shop Drawing Schedule requirements in Subparagraph CONTRACTOR'S RESPONSIBILITY.

1.03 PRODUCT DATA

A. Product data as specified in individual sections, include, but are not necessarily limited to, standard prepared data for manufactured products (sometimes referred to as catalog data), such as the manufacturers product specification and installation instructions, availability of colors and patterns, manufacturer's printed statements of compliances and applicability, roughing-in diagrams and templates, catalog cuts, product photographs, standard wiring

diagrams, printed performance curves and operational-range diagrams, production or quality control inspection and test reports and certifications, mill reports, product operating and maintenance instructions and recommended spare-parts listing storage instructions, and printed product warranties, as applicable to the work.

1.04 WORKING DRAWINGS

A. When used in the Contract Documents, the term "working drawings" shall be considered to mean the Contractor's Drawings for temporary structures such as temporary bulkheads, support of open cut excavation, support of utilities, ground water control systems, forming and falsework; for underpinning; and for such other work as may be required for construction but does not become an integral part of the Project.

B. Working drawings shall be signed and sealed by a registered Professional Engineer, currently licensed to practice in the State and shall convey, or be accompanied by, calculations or other sufficient information to completely explain the structure, machine, or system described and its intended manner of use. Prior to commencing such work, working drawings must have been reviewed without specific exceptions by the District Representative. Such review will be for general conformance and will not relieve the Contractor in any way from his responsibility with regard to the fulfillment of the terms of the Contract. All risks of error are assumed by the Contractor; the District Representative shall have no responsibility therefore.

1.05 SAMPLES

A. The Contractor shall furnish, for review of the District Representative, samples required by the Contract Documents or requested by the District Representative. Samples shall be delivered to the District Representative as specified or directed and in quantities and sizes as specified. A minimum of two samples of each item shall be submitted unless otherwise specified. The Contractor shall prepay all shipping charges on samples. Materials or equipment for which samples are required shall not be used in work until reviewed by the District Representative.

B. Samples specified in individual sections, include, but are not necessarily limited to, physical examples of the work such as sections of manufactured or fabricated work, small cuts or containers of materials, complete units of repetitively-used products, color/texture/pattern swatches and range sets, specimens for coordination of visual effect, graphic symbols, and units of work to be used by the District Representative for independent inspection and testing, as applicable to the Work.

C. The Contractor shall prepare a transmittal letter for each shipment of samples. He shall enclose a copy of this letter with the shipment and send a copy of this letter to the District Representative. Review of a sample shall be only for the characteristics or use named in such review and shall not be construed to change or modify any Contract requirements.

1.06 SUBMITTAL REQUIREMENTS

A. The Contractor shall review, approve, and submit, with reasonable promptness and in such sequence, so as to cause no delay in the Contract Work or in the Work of the District or any separate contractor, all shop drawings, product data, working drawings and samples required by the Contract Documents.

B. The District Representative shall furnish to the Contractor, in Adobe PDF format, a form that will be required for all shop drawing submittals. The Contractor shall complete the “Contractor Information” section of this form for each submittal.

C. The Contractor shall submit four (4) copies of descriptive or product data submittals to complement shop drawings to the District Representative. The District Representative will review the submittal and return to the Contractor two (2) marked-up copies of the shop drawings with the appropriate review comments.

D. Shop drawings, product data, working drawings and samples shall be furnished with the following information:

1. Number and title of the drawing.

2. Date of drawing or revision.

3. Name of project building, facility or system.

4. Name of contractor, subcontractor, and manufacturer submitting drawing.

5. Clear identification of contents, location of the work, and the sheet numbers where the product is found in the contract drawings.

6. Contractor Certification Statement.

7. Submittal Identification Number.

8. Contract Specifications Number Reference.

E. All items specified are not necessarily intended to be a manufacturer's standard product. Variations from specified items will be considered on an "or equal" basis. If submittals show variations from Contract requirements because of standard shop practice or for other reasons, the Contractor shall describe such variations in his letter of transmittal and on the shop drawings along with notification of his intent to seek contract adjustment. If acceptable, proper adjustment in the Contract shall be implemented where appropriate. If the Contractor fails to describe such variations he shall not be relieved of the responsibility for executing the work in accordance with the Contract, even though such drawings have been reviewed. Variations submitted but not described may be cause for rejection. Any variations initiated by the Contractor will not be considered as an addition to the scope of work unless specifically noted and then approved as such in writing by the District Representative.

F. Data on materials and equipment shall include materials and equipment lists giving, for each item thereon, the name and location of the supplier or manufacturer, trade name, catalog reference, material, size, finish and all other pertinent data.

G. For all mechanical and electrical equipment furnished, the Contractor shall provide a list including the equipment name, and address and telephone number of the manufacturer's representative and service company so that service and/or spare parts can be readily obtained. In addition, a maintenance and lubrication schedule for each piece of equipment shall be submitted.

H. The Contractor shall use the color "green" to make his remarks on the Submittals. Only the District Representative will utilize the color "red" in marking submittals.

1.07 CONTRACTOR'S RESPONSIBILITY

A. It is the duty of the Contractor to check, and coordinate with the work of all trades, all drawings, data, schedules and samples prepared by or for him before submitting them to the District Representative for review. Each and every copy of any drawing or data sheet larger than 11"x17" shall bear Contractor's stamp showing that they have been so checked and approved. Drawings or data sheets 11"x17" and smaller shall be bound together in an orderly fashion and bear the Contractor's stamp on the cover sheet. The cover sheet shall fully describe the packaged data and include a list of all sheet numbers within the package. Shop drawings submitted to the District Representative without the Contractor's stamp will be returned to the Contractor, without review at the District Representative's option, for conformance with this requirement.

B. The Contractor shall review shop drawings, product data, and samples prior to submission to determine and verify the following:

1. Field measurements.

2. Field construction criteria.

3. Manufacturer's catalog numbers and similar data.

4. Conformance with Specifications.

C. Shop drawings shall indicate any deviations in the submittal from the requirements of the Contract Documents.

D. At a time decided upon at the preconstruction meeting the Contractor shall furnish the District Representative a Shop Drawing schedule fixing the respective dates for the initial submission of shop and working drawings, the beginning of manufacture, testing and installation of materials, supplies and equipment. This schedule shall be provided as a separate entity and indicate those submittals that are critical to the progress schedule. The Contractor shall prepare and transmit each submittal sufficiently in advance of performing the related work or other applicable activities, or within the time specified in the individual work sections of the Specifications, so that the installation will not be delayed by processing times including disapproval and resubmittal (if required), coordination with other submittals, testing, purchasing, fabrication, delivery, and similar sequenced activities. No extension of time will be authorized because of the Contractor's failure to transmit complete and acceptable submittals sufficiently in advance of the Work.

E. The Contractor shall not begin any work affected by a submittal returned, "Rejected. Revise as indicated" and "Resubmit". Before starting this work all revisions must be corrected by the Contractor. After resubmittal they will be reviewed and returned to him by the District Representative. If returned marked, "No exceptions noted" or "Exceptions as noted", then the Contractor may begin this work. Any corrections made to the shop drawings are to be followed without exception.

F. The Contractor shall submit to the District Representative all shop drawings and data sufficiently in advance of construction requirements to provide no less than twenty-one (21) calendar days for review from the time the District Representative receives them.

G. The Contractor shall be responsible for and bear all cost of damages which may result from the ordering of any material or from proceeding with any part of work prior to review by the District Representative of the necessary shop drawings.

H. All shop drawings, product data, working drawings and samples submitted by subcontractors for review shall be sent directly to the Contractor for checking. The Contractor shall be responsible for their submission according to the approved shop drawing schedule so as to prevent delays in delivery of materials and project completion.

I. The Contractor shall check all subcontractor's shop drawings, product data, working drawings and samples regarding measurements, size of members, materials, and details to satisfy himself that they are in conformance to the Contract Documents. Shop drawings found to be inaccurate or otherwise in error shall be returned to the subcontractors for correction before submission to the District Representative.

1.08 ENGINEER'S REVIEW OF SHOP DRAWINGS, PRODUCT DATA, WORKING DRAWINGS AND SAMPLES

A. The District Representative's review is for general conformance with the design concept and contract drawings. Markings or comments shall not be construed as relieving the Contractor from compliance with the Contract Drawings and Specifications or from departures wherefrom. The Contractor remains responsible for details and accuracy, for coordinating the work with all other associated work and trades, for selecting fabrication processes, for techniques of assembly, and for performing work in a safe manner.

B. The review of shop drawings, data, and samples will be general. They shall not be construed:

1. As permitting any departure from the Contract requirements;

2. As relieving the Contractor of responsibility for any errors, including details, dimensions, and materials;

3. As approving departures from details furnished by the District Representative, except as otherwise provided herein.

C. If the shop drawings, data or samples as submitted describe variations per subparagraph (1.07H), and show a departure from the Contract requirements which District Representative finds to be in the interest of the District and to be so minor as not to involve a change in Contract Price or time for performance, the District Representative may return the reviewed drawings without noting an exception.

D. Submittals will be returned to the Contractor under one of the following:

"NO EXCEPTIONS NOTED" is assigned when there are no notations or comments on the submittal. When returned under this code the Contractor may release the equipment and/or material for manufacture.

"EXCEPTIONS AS NOTED" is assigned when notations or comments have been made on the submittal pointing out minor discrepancies as compared with the Contract Documents. Resubmittal or confirmation is not necessary prior to release for manufacturing.

"EXCEPTIONS AS NOTED/CONFIRM." This combination of codes is assigned when a confirmation of the notations and comments is required from the Contractor. The Contractor may release the equipment or material for manufacture; however, all notations and comments must be incorporated into the final product. This confirmation is to address the omissions and/or nonconforming items that were noted. Only the items to be "confirmed" need to be resubmitted.

"EXCEPTIONS AS NOTED/RESUBMIT." This combination of codes is assigned when a resubmittal is required by the Contractor. The Contractor may release a portion of the equipment or material for manufacture; however, all notations and comments must be incorporated into the final submittal. This resubmittal is to address the omissions and/or nonconforming items that were noted.

"REJECTED. REVISE AS INDICATED/RESUBMIT." This combination of codes is assigned when the submittal is in noncompliance with the Contract Documents and must be corrected and the entire package resubmitted. This code generally means that the equipment or material cannot be released for manufacture unless the Contractor takes full responsibility for providing the submitted items in accordance with Contract Documents.

"FOR YOUR INFORMATION" is assigned when the package provides information of a general nature that may or may not require a response.

E. Resubmittals will be handled in the same manner as first submittals. On resubmittals the Contractor shall direct specific attention, in writing, on the letter of transmittal and on resubmitted shop drawings by use of revision triangles or other similar methods, to revisions other than the corrections requested by the District Representative on previous submissions. Any such revisions which are not clearly identified shall be made at the risk of the Contractor. The Contractor shall make corrections to any work done because of this type revision that is not in accordance to the Contract Documents as may be required by the District Representative.

F. If the Contractor considers any correction indicated on the shop drawings to constitute a change to the Contract Documents, the Contractor shall give

written notice thereof to the District Representative at least seven (7) working days prior to release for manufacture.

G. The District Representative will review a submittal/resubmittal a maximum of two (2) times after which cost of review will be borne by the Contractor. The cost of engineering shall be equal to the District Representative's charges to the District under the terms of the Engineer's agreement with the District.

H. When the shop drawings have been completed to the satisfaction of the District Representative, the Contractor shall carry out the construction in accordance therewith and shall make no further changes therein except upon written instructions from the District Representative.

I. Partial submittals may not be reviewed. The District Representative will be the only judge as to the completeness of a submittal. Submittals not complete will be returned to the Contractor. The District Representative may at his option provide a list or mark the submittal directing the Contractor to the areas that are incomplete.

PART II – PRODUCTS

A. Final approved shop drawings shall be submitted in electronic format.

PART III – EXECUTION
(NOT USED)

END OF SECTION

SECTION 01370

SCHEDULE OF VALUES

PART I - GENERAL

1.01 DESCRIPTION

A. Scope of Work:

1. The Contractor shall submit to the District Representative a proposed Schedule of Values allocated to the various fixed price items of the Work, within ten (10) days after the issuance of the Notice of Award.

2. Upon request of the District Representative, the Contractor shall support the Schedule of Values with data that shall substantiate their correctness.

3. The Schedule of Values will be used by the District or Representative for the purpose of reviewing fixed price items and Payment Applications.

1.02 FORM AND CONTENT OF SCHEDULE OF VALUES

A. The Schedule of Values shall be letter sized pdf document. Contractor's standard forms will be considered for approval by the District Representative upon Contractor's request. The schedule shall identify:

1. Project name and location
2. Project number
3. Name and address of Contractor
4. District Representative's name
5. Date of submission

B. The Schedule of Values shall list the installed value of the component part of the Work in sufficient detail to serve as a basis for computing values for partial payments during construction.

C. Each line item shall be identified with the number and title of the respective major section of the Specifications.

D. For each major line item, the Schedule of Values shall list sub-values of major products or operations under the item.

E. For items on which partial payments will be requested for stored materials, the value shall be broken down into:

1. The cost of the materials, delivered and unloaded.
2. Paid invoices shall be required for materials upon request by the District.
3. The total installed value.

1.03 SUB-SCHEDULE OF UNIT MATERIAL VALUES

A. The Contractor shall submit a Sub-Schedule of Unit Material Values, including costs and quantities, for products on which partial payments will be requested for stored products.

B. The form of submittal shall parallel that of the Schedule of Values, with each item identified the same as the line item in the Schedule of Values.

C. The unit quantity for bulk materials shall include an allowance for normal waste.

D. The unit values for the materials shall be broken down into:

1. Cost of the material, delivered and unloaded at the site, with taxes paid.

2. Copies of paid invoices for component material shall be included with the payment request in which the material first appears.

E. The installed unit value multiplied by the quantity listed shall equal the cost of that item in the Schedule of Values.

1.04 REVIEW AND RESUBMITTAL

A. After review by District, the Contractor shall revise and resubmit the Schedule of Values and Sub-Schedule of Unit Material Values as required.

B. The Contractor shall resubmit revised schedules in the same manner.

PART II - PRODUCTS (NOT USED)

PART III - EXECUTION (NOT USED)

END OF SECTION

SECTION 01380

CONSTRUCTION PHOTOGRAPHS

PART I - GENERAL

1.01 REQUIREMENTS

A. The Contractor shall employ a competent photographer to take construction record photographs periodically during the course of the Work.

1.02 PHOTOGRAPHY REQUIRED

A. Photographs shall be taken in strict conformance with this Section and shall be furnished to the District with each Payment Application.

B. Photographs shall be taken at each of the major stages of construction listed below.

1. Completion of existing ditch backfilling (at 200-foot intervals).

2. Completion of filter marsh construction with all outfall weirs.

3. Installation of storm culverts with headwalls.

4. Installation of all geoweb structures.

5. All wetlands, both pre- and post-construction at each wetland.

6. Borrow pit littoral shelves

7. Completion of site restoration and landscaping.

C. Views and Quantities Required:

1. Two (2) views of each item listed in Paragraph 1.02(B) above.

2. Five (5) views weekly of overall project site, where Work is in progress.

3. Each time photographs are taken, at least one (1) photograph shall be taken from the same overall view as was taken during the previous photograph session.

4. The Contractor shall consult with the District Representative for instructions concerning views required.

5. Distribute one print of each view to the District Representative.

6. Aerial photographs may be used upon prior approval by the District Representative.

D. Digital:

1. All photographs are to be color digital, compiled on thumb drive, and provided with a description index of the images with dates.

2. Electronic file copies of all photographs shall be delivered with each monthly report.

1.03 AERIAL PHOTOGRAPHY

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

1. Eleven (11) aerial photos will be taken prior to commencing work, but not by more than 45 days. These photos include: 1) one vertical aerial of the entire project area and a one (1) perspective of each project location. Image orientation shall be approved by the District Representative.

2. After initial pre-construction aerial photos, aerial photos will be taken on a monthly basis and only for the project area(s) actively under construction; for each project phase being photographed, the site will be photographed from two orientations (e.g., vertical and oblique).

3. A last and full set of aerial photos (11 photos) shall be taken after completion and final acceptance of the project by the District.

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

C. Project photographs shall be submitted in electronic formats. Electronic versions of photographs will be in ".jpg" format. Each photograph print

shall have the project site, date and time the photograph was taken electronically superimposed on it or written in the bottom border or on the back of the photograph. Each submittal shall also include rights of reproduction for the District and the Engineer(s) of Record.

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

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

F. There is no separate pay item for this work.

PART II – PRODUCTS – NOT USED

PART III - EXECUTION

3.01 TECHNIQUE

A. The photography shall be a factual presentation of the condition and progress of the Work.

B. The photography shall be of correct exposure and focus and:

1. High resolution and sharpness

2. Maximum depth-of-field

3. Minimum distortion

END OF SECTION

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SECTION 01410

TESTING AND TESTING LABORATORY SERVICES

PART I - GENERAL

1.01 REQUIREMENTS INCLUDED

A. Contractor will employ and pay for the services of an independent testing laboratory to perform soil, roadway, and concrete testing specifically indicated on the Contract Documents or specified in the Specifications for conformity with the Contract Documents.

1. Contractor shall cooperate with the laboratory to facilitate the execution of its work.

2. Employment of the laboratory shall in no way relieve Contractor from its obligations to properly perform the Work of the Contract.

B. Contractor shall perform and pay for all other testing required in the specifications.

1.02 LIMITATIONS OF AUTHORITY OF TESTING LABORATORY

A. Laboratory is not authorized to:

1. Release, revoke, alter or enlarge on requirements of Contract Documents.

2. Approve or accept any portion of the Work.

3. Perform any duties of the Contractor.

1.03 CONTRACTOR'S RESPONSIBILITIES

A. Cooperate with laboratory personnel, provide access to Work and to Manufacturer's operations.

B. Secure and deliver to the laboratory adequate quantities of representational samples of materials proposed to be used and which require testing.

C. Provide to the laboratory the preliminary design mix proposed to be used for concrete, and other materials mixes that require control by the testing laboratory.

D. Materials and equipment used in the performance of work under this Contract are subject to inspection and testing at the point of manufacture or fabrication. Standard specifications for quality and workmanship are indicated in the Contract Documents. The District Representative may require the Contractor to provide statements or certificates from the manufacturers and fabricators that the materials and equipment provided by them are manufactured or fabricated in full accordance with the standard specifications for quality and workmanship indicated in the Contract Documents. All costs of this testing and providing statements and certificates shall be a subsidiary obligation of the Contractor, and no extra charge to the District shall be allowed on account of such testing and certification.

E. Furnish incidental labor and facilities:

1. To provide access to work to be tested.

2. To obtain and handle samples at the Project site or at the source of the product to be tested.

3. To facilitate inspections and tests.

4. For storage and curing of test samples.

F. Notify laboratory sufficiently in advance (minimum 48 hours) of operations to allow for laboratory assignment of personnel and scheduling of tests.

G. Employ and pay for the services of the same or a separate, equally qualified independent testing laboratory to perform additional inspections, sampling and testing required for the Contractor's convenience and as approved by the District Representative.

H. The Contractor shall pay for the laboratory costs directly to the testing firm.

PART II – PRODUCTS
(NOT USED)

PART III – EXECUTION
(NOT USED)

END OF SECTION

SECTION 01500

TEMPORARY FACILITIES

PART I - GENERAL

1.01 GENERAL

A. The Contractor shall be responsible for coordinating with the appropriate authority for, and including the costs associated with, obtaining the necessary permits required for the construction field office, temporary power and temporary water.

1.02 SANITARY FACILITIES

A. Contractor shall furnish temporary separate male and female sanitary facilities at the site, as provided herein, for the needs of all construction workers and others performing work or furnishing services on the Project.

B. Sanitary facilities shall be of reasonable capacity, properly maintained throughout the construction period, and obscured from public view to the greatest practical extent. If toilets of the chemically treated type are used, at least one toilet will be furnished for each 20 persons. Contractor shall enforce the use of such sanitary facilities by all personnel at the site.

1.03 MAINTENANCE OF TRAFFIC

A. Contractor shall conduct his work to interfere as little as possible with public travel, whether vehicular or pedestrian. Whenever it is necessary to cross, obstruct, or close roads, driveways and walks, whether public or private, Contractor shall provide and maintain suitable and safe bridges, detours, or other temporary expedients for the accommodation of public and private travel, and shall give reasonable notice to owners of private drives before interfering with them. Driveway access to commercial properties shall be maintained at all times. Such maintenance of traffic shall not be required when Contractor has obtained permission from the owner and tenant of private property, or from the authority having jurisdiction over public property involved, to obstruct traffic at the designated point. At all times, the Contractor shall perform the Work in accordance with the permits and easement agreements.

B. Traffic control shall be in accordance with FDOT Roadway and Traffic Design Standards for Traffic Control through Work Zones.

1.04 BARRICADES AND LIGHTS

A. All streets, roads, highways, and other public thoroughfares which are closed

to traffic shall be protected by effective barricades on which shall be placed acceptable warning signs. Barricades shall be located at the nearest intersecting public highway or street on each side of the blocked section.

B. All open trenches and other excavations shall have suitable barricades, signs, and lights to provide adequate protection to the public. Obstructions such as material piles and equipment shall be provided with similar warning signs and lights. Contractor shall be responsible for public safety within the construction area.

C. All barricades and obstructions shall be illuminated with warning lights from sunset to sunrise. Material storage and conduct of the Work on or alongside public streets and highways shall cause the minimum obstruction and inconvenience to the traveling public. All barricades, signs, lights and other protective devices shall be installed and maintained in conformity with applicable statutory requirements and, where within railroad and highway rights-of-way, as required by the authority having jurisdiction thereover.

1.05 PROTECTION OF PUBLIC AND PRIVATE PROPERTY

A. Contractor shall protect, shore, brace, support, and maintain all underground pipes, conduits, drains, and other underground construction uncovered or otherwise affected by his construction operations. All pavement, surfacing, driveways, curbs, walks, buildings, utility poles, guy wires, fences, and other surface structures affected by construction operations, together with all sod and shrubs in yards and parking areas, shall be restored to their original condition, whether within or outside the easement. All replacements shall be made with new materials.

1.06 PARKING

A. Contractor shall provide and maintain suitable parking areas for the use of all construction workers and others performing work or furnishing services in connection with the Project, as required to avoid any need for parking personal vehicles where they may interfere with public traffic, District’s operations, or construction activities.

B. Contractor shall install provide at locations shown on the drawings, or where indicated by the District Representative.

1.07 DUST CONTROL

A. Contractor shall take reasonable measures to prevent unnecessary dust. Earth surfaces subject to dusting shall be kept moist with water or by application of a chemical dust suppressant. Dusty materials in piles or in transit shall be covered when practicable to prevent blowing.

B. Buildings or operating facilities that may be adversely affected by dust shall be adequately protected from dust. Existing or new machinery, motors, instrument panels or similar equipment, shall be protected by suitable dust screens. Proper ventilation shall be included with dust screens.

1.08 SWEEPING

A. The Contractor shall sweep loose material from all pavement at the end of each workday.

1.09 POLLUTION CONTROL

A. Contractor shall prevent the pollution of drains and watercourses by sanitary wastes, sediment, debris and other substances resulting from construction activities. No sanitary wastes will be permitted to enter any drain or watercourse other than sanitary sewers. No sediment, debris or other substance will be permitted to enter sanitary sewers and reasonable measures will be taken to prevent such materials form entering any drain or watercourse.

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

C. Provide equipment and personnel, perform emergency measures required to contain any spillage, and to remove contaminated soils or liquids.

D. Take special measures to prevent harmful substances from entering public waters.

1. Prevent disposal of wastes, effluents, chemicals, or other such substances adjacent to streams, or in sanitary or storm sewers.

E. Provide systems for control of atmospheric pollutants.

1. Prevent toxic concentrations of chemicals

2. Prevent harmful dispersal of pollutants into the atmosphere.

F. All Contractor’s equipment used during construction shall conform to all current federal, state and local laws and regulations.

1.10 WATER CONTROL

A. Provide methods to control surface water and water from excavations and structures to prevent damage to the Work, the site, or adjoining properties.

1. Control fill, grading and ditching to direct water away from excavations, pits, tunnels and other construction areas; and to direct drainage to proper runoff courses so as to prevent any erosion, damage or nuisance.

2. Contractor shall use a sediment box and/or other appropriate measures on all dewatering operations. The outfall of all drainage structures shall have sediment curtains installed.

B. Provide, operate and maintain equipment and facilities of adequate size to control surface water.

C. Dispose of drainage water in a manner to prevent flooding, erosion, or other damage to any portion of the site or to adjoining areas and in conformance with all environmental requirements.

PART II – PRODUCT

(Not Used)

PART III – EXECUTION

(Not Used)

END OF SECTION

SECTION 01505

MOBILIZATION

PART I - GENERAL

1.01 DEFINITION AND SCOPE

A. Mobilization shall include the obtaining of all permits, insurance, and bonds; moving onto the site of all plant and equipment; furnishing and erecting plants, temporary facilities, and other construction facilities; all as required for the proper performance and completion of the Work. Mobilization may include, but not be limited to, the following principal items:

1. Move onto the site all materials and equipment required for first month's operations.

2. Maintenance of Traffic.

3. Install temporary construction power, wiring, and lighting facilities.

4. Establish fire protection plan, hurricane preparedness plan and safety program.

5. Secure construction water supply.

6. Provide on-site sanitary facilities and potable water facilities.

7. Arrange for and erect Contractor's work and storage yard and employees' parking facilities.

8. Submit all required insurance certificates and bonds.

9. Obtain all required permits.

10. Post all OSHA, Environmental Protection Agency, Department of Labor, and all other required notices.

11. Have superintendent at the job site full time.

12. Provide and erect project construction sign(s).

13. Submit a finalized construction schedule approved by the District Representative.

14. Submit a finalized schedule of values of the Work approved by the

District Representative.

15. Submit a finalized schedule of submittals approved by the District Representative.
16. Construct, maintain, and restore temporary access and haul roads.

PART II – PRODUCT
(Not Used)

PART III – EXECUTION
(Not Used)

END OF SECTION

SECTION 01510

TEMPORARY UTILITIES

PART I - GENERAL

1.01 REQUIREMENTS INCLUDED

A. Furnish, install and maintain temporary utilities required for construction, remove on completion of Work.

1.02 REQUIREMENTS OF REGULATORY AGENCIES

A. Comply with National Electric Code.

B. Comply with Federal, State and local codes and regulations and with utility company requirements.

C. Comply with regulations of Health Department of the municipalities.

PART II - PRODUCTS

2.01 MATERIALS, GENERAL

A. Materials may be new or used, but must be adequate in capacity for the required usage, must not create unsafe conditions, and must not violate requirements of applicable codes and standards.

2.02 TEMPORARY ELECTRICITY AND LIGHTING

A. Arrange with utility company and District to provide service required for power and lighting, and pay all costs for service and for power used in the construction, testing and trial operation prior to final acceptance of the work by the District as stipulated by the District Representative. All cost associated with obtaining temporary and permanent power will be at Contractor expense.

B. Provide adequate artificial lighting for all areas of work when natural light is not adequate for work, and for areas accessible to the public.

2.03 TEMPORARY TELEPHONE and INTERNET SERVICE

A. If hardwire communication service is deemed necessary, arrange with local company to provide direct line telephone line and internet service at the construction site for the use by personnel and employees.

B. Contractor shall pay all costs for installation, maintenance and removal, and service charges.

2.04 TEMPORARY WATER

A. The Contractor shall include in its bid any cost(s) anticipated for the use of temporary water facilities as a part of the construction of this project.

2.05 TEMPORARY SANITARY FACILITIES

A. Provide sanitary facilities in compliance with laws and regulations.

B. Service, clean and maintain facilities and enclosures.

PART III - EXECUTION

3.01 GENERAL

A. Maintain and operate systems to assure continuous service.

B. Modify and extend systems as work progress requires.

C. Allow the District or Representative reasonable use of all temporary utilities.

3.02 REMOVAL

A. Completely remove temporary materials and equipment when their use is no longer required as determined by the District Representative, but not before achieving Substantial Completion.

B. Clean and repair damage caused by temporary installations or use of temporary facilities.

END OF SECTION

SECTION 01530

PROTECTION OF EXISTING FACILITIES

PART I - GENERAL

1.01 SCOPE OF WORK

A. The Contractor shall protect all existing utilities, facilities, and improvements not designated for removal and restore damaged or temporarily located utilities, facilities, and improvements to a condition equal to or better than they were prior to such damage or temporary relocation in accordance with the requirements of the Contract Documents.

B. The number of exploratory excavations required shall be that number sufficient to determine the alignment and depth of the existing utility or facility.

C. The Contractor shall determine the exact locations and depths of all existing utilities indicated on the Drawings that affect the Work. In addition to those indicated, the Contractor shall make exploratory excavations of all utilities. All such exploratory excavations shall be performed as soon as practicable after Notice to Proceed and, in any event, a sufficient time in advance of construction to avoid possible delays to the Contractor's Work.

PART II - PRODUCTS (NOT USED)

PART III - EXECUTION

3.01 RIGHTS-OF-WAY

A. The Contractor shall not do any Work that would affect any oil, gas, sewer, or water pipeline; any telephone, telegraph, or electric transmission line; fiber optic cable; any fence; or any other structure, nor shall the Contractor enter upon the rights-of-way or easements involved with any such utilities until the Contractor has secured authority therefore from the utility, rights-of-way or easement owner, and has provided the District Representative with written proof of same. After authority has been obtained, the Contractor shall give said facility owner a minimum of one week’s notice of the Contractor's intention to begin Work, and shall give said facility owner convenient access for removing, shoring, supporting, or otherwise protecting its pipeline, transmission line, ditch, fence, or structure and for replacing same. Should two (2) or more contracts be executed at one time on the same or adjacent land in such manner that work on one

contract may interfere with that on another, the District shall decide which Contractor shall have priority to perform and in what manner. When the territory of one contract is the necessary or convenient means of access for the execution of another contract, such privilege of access or any other reasonable privilege may be granted by the District to the Contractor so desiring, to the extent, amount, manner, and times permitted by the District. No such decision as to the method or time of conducting the Work or the use of territory shall be made the basis of any claim for delay or damage, except as provided for temporary suspension of the Work.

3.02 PROTECTION OF STREET OR ROADWAY MARKERS

A. The Contractor shall not destroy, remove, or otherwise disturb any existing survey markers, or other existing street or roadway markers, without proper authorization. No pavement breaking or excavation shall be started until all survey or other permanent marker points that may be disturbed by the construction operations have been properly referenced for easy and accurate restoration. It shall be the Contractor's responsibility to notify the proper representatives of the proper governmental agency of the time and location that work will be done. Such notice shall be sufficiently in advance of construction that there shall be no delay due to waiting for survey points to be satisfactorily referenced for restoration. All survey markers or points disturbed without proper authorization by the District Representative will be accurately restored by the Contractor at no additional cost to the District after all street or roadway resurfacing has been completed.

3.03 RESTORATION OF PAVEMENT

A. General: All paved areas, including asphaltic concrete cut or damaged during construction, shall be replaced with similar materials and of equal thickness to match the existing adjacent undisturbed areas, except where specific resurfacing requirements have been called for in the Contract Documents or in the requirements of the agency issuing the permit. All temporary and permanent pavements shall conform to the requirements of the affected pavement owner. All pavement subject to partial removal shall be neatly saw cut in straight lines. All restoration shall be performed in accordance with these Specifications.

B. Temporary Resurfacing: Wherever required by the authorities having jurisdiction, the Contractor shall place temporary surfacing promptly after backfilling and maintain such surfacing for the period of time fixed by said authorities before proceeding with the final restoration of improvements. Temporary resurfacing shall be constructed in accordance with these Specifications.

C. Permanent Resurfacing: All pavement restoration shall be in accordance with these Specifications.

3.04 EXISTING UTILITIES AND IMPROVEMENTS

A. General: The Contractor shall protect all utilities and other improvements that 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 indicated on the Drawings that may be encountered during construction, and to assure 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, for uninterrupted utility service and such special protection as may be directed by the appropriate governmental agency or utility representative.

B. Utilities To Be Moved: If it becomes necessary to move the property of any public utility or franchise holder, such utility company or franchise holder will, upon proper application by the Contractor, be notified by the District to relocate such property within a specified reasonable time. The Contractor shall not interfere with said property until it has been relocated by the utility or franchise holder.

C. Owner's Right of Access: The right is reserved by the District, and by 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.

D. Known Utilities: Existing utility lines that are shown on the Drawings or the locations of which are made known to the Contractor prior to excavation 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 by the Contractor at no additional cost to the District.

E. Unknown Utilities: If the Contractor damages any existing utility lines that are not shown on the Drawings or the locations of which are not made known to Contractor prior to excavation, or were not, or could not have been verified or located by the Contractor prior to starting the Work, a written report thereof shall be made immediately to the District. If directed by the District, repairs shall be made by the Contractor under the provisions of the Contract Documents.

F. Utilities To Be Removed: When utility lines that are to be removed are encountered within the area of operations, the Contractor shall notify the utility owner and the District a sufficient time in advance for the necessary

measures to be taken to prevent interruptions of the service.

G. Approval Of Repairs: All repairs to a damaged improvement facility shall be inspected and approved by an authorized representative of the improvement's owner before being concealed by backfill or other Work.

H. Relocation of Utilities: Where the proper completion of the Work requires the temporary or permanent removal and/or relocation of an existing utility, or other improvement that is shown on the Drawings, the Contractor shall, at Contractor's own expense, remove, and without unnecessary delay, temporarily replace or relocate such utility or improvement in a manner satisfactory to the District and the owner of the facility. In all cases of such temporary removal or relocation, restoration to the 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 location and to as good or better condition as prior to removal.

I. Maintaining In Service: All oil and gasoline pipelines, power, telephone, or other 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 be maintained continuously in service during all the operations, unless other arrangements satisfactory to the District Representative are made with the owner of said pipelines, duct, main, irrigation line, sewer, storm drain, pole, wire, or cable. The Contractor shall be responsible for and shall make good all damage due to Contractor's 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.

3.05 TREES WITHIN RIGHTS-OF-WAY AND PROJECT LIMITS

A. General: The Contractor shall exercise all necessary precautions to prevent damage or destruction of any trees or shrubs, including those lying within street rights-of-way and Project limits. The Contractor shall not trim or remove any trees unless such trees have been approved for trimming or removal by all jurisdictional agencies and the District. All existing trees and shrubs that are damaged during construction shall be trimmed or replaced by Contractor under permit from the jurisdictional agencies and the District and to the satisfaction of said agencies and the District. Tree trimming, tree planting and transplanting shall be accomplished in accordance with these specifications.

3.06 NOTIFICATION BY THE CONTRACTOR

A. Prior to any excavation in the vicinity of any existing underground facilities,

including all water, sewer, storm drain, gas, petroleum products, or other pipelines; all buried electric power, communications, or television cables; all traffic signal and street lighting facilities; and all roadway and state highway rights-of-way, the Contractor shall notify the respective authorities representing the owners or agencies responsible for such facilities not less than two (2) working days nor more than five (5) working days prior to excavation so that representatives of said owners or agencies can be present during such work if they so desire.

3.07 SUBSURFACE OBSTRUCTIONS

A. The Contractor shall field determine, before ditch backfilling, culvert installation, weir construction or any excavations are begun, the depth and location of existing utilities. Utility locations indicated on the Drawings are shown based on available data. The Contractor shall submit descriptions, depths, and locations of subsurface obstructions to the District Representative for review if they differ from those shown on the Drawings.

B. In excavation, backfilling, and laying pipe, care shall be taken not to remove, disturb, or damage existing pipes, conduits, or structures. If necessary, the Contractor shall sling, shore-up, and maintain such structures in operation at no additional cost to the District.

C. The Contractor shall obtain the permission of and give sufficient Notice to the proper authorities of the Contractor's intention to remove or disturb any pipe, conduit, structure or facility, and shall abide by their requirements and Laws and Regulations governing such work.

D. In the event subsurface structures are broken or damaged in the execution of the Work, the Contractor shall immediately notify the proper authorities and, at the option of said authorities, either repair the damage at once or pay the proper charges for repairing said damage at no additional cost to the District. Repairs shall be made to the satisfaction of the utility owner and the District Representative. The Contractor shall be responsible for any damage to persons or property caused by such breaks or due to the neglect in reporting and/or repairing such damages.

E. Neither the District nor the District Representative will be liable for any claims made by the Contractor based on underground obstructions that could have been reasonably identified as being different than that indicated on the Drawings. The Contractor shall uncover subsurface obstructions in advance of construction so that the method of avoiding same may be determined before the Work reaches the obstruction.

3.08 CONFLICTS WITH OTHER UTILITIES

A. It shall be the Contractor's responsibility to provide the appropriate utility company sufficient advance Notice so their representatives may verify the utility location on the Project site when construction begins. The Contractor shall coordinate and cooperate with these utilities to ensure that no damages occur which may cause interruption of their services.

B. Where it may be necessary to relocate gas mains or telephone ducts (defined here as gas lines larger than 2-1/2 inches and telephone cables within ductwork) to allow construction of the Work or where major relocation of small services requires replacement or performing connections to the existing lines, all such relocation work is the responsibility of and must be performed by the respective utility companies. The Contractor shall immediately provide Notice to the proper utility company and the District Representative of the occurrence and location of such required relocations.

C. The District will not be responsible for any delay or inconvenience to the Contractor resulting from the existence, removal, or adjustment of any public or private utility that could have been reasonably identified. Additional costs incurred as a result thereof shall be borne by the Contractor and considered as included in the price bid for the various pay items.

D. Relocation or realignment of storm drains or sewer lines that may interfere with the construction of the Work shall be the responsibility of the Contractor.

E. Where storm drains or sewer lines are removed by the Contractor to facilitate construction and replaced in their original position, there shall be no direct payment made. All related costs shall be included in the price bid for the various pay items.

3.09 POLE RELOCATION AND PROTECTION

A. The Contractor shall take notice of the number of power, telephone, and traffic signal support poles within the Project. Several may be in proximity to or in direct conflict with the alignment of the proposed new pipelines. The Contractor shall immediately provide Notice to the proper utility company and the District Representative of the occurrence and location of such required relocations. It is intended that poles shall be supported with mud jacks or by other means of bracing as required to maintain them in a stable condition. The Contractor shall coordinate relocation and protection activities with the pole owner.

3.10 EXISTING FENCE LINES

A. At various locations within the Project, existing fences may conflict with or impair construction operations for the installation of the Work. The Contractor shall protect these fences in places where they do not conflict with construction operations. Where a fence may conflict with the backswing of machinery or otherwise impede construction, the Contractor shall contact the owner and arrange for the temporary removal or relocation of the fence. Any fence temporarily relocated shall be placed in a manner to maintain the intent and integrity of the original fenced area. Any fence removed or temporarily relocated shall be restored to its original condition and location unless otherwise arranged with the owner of the fence. Where it is impossible to salvage the existing materials to reconstruct the fence, the fence shall be replaced "in kind."

B. All cost for such temporary removal, temporary replacement, or "in kind" replacement shall be included in the price bid for the various pay items. No direct payment shall be made for fence replacement.

3.11 UTILITY INVESTIGATION

A. Prior to commencing with trench or other excavations required for the performance of the Work, the Contractor shall conduct a field investigation for the purpose of determining existing locations of all underground utilities and facilities which are shown on the Drawings. The Contractor shall coordinate all utility investigations with Sunshine. The investigation shall be made by hand or machine excavation. All such excavations shall include removal of surface material and obstructions required to perform the excavations. The Contractor shall notify, in writing, the owner of the facility to be excavated and request that a representative of the owner be present during the excavation. The Contractor shall provide the utility owner adequate Notice so that a representative can be there. The Contractor shall provide sheeting, shoring, and bracing as required to minimize the required size of the excavation and support adjacent ground, structures, roadways, and utilities. After the data is obtained at each excavation site, the Contractor shall immediately backfill each excavation site. Backfill shall be compacted sand for the full depth. The surface shall be returned to its original grade and condition except that paved areas may be temporarily surfaced and maintained where excavations required for the performance of the Work coincide with the location of the investigative location. The Contractor shall be responsible for all costs associated with the repair of roadways, paving, structures, underground and above ground utilities and facilities damaged in conducting the investigations.

B. Findings of the investigation shall be reported to the District

Representative. The District Representative will furnish one (1) set of full-size Drawings for the Contractor's field use in recording the findings of the investigation. The Contractor shall describe the size, material, and location of existing underground utilities and facilities. Locations and elevations shall be referenced to Project stationing, distance from base line, and Project bench marks. The Contractor shall provide written detailed description of any underground utility or facility conflicting with the elevation or alignment of the Work.

3.12 SPECIAL RESTORATION REQUIREMENTS

A. The Contractor shall schedule and conduct operations to minimize the impact of construction upon lawns, driveways, sidewalks, irrigation systems, and street paving. Restoration for these items shall be completed as soon as practical after installation of proposed pipelines and other project facilities. The following specific requirements apply.

1. Driveways and Sidewalks: The Contractor shall saw cut existing driveway or sidewalk pavement and remove the required section not sooner than the same day the Work is to be installed beneath it. The Contractor shall maintain full access to each driveway at all times. The Contractor shall re-grade and compact disturbed areas immediately after the Work is installed. The Contractor shall provide suitable and safe pedestrian facilities where a sidewalk is removed. The Contractor shall construct temporary driveway or sidewalk section within 24 hours of removal of the existing section. The Contractor shall coordinate driveway construction and restoration with property owners. Property owners shall be provided with Notice of proposed method and schedule of construction and restoration a minimum of 72 hours prior to commencement of construction activities affecting the property owner's driveways or sidewalks.

2. Irrigation Systems: The Contractor shall provide 10-day Notice to property owners prior to the Contractor removing irrigation system components.

3. Lawn Areas: The Contractor shall remove existing grass along a straight line to a minimum distance of six inches beyond the areas disturbed by construction activities on each side of the affected area. Sod shall be installed in disturbed lawn areas in a strip of uniform width along each section of lawn area with sod of identical type as existing. The Contractor shall grade and compact the area before the end of the next calendar day after excavation is performed. All sodding shall be performed in accordance with these Specifications. The Contractor shall install new sod within

fourteen days after excavation.

4. Trees, Shrubs, and Landscaping: The Contractor shall use a bonded company, licensed to perform landscape work, to perform all landscaping work required in accordance with these Specifications.

5. Fencings and all other existing facilities impacted by construction operations.

END OF SECTION

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SECTION 01540

SECURITY

PART I - GENERAL

1.01 DESCRIPTION

A. The Contractor shall insure that each employee, representative, subcontractor, supplier, and others working for the Contractor use designated access roads and parking areas.

B. The Contractor shall employ watchmen on the Work when necessary and shall erect and maintain such strong and suitable barriers and such lights as shall effectually prevent the happening of any accident to health or to property or to any partially completed Work or to any materials stored on or adjacent to the site of the Work.

C. The Contractor shall employ temporary fencing and gates to adequately protect the Work, and shall provide all access required by the District or Representative, and others requiring access to the Work.

D. Stored materials shall be kept in a neat and orderly manner. Materials that are subject to deterioration by exposure to the sun, rain or other elements shall be kept adequately covered and protected.

E. The Contractor shall be responsible for protecting all stored materials and the Project site safe from theft and vandalism. The Contractor shall employ security personnel and erect fences as necessary at no additional cost to the District.

G. All security measures shall be provided at no additional cost to the District.

PART II - MATERIALS
(NOT USED)

PART III – EXECUTION
(NOT USED)

END OF SECTION

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SECTION 01580

PROJECT IDENTIFICATION AND SIGNS

PART I - GENERAL

1.01 REQUIREMENTS INCLUDED

A. Furnish, install prior to construction, and maintain one (1) project identification signs each respective project location to be determined by the District.

B. Remove signs on completion of construction.

C. Allow no other signs to be displayed.

1.02 INFORMATIONAL SIGNS

A. Painted signs with painted lettering, or standard products.

1. Size of signs and lettering: as required by the District, or as appropriate to usage.

2. Colors: as required by the District, otherwise of uniform colors throughout Project.

B. Erect at appropriate locations, as directed by the District or Representative, to provide required information.

C. Project identification sign shall comply with standards shown at the end of this Section.

1. Project identification sign will be provided and installed by the Contractor.

2. Project identification sign shall be installed by the Contractor.

1.03 QUALITY ASSURANCE

A. Sign Painter: Professional experienced in type of work required.

B. Finishes, Painting: Adequate to resist weathering and fading for scheduled construction period.

PART II - PRODUCTS

2.01 SIGN MATERIALS

A. Structure and Framing: May be new or used, wood or metal, in sound condition structurally adequate and suitable for specified finish.

B. Sign Surfaces: 4' x 8' heavy duty 10mm colorplast.

1. Thickness: As required by standards to span framing members, to provide even, smooth surface without waves or buckles.

C. Rough Hardware: Galvanized.

D. Lettering: Black vinyl

E. The project sign shall be fabricated in general accordance with the detail provided at the end of this Section. Signage content must be preapproved by the District.

F. District will provide logos electronically.

PART III - EXECUTION

3.01 PROJECT IDENTIFICATION SIGNS

A. Paint exposed surface of supports, framing and surface material; one coat of primer and one coat of exterior paint.

3.02 MAINTENANCE

A. Maintain signs and supports in a neat, clean condition; repair damages to structures, framing or sign.

3.03 REMOVAL

A. Remove signs, framing, supports and foundations at completion of project.

Palm River Restoration
East McKay Bay Stormwater and Habitat Restoration Sites

Managed by:
Southwest Florida Water Management District
Surface Water Improvement and Management (SWIM) Program

Funded by:
Southwest Florida Water Management District
Florida Department of Transportation

RESTORE Act Funding administered by the Gulf Coast Ecosystem Restoration Council
Deepwater Horizon Program of the Florida Department of Environmental Protection
Tampa Bay Environmental Restoration Fund

Additional logos TBD

Designed by:

ARDURRA

4921 Memorial Highway Suite 300
Tampa, FL 33634
Phone (813) 880-8881
Fax (813) 880-8882
www.ardurra.com

Constructed by:

XXXXXXXXXXXXXXXX

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SECTION 01600

MATERIAL AND EQUIPMENT

PART I - GENERAL

1.01 REQUIREMENTS INCLUDED

Material and equipment incorporated into the Work:

A. Conform to applicable specifications and standards.

B. Comply with size, make, type and quality specified, or as specifically approved in writing by the District Representative.

C. Manufactured and fabricated products:

1. Design, fabricate and assemble in accord with the best engineering and shop practices.

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

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

4. Products shall be suitable for service conditions.

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

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

1.02 APPROVAL OF MATERIALS

A. All materials and equipment furnished by the Contractor shall be subject to the inspection and approval of the District Representative. Shop drawings shall include Contractor's certification of materials meeting project specifications. No material shall be delivered to the work without prior review of the District Representative.

B. Facilities and labor for handling and inspection of all materials and equipment shall be furnished by the Contractor. If the District Representative requires, either prior to beginning or during the progress of

the work, the Contractor shall submit samples of materials for such special tests as may be necessary to demonstrate that they conform to the specifications. Such samples shall be furnished, stored, packed, and shipped as directed at the Contractor's expense. Except as otherwise noted, the District Representative will make arrangements and the District will pay for the tests.

C. The Contractor shall submit data and samples sufficiently early to permit consideration and review before materials are necessary for incorporation in the work. Any delay resulting from the Contractor's failure to submit samples or data promptly shall not be used as a basis of claims against the District or Representative.

D. The materials and equipment used on the work shall correspond to the approved samples or other data previously submitted to the District Representative for review.

1.03 MANUFACTURER'S INSTRUCTIONS FOR INSTALLATION

A. When Contract Documents require that installation of work shall comply with manufacturer's printed instructions, obtain and distribute copies of such instructions to parties involved in the installation, including four (4) copies to the District Representative.

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

B. Handle, install, connect, clean, condition and adjust products in strict accord with such instructions and in conformity with specified requirements.

1. Should job conditions or specified requirements conflict with manufacturer's instructions, consult with District Representative for further instructions.

2. Do not proceed with work without clear instructions.

C. Perform work in accord with manufacturer's instructions. Do not omit any preparatory step or installation procedure unless specifically modified or exempted by Contract Documents.

D. Upon completion of installation, the Contractor shall obtain from the manufacturer a signed certification that the equipment has been properly installed in accordance with the manufacturer’s recommendations.

1.04 TRANSPORTATION AND HANDLING

A. Arrange deliveries of products in accord with construction schedules, coordinate to avoid conflict with work and conditions at the site.

1. Deliver products in undamaged condition, in manufacturer's original containers or packaging, with identifying labels intact and legible.

2. Immediately on delivery, inspect shipments to assure compliance with requirements of Contract Documents and approved submittals, and that products are properly protected and undamaged.

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

1.05 STORAGE AND PROTECTION

A. The Contractor shall furnish a covered, weather-protected storage structure providing a clean, dry, noncorrosive environment for all special equipment to be incorporated into this project. Storage of equipment shall be in strict accordance with the "instructions for storage" of each equipment supplier and manufacturer including connection of heaters, placing of storage lubricants in equipment or climate-controlled facilities, etc. The Contractor shall furnish a copy of the manufacturer's instructions for storage to the District Representative prior to storage of all equipment and materials. Corroded, damaged or deteriorated equipment and parts shall be replaced before acceptance of the project. Equipment and materials not properly stored will not be included in a payment estimate.

B. Store products in accord with manufacturer's instructions, with seals and labels intact and legible.

1. Store products subject to damage by the elements in weather tight enclosures.

2. Maintain temperature and humidity within the ranges required by manufacturer's instructions.

3. Store fabricated products above the ground on blocking or skids to prevent soiling or staining. Cover products which are subject to deterioration with impervious sheet coverings, provide adequate ventilation to avoid condensation.

4. Store loose granular materials in a well-drained area on solid surfaces to prevent mixing with foreign matter.

C. All materials and equipment to be incorporated in the work shall be handled and stored by the Contractor before, during, and after shipment in a manner to prevent warping, twisting, bending, breaking, chipping, rusting, and any injury, theft or damage of any kind whatsoever to the material or equipment.

D. Cement, sand and lime shall be stored under a roof and off the ground and shall be kept completely dry at all times. All miscellaneous steel and reinforcing steel shall be stored off the ground and covered or otherwise to prevent accumulations of dirt or grease, and in a position to prevent accumulations of standing water and to minimize rusting. Precast concrete sections shall be handled and stored in a manner to prevent accumulations of dirt, standing water, staining, chipping or cracking. Brick, block and similar masonry products shall be handled and stored in a manner to reduce breakage, chipping, cracking, and spilling to a minimum.

E. All materials that, in the opinion of the District Representative, have become so damaged as to be unfit for the use intended or specified shall be promptly removed from the site of the work, and the Contractor shall receive no compensation for the damaged material or its removal.

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

G. Protection after Installation:

1. Provide substantial coverings as necessary to protect installed products from damage from traffic and subsequent construction operations. Remove covering when no longer needed.

H. The Contractor shall be responsible for all material, equipment, and supplies sold and delivered to the District under this Contract until final inspection of the work and acceptance thereof by the District. In the event any such material, equipment, and supplies are lost, stolen, damaged, or destroyed prior to final inspection and acceptance, the Contractor shall replace same without additional cost to the District.

I. Should the Contractor fail to take proper action on storage and handling of equipment supplied under this Contract within seven days after written notice to do so has been given, the District retains the right to correct all deficiencies noted in previously transmitted written notice and deduct the cost associated with these corrections from the Contract Price. These costs may be comprised of expenditures for labor, equipment usage,

administrative, clerical, and engineering and any other costs associated with making the necessary corrections.

1.06 SUBSTITUTIONS AND PRODUCT OPTIONS

A. Contractor's Options:

1. For products specified only by reference standard, select any product meeting that standard.

2. For products specified by naming several products or manufacturers, submit the products or manufacturers named in the Proposal, which complies with the specifications.

3. For products specified by naming one or more products or more products or manufacturers and "or equal", Contractor shall submit a request as for substitutions for any product or manufacturer not specifically named.

B. Substitutions:

1. After the Effective Date of the Agreement, the District Representative will consider written requests from Contractor for substitution of products.

2. Submit a separate request for each product, supported with complete data, with drawings and samples as appropriate, including:

a. Comparison of the qualities of the proposed substitution with that specified.

b. Changes required in other elements of the work because of the substitution.

c. Effect on the construction schedule.

d. Cost data comparing the proposed substitution with the product specified.

e. Any required license fees or royalties.

f. Availability of maintenance service, and source of replacement materials.

3. The District Representative will solely determine the acceptability of the proposed substitution.

C. Contractor's Representation:

1. A request for a substitution constitutes a representation that Contractor:

a. Has investigated the proposed product and determined that it is equal to or superior in all respects to that specified.

b. Will provide the same warranties or bonds for the substitution as for the product specified.

c. Will coordinate the installation of an accepted substitution into the Work, and make such other changes as may be required to make the Work complete in all respects.

d. Waives all claims for additional costs, under his responsibility, which may subsequently become apparent.

1.07 SPECIAL TOOLS

A. Manufacturers of equipment and machinery shall furnish any special tools (including grease guns or other lubricating devices) required for normal adjustment, operations and maintenance, together with instructions for their use. The Contractor shall preserve and deliver to the District these tools and instructions in good order no later than upon completion of the Contract.

1.08 WARRANTY

A. For all major pieces of equipment, submit a warranty from the equipment manufacturer. At a minimum, the manufacturer's warranty period shall be concurrent with the Contractor's for one (1) year after the time of Substantial Completion. Exceptions for extended warranties shall be noted within each piece of equipment’s technical specification.

PART II – PRODUCTS
(Not Used)

PART III – EXECUTION
(Not Used)

END SECTION

SECTION 01670

SUBSTITUTIONS AND PRODUCT OPTIONS

PART I - GENERAL

1.01 DESCRIPTION

A. General:

1. This section covers the furnishing of all labor, materials, tools, equipment, and performance of all work and services for furnishing, submitting, processing and handling of requests for substitution and product options. See items as indicated on Drawings and as specified. Any substitution or option shall be in accord with the provisions of Contract Documents, and completely coordinated with work of other trades.

2. Although such work is not specifically indicated, furnish all supplementary or miscellaneous items, appurtenances and devices incidental to or necessary for a sound, secure and complete installation.

3. See appropriate sections for specific items specified. See General Conditions for additional information.

B. Procedure:

1. For equipment and materials that are listed in the Bid Form, observe procedures outlined in Instructions to Bidders.

2. For products, equipment, and materials that are named in Drawings or Specifications for which a request for substitution is made, observe procedures outlined in these specifications.

C. Costs: Cost incurred by requestor in providing information, catalogs, and samples - including but not limited to labor, materials, freight postage, and transportation - are sole cost of "Requestor" with no cost assessed to the District or Representative.

1.02 REQUESTS FOR SUBSTITUTION - GENERAL:

A. Base all bids on materials, equipment and procedures specified.

B. Certain types of equipment and kinds of material are described in specifications by means of trade names and catalog numbers and/or

manufacturer's names. Where this occurs, it was not intended to exclude from consideration such types of equipment and kinds of material bearing other trade names, catalog numbers and/or manufacturer's names, capable of accomplishing purpose of types of equipment or kinds of material specifically indicated.

C. Other types of equipment and kinds of material may be acceptable to District or Representative.

D. Types of equipment, kinds of material and methods of construction, if not specifically indicated must be approved in writing by District or Representative.

1.03 SUBMISSION OF REQUESTS FOR SUBSTITUTION:

A. Within no more than 30 days after award of the Contract, the District Representative will consider requests for substitutions of products, materials, systems or other items. Requests must be received by District Representative within 30 calendar days after the Notice to Proceed. All requests for substitution shall be completed as specified below.

B. Substitute items must comply with color and pattern of base specified items unless specifically approved otherwise.

C. Submit two (2) copies of request for substitution. Include in request:

1. Name of product located by Drawing No. or Specification No., followed by a detail or line number the particular item(s) for which request for substitution is initiated.

2. Complete data substantiating compliance of proposed substitution with Contract Documents.

3. For products, include:

a. Product identification by schedule or tag no., including manufacturer's name.

b. Manufacturer's literature, marked to indicate specific model, type, size, and options to be considered:

1) Product Description
2) Performance and test data
3) Reference standards
4) Difference in power demand
5) Dimensional differences for specified unit

c. Submit samples, full size if so required. The District Representative reserves the right to impound samples until physical units are installed on project for comparison purposes. All costs of furnishing and return of samples shall be paid by requester. District Representative is not responsible for loss of or damage to samples.

d. Name and address of similar projects where product was used, date of installation, and field performance data on installation.

4. For construction methods, include:

a. Detailed description of proposed method.
b. Drawings illustrating methods.

5. Itemized comparison of proposed substitution with product or method specified.

6. Data relating to changes in construction schedule.

7. Accurate cost data on proposed substitution in comparison with product or method specified.

8. Include with any request a specific statement defining changes in contract time or amount.

D. In making request for substitution, or in using an approved substitute item, Supplier/Manufacturer represents:

1. He has personally investigated proposed product or method, and has determined that it is equal or superior in all respects to that specified, and that it will perform function for which it is intended.

2. Will provide same or better warranty for substitute item as for product or method specified.

3. Will coordinate installation of accepted substitution into work, to include but not be limited to the following:

a. Building and structure modifications as necessary;
b. Additional ancillary equipment to accommodate change;
c. Piping, valving, mechanical, electrical, or instrumentation changes, and,
d. All other changes required for work to be complete in all

respects to permit incorporation of substitution into project.

4. Waives all claims for additional costs related to substitution which subsequently become apparent.

E. Written acceptance or rejection of items presented for substitution will be given within two weeks of receipt of request.

F. In the event the acceptance of a substitute results in a change in Contract Price or Time, or is a deviation from the Contract Documents, a change order will be issued to reflect such change. In the event the acceptance of an alternate does not result in a change in Contract Price or Time, a field order will be issued.

G. Substitutes may be rejected for the following reasons:

1. Acceptance will require substantial revision of Contract Documents or building spaces.

2. If they are in District Representative's opinion, not equal to base product specified, or will not adequately perform function for which intended.

3. If request is not initiated by the Contractor in accordance with this specification section.

1.04 SUBSTITUTION DUE TO UNAVAILABILITY

A. Unavailability of specified item due to strikes, lockouts, bankruptcy, discontinuance of production, proven shortage, or similar occurrences are reasons for substitution after Contract award.

B. Notify District Representative in writing, as soon as condition of unavailability becomes apparent; include substantiating data. Submit request for substitution sufficiently in advance to avoid delays.

C. Submit data as required in paragraph 1.03 above.

PART II - PRODUCTS
(NOT USED)

PART III - EXECUTION
(NOT USED)

END OF SECTION

SECTION 01700

CONTRACT CLOSEOUT

PART I - GENERAL

1.01 REQUIREMENTS INCLUDED

Comply with requirements stated in General Conditions and in Specifications for administrative procedures in closing out the Work.

1.02 SUBSTANTIAL COMPLETION

A. When Contractor considers the Work is substantially complete, he shall submit to the District Representative:

1. A written notice that the Work, or designated portion thereof, is substantially complete.

2. A list of items to be completed or corrected.

3. A copy of all applicable, executed:

- Manufacturer Certifications of Proper testing, Ready for Operation and Completion
- Calibration and Testing Certificates
- Transmittals of Operations and Maintenance Manuals
- Transmittals of Spare Parts
- District's Equipment Training Attendance Sign-in sheets
- Warranties and guarantees of the manufacturer(s).
- Record Drawings

B. Within a reasonable time after receipt of such notice, the District Representative will make an inspection to determine the status of completion.

C. Should the District Representative determine that the Work is not Substantially Complete:

1. The District Representative will promptly notify the Contractor, in writing, giving the reasons therefore.

2. Contractor shall remedy the deficiencies in the Work, and send a second written notice of substantial completion to the District Representative.

3. The District Representative will re-inspect the Work.

D. When the District Representative finds that the Work is Substantially Complete, he will:

1. Prepare and deliver to District a tentative Certificate of Substantial Completion with a tentative list of items to be completed or corrected before final completion.

2. After consideration of any objections made by the District as provided in Conditions of the Contract, and when the District Representative considers the Work Substantially Complete, he will execute and deliver to the Contractor a definite Certificate of Substantial Completion with a revised tentative list of items to be completed or corrected.

1.03 FINAL INSPECTION

A. When Contractor considers the Work to be complete, he shall submit written certification that:

1. Contract Documents have been reviewed.

2. Work has been inspected for compliance with Contract Documents.

3. Work has been completed in accordance with Contract Documents.

4. Equipment and systems have been tested in the presence of the District's representative and are operational.

5. Work is completed and ready for final inspection.

B. The District Representative will make an inspection to verify the status of completion with reasonable promptness after receipt of such certification.

C. Should the District Representative consider that the Work is incomplete or defective:

1. The District Representative will promptly notify the Contractor in writing, listing the incomplete or defective work.

2. Contractor shall take immediate steps to remedy the stated deficiencies, and send a second written certification to the District Representative that the Work is complete.

3. The District Representative will re-inspect the Work.

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

1.04 REINSPECTION FEES

A. Should the District Representative perform re-inspections, due to failure of the Work, to comply with the claims of status of completion made by the Contractor:

1. District will deduct the amount of such compensation from the final payment to the Contractor.

1.05 CONTRACTOR'S CLOSEOUT SUBMITTALS TO DISTRICT

A. Evidence of compliance with requirements of governing authorities.

B. Project Record Documents and Record Drawings.

C. Operating and Maintenance Data, Instructions to District's Personnel.

D. Warranties and Bonds, w/ a log of start dates and expiration dates.

E. Spare Parts, Maintenance Materials and Specific Tools.

F. Evidence of Payment and Release of Liens.

G. Certificate of Insurance for Products and Completed Operations.

H. Contractor's Final Affidavit.

I. Lien Waivers from Subcontractors and Suppliers.

J. Consent of Surety from the bonding company.

K. Contractor's Guarantee.

1.06 FINAL ADJUSTMENT OF ACCOUNTS

A. Submit a final statement of accounting to the District.

B. Statement shall reflect all adjustments to the Contract Sum:

1. The original Contract Sum.

2. Additions and deductions resulting from:

    a. Previous Change Orders.

    b. Unit Prices.

    c. Deductions for uncorrected Work.

    d. Penalties and Bonuses.

    e. Deductions for liquidated damages.

    f. Deductions for re-inspection payments.

    g. Other adjustments.

3. Total Contract Sum, as adjusted.

4. Previous payments.

5. Sum remaining due.

C. District Representative will prepare a final Change Order, reflecting approved adjustments to the Contract Price, which were not previously made by Change Orders.

1.07 FINAL APPLICATION FOR PAYMENT

A. Contractor shall submit the final Application for Payment in accordance with procedures and requirements stated in the General Conditions.

PART II – PRODUCTS
(Not Used)

PART III – EXECUTION
(Not Used)

END OF SECTION

SECTION 01710

CLEANING

PART I - GENERAL

1.01 SCOPE OF WORK

A. The Contractor shall execute cleaning during progress of Work and at completion of the Work as required by the General Conditions.

1.02 DISPOSAL REQUIREMENTS

A. The Contractor shall conduct cleaning and disposal operations to comply with all applicable Laws and Regulations.

PART II – MATERIALS

2.01 MATERIALS

A. The Contractor shall use only those cleaning materials which do not create hazards to health or property and which do not damage surfaces.

B. The Contractor shall use only those cleaning materials and methods recommended by the Manufacturer of the surface material to be cleaned.

C. The Contractor shall use cleaning materials only on surfaces so recommended by cleaning material Manufacturer.

PART III – EXECUTION

3.01 CLEANING DURING CONSTRUCTION

A. The Contractor shall execute daily cleaning to keep the Work, the site and adjacent properties free from accumulations of waste materials, water, eroded material, rubbish and windblown debris resulting from construction operations.

B. The Contractor shall provide suitable on-site containers for the daily collection of all waste materials, debris and rubbish.

C. The Contractor shall remove waste materials, debris and rubbish from site containers periodically and dispose of at properly licensed and permitted disposal areas away from the site.

D. The Contractor shall schedule operations so that dust and other

contaminants resulting from the cleaning process do not fall on wet or newly-coated surfaces.

E. The Contractor shall remove from the site all surplus materials and temporary structures when no further need therefore develops and as approved by the District Representative. The Contractor shall be responsible and liable for all spillage and shall incur all associated costs including, but not limited to, costs related to repair and maintenance resulting from any such damage.

3.02 FINAL CLEANING

A. The Contractor shall employ skilled workmen for final cleaning.

B. The Contractor shall remove all grease, mastic, adhesives, dust, dirt, stains, fingerprints, labels and all other foreign materials from sight-exposed interior and exterior surfaces.

C. Prior to Final Completion, the Contractor shall conduct an inspection of sight-exposed interior and exterior surfaces and all Work areas, to verify that the entire Work and the entire construction area of the Work are clean.

END OF SECTION

SECTION 01720

RECORD DRAWINGS

PART 1 -- GENERAL

1.1 GENERAL

A. The District shall provide, at the pre-construction conference, a reproducible set of plans. The record information shall be transferred from the Contractor's construction drawings to the reproducible drawings with waterproof drawing ink or via CADD updates. All changes shall be noted in red block lettering or typed and/or indicated with a clouded marking around the change detail.

B. Contractor's record drawings shall be maintained in accordance with the General Conditions, all specific directions in the specifications and the Special Conditions.

C. On the Record drawings, the Contractor shall mark all project conditions, locations, configurations, and any other changes or deviations which may vary from the details represented on the original Contract Drawings, including buried or concealed construction and utility features which are revealed during the course of construction. Special attention shall be given to recording the horizontal and vertical location of all buried utilities that differ from the locations indicated or which were not indicated on the Contract Drawings. Contractor shall record on the record drawings all items called out and specified by the Engineer of Record for updating on the original plans during construction.

Said record drawings shall be supplemented by any detailed sketches or typewritten changes to the specifications, as necessary or directed to indicate fully the work as actually constructed. These master record drawings of the contractor's representation of as-built conditions, including all revisions made necessary by addenda, change orders, and the like shall be maintained up-to-date during the progress of the work.

D. Record drawings shall be accessible to the District Representative or the professional at all times during the construction period.

E. Applications for Payment will not be approved if the record drawings are not kept current and not until the completed record drawings showing all variations between the work as actually constructed and as originally shown on the Contract Drawings or other Contract Documents have been inspected and accepted by the District Representative or project representative. Prior to the submission of the contractor's periodic

application for payment, contractor shall provide to the District for review and approval, one (1) set of relevant record drawing sheets, showing red lined changes of as-built conditions.

G. Upon completion of the project and prior to the approval of final payment, the contractor shall submit for approval four (4) sets of record drawing prepared by and signed and sealed by a licensed Florida surveyor for review and approval by the District representative. The record drawing sheet size shall by 24"X36". Once the record drawings are approved by the District Representative the contractor shall compile and certify the record drawings and provide four (4) copies of record drawings, one (1) set of reproducible record drawings and four (4) digital pdf formatted copies of the record drawings. Contractor shall leave all clouds, mark ups, and line outs on the one (1) set of reproducible record drawings.

H. The contractor's final pay request shall not be accepted by the District until the reproducible record drawings are approved by the District Representative.

1.2 MINIMUM REQUIREMENTS

A. All as-built conditions must be noted as follows:

1. Invert elevation of all services, and gravity stub outs for future connections, including terminal point. Locate by three ties to permanent landmarks.

2. Limits, dimensions, and depth of concrete encasing, encasing pipe and sheeting. Locate by station/offset.

3. Horizontal and vertical locations of other public and private utilities when they are encountered during construction. Locate by station/offset.

4. Indicate size, type, depth, location, and limits of any abandoned pipe that is part of design. Include type of abandonment (i.e. end plug, mortar filled, etc.). Locate by station/offset.

5. Storm Sewers and Structures: Station and offset for all catch basins, manholes, spillways and other structures. Elevations of grates/lids, throats, ditch blocks, weirs, and orifices. Invert elevations for all pipes and structures. Pipe size, type, material, slope, and distance between structures.

6. Roadway: Elevations of all roadway vertical control points and terminations of curb returns. As-built cross sections superimposed

on the proposed template every 100 feet. Elevations shown at the right-of-way line, toe of slope, top of slope, back of sidewalk, front of sidewalk, top of curb, edge of pavement, top of median curb and centerline of construction.

7. Surface Water Features: Cross-sectional surveys every 100 feet through all stormwater ponds, ditches and graded/planted wetland areas to verify that final grades are in accordance with project permits and the contract documents.

B. All changes and significant deviations from the original design plans must be included as described below:

1. Pipe diameter and material, including services.

2. Elevations and dimensions of diversion weirs, earthen weirs, spillway and control structure weir openings.

3. Gravity Storm Sewers: Locations all manholes and control structures. Elevations for top of manholes and pipe inverts. Pipe size, type, slope, and distance between manholes.

All deviations must be highlighted on the record drawings using a "cloud". If any revisions to the original plans required a Change Order, the "cloud" shall include the Change Order number.

* A significant deviation is defined as follows:

1) Horizontal – More than 1.0 foot for geoweb structures and pipes.

2) Vertical - More than 0.10 feet for geoweb structures and gravity pipes.

3) More than 0.20 feet for surface excavations and ditch fills.

PART 2 -- PRODUCTS
(Not Used)

PART 3 -- EXECUTION
(Not Used)

END OF SECTION

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SECTION 02104

PREVENTION, CONTROL, AND ABATEMENT OF
EROSION AND WATER POLLUTION

PART I – GENERAL

1.01 SCOPE OF WORK

A. Provide erosion control measures on the project and in areas outside the right-of-way where work is accomplished in conjunction with the project, so as to prevent pollution of water, detrimental effects to public or private property adjacent to the project right-of-way and damage to work on the project. Construct and maintain temporary erosion control features or, where practical, construct and maintain permanent erosion control features as shown in the Plans or as may be directed by the District Representative.

B. Coordinate the installation of temporary erosion control features with the construction of the permanent erosion control features to the extent necessary to ensure economical, effective, and continuous control of erosion and water pollution throughout the life of the Contract.

Due to unanticipated conditions, the District Representative may direct the use of control features or methods other than those included in the original Contract. In such event, the District will pay for this additional work as unforeseeable work.

1.02 CONTROL OF CONTRACTOR'S OPERATIONS WHICH MAY RESULT IN WATER POLLUTION

A. Prevent pollution of streams, canals, lakes, reservoirs, and other water impoundments with fuels, oils, bitumens, calcium chloride, or other harmful materials. Also, conduct and schedule operations to avoid or otherwise minimize pollution or siltation of such water impoundments, and to avoid interference with movement of migratory fish. Do not dump any residue from dust collectors or washers into any live stream.

B. Restrict construction operations in rivers, streams, lakes, tidal waters, reservoirs, canals, and other water impoundments to those areas where it is necessary to perform filling or excavation to accomplish the work shown in the Plans and to those areas which must be entered to construct temporary or permanent structures. As soon as conditions permit, promptly clear rivers, streams, and impoundments of all obstructions placed therein or caused by construction operations.

C. Do not frequently ford live streams with construction equipment. Wherever an appreciable number of stream crossings are necessary at any one location, use

a temporary bridge or other structure.

D. Except as necessary for construction, do not deposit excavated material in rivers, streams, canals, or impoundments, or in a position close enough thereto, to be washed away by high water or runoff.

E. Where pumps are used to remove highly turbid waters from enclosed construction areas such as cofferdams or forms, treat the water by one or more of the following methods prior to discharge into State waters: pumping into grassed swales or appropriate vegetated areas or sediment basins, or confined by an appropriate enclosure such as turbidity barriers when other methods are not considered appropriate.

F. Do not disturb lands or waters outside the limits of construction as staked, except as authorized by the District Representative.

G. Obtain the District Representative's approval for the location of, and method of operation in, borrow pits, material pits, and disposal areas furnished for waste material from the project (other than commercially operated sources) such that erosion during and after completion of the work will not result in probability of detrimental siltation or water pollution.

PART II – PRODUCTS

2.01 MATERIALS FOR TEMPORARY EROSION CONTROL

A. The District Representative will not require testing of materials used in construction of temporary erosion control features other than as provided for geotextile fabric in Section 02514 unless such material is to be incorporated into the completed project. When no testing is required, the District Representative will base acceptance on visual inspection.

B. The Contractor may use new or used materials for the construction of temporary silt fence, staked turbidity barriers, and floating turbidity barrier not to be incorporated into the completed project, subject to the approval of the District Representative.

2.02 PRECONSTRUCTION REQUIREMENTS.

A. At the Preconstruction Conference, provide to the District an Erosion Control Plan meeting the requirements or special conditions of all permits authorizing project construction.

B. When a DEP generic permit is issued, the Contractor's Erosion Control Plan shall be prepared to accompany the Stormwater Pollution Prevention Plan (SWPPP). Ensure the Erosion Control Plan includes procedures to control off-site tracking

of soil by vehicles and construction equipment and a procedure for cleanup and reporting of non-storm water discharges, such as contaminated groundwater or accidental spills. Do not begin any soil disturbing activities until District approval of the Contractor's Erosion Control Plan by District Representative, including required signed certification statements.

C. Failure to sign any required documents or certification statements will be considered a default of the Contract. Any soil disturbing activities performed without the required signed documents or certification statements may be considered a violation of the DEP Generic Permit.

D. When the SWPPP is required, prepare the Erosion Control Plan in accordance with the planned sequence of operations and present in a format acceptable to the District Representative. The Erosion Control Plan shall describe, but not be limited to, the following items or activities:

1. For each phase of construction operations or activities, supply the following information:

    a. Locations of all erosion control devices
    b. Types of all erosion control devices
    c. Estimated time erosion control devices will be in operation
    d. Monitoring schedules for maintenance of erosion control devices
    e. Methods of maintaining erosion control devices
    f. Containment or removal methods for pollutants or hazardous wastes

2. The name and telephone number of the person responsible for monitoring and maintaining the erosion control devices.

3. Submit for approval the Erosion Control Plans meeting paragraphs 3a, 3b, or 3c below:

    a. Projects permitted by the Southwest Florida Water Management District (SWFWMD), require the following:

        Submit a copy of the Erosion Control Plan to the District Representative for review and to the appropriate SWFWMD Office for review and approval. Include the SWFWMD permit number on all submitted data or correspondence.

        The Contractor may schedule a meeting with the appropriate SWFWMD Office to discuss his Erosion Control Plan in detail, to expedite the review and approval process. Advise the District Representative of the time and place of any meetings scheduled with SWFWMD.

        Do not begin construction activities until the Erosion Control Plan receives

written approval from both SWFWMD and the District Representative.

PART III – EXECUTION

3.01 CONSTRUCTION REQUIREMENTS

A. Limitation of Exposure of Erodible Earth:

The District Representative may limit the surface areas of unprotected erodible earth exposed by the construction operation and may direct the Contractor to provide erosion or pollution control measures to prevent contamination of any river, stream, lake, tidal waters, reservoir, canal, or other water impoundments or to prevent detrimental effects on property outside the project right-of-way or damage to the project. Limit the area in which excavation and filling operations are being performed so that it does not exceed the capacity to keep the finish grading, turf, sod, and other such permanent erosion control measures current in accordance with the accepted schedule.

Do not allow the surface area of erodible earth that clearing and grubbing operations or excavation and filling operations expose to exceed 750,000 square feet without specific prior approval by the District Representative. This limitation applies separately to clearing and grubbing operations and excavation and filling operations.

The District Representative may increase or decrease the amount of surface area the Contractor may expose at any one time.

B. Incorporation of Erosion and Sediment Control Features

Incorporate permanent erosion control features into the project at the earliest practical time. Use temporary erosion and sediment control features found in the State of Florida Erosion and Sediment Control Designer and Reviewer Manual (E&SC Manual) to correct conditions that develop during construction which were not foreseen at the time of design, to control erosion and sediment prior to the time it is practical to construct permanent control features, or to provide immediate temporary control of erosion and sediment that develops during normal construction operations, which are not associated with permanent erosion control features on the project. An electronic version of the E&SC Manual can be found at the following URL:

https://www.fdot.gov/docs/default-source/roadway/drainage/files/Erosion-Sediment-Control.pdf

Install all sediment control devices in a timely manner to ensure the control of

sediment and the protection of lakes, streams, gulf or ocean waters, or any wetlands associated therewith and to any adjacent property outside the right-of-way as required.

At sites where exposure to such sensitive areas is prevalent, complete the installation of any sediment control device prior to the commencement of any earthwork.

After installation of sediment control devices, repair portions of any devices damaged at no expense to the District. The District Representative may authorize temporary erosion and sediment control features when finished soil layer is specified in the Contract and the limited availability of that material from the grading operations will prevent scheduled progress of the work or damage the permanent erosion control features.

C. Scheduling of Successive Operations:

Schedule operations such that the area of unprotected erodible earth exposed at any one time is not larger than the minimum area necessary for efficient construction operations, and the duration of exposure of uncompleted construction to the elements is as short as practicable.

Schedule and perform clearing and grubbing so that grading operations can follow immediately thereafter. Schedule and perform grading operations so that permanent erosion control features can follow immediately thereafter if conditions on the project permit.

D. Details for Temporary Erosion and Sediment Control Features:

1. General:

Use temporary erosion, sediment and water pollution control features found in the E&SC Manual. These features consist of, but are not limited to, temporary turf, rolled erosion control products, sediment containment systems, runoff control structures, sediment barriers, inlet protection systems, silt fences, turbidity barriers, and chemical treatment. For design details for some of these items, refer to the Design Standards and E&SC Manual.

2. Temporary Turf:

The District Representative may designate certain areas of turf or sod constructed in accordance with Section 02570 as temporary erosion control features. For areas not defined as sod, constructing temporary turf by seeding only is not an option for temporary erosion control under this Section. The District Representative may waive the turf establishment requirements of

Section 02570 for areas with temporary turf that will not be a part of the permanent construction.

3. Runoff Control Structures:

   Construct runoff control structures in accordance with the details shown in the Plans, the E&SC Manual, or as may be approved as suitable to adequately perform the intended function.

4. Sediment Containment Systems:

   Construct sediment containment systems in accordance with the details shown in the Plans, the E&SC Manual, or as may be approved as suitable to adequately perform the intended function. Clean out sediment containment systems as necessary in accordance with the Plans or as directed.

5. Sediment Barriers:

   Provide and install sediment barriers according to details shown in the Plans, as directed by the District Representative, or as shown in the E&SC Manual to protect against downstream accumulation of sediment. Sediment Barriers include, but are not limited to synthetic bales, silt fence, fiber logs and geosynthetic barriers. Reusable barriers that have had sediment deposits removed may be reinstalled on the project as approved by the District Representative.

6. Silt Fence:

   a. General:

      Furnish, install, maintain, and remove silt fences, in accordance with the manufacturer's directions, these Specifications, the details as shown in the Plans, the Design Standards, and the E&SC Manual.

   b. Materials and Installation:

      Use a geotextile fabric made from woven or nonwoven fabric, meeting the physical requirements of Section 02514 according to those applications for erosion control.

      Choose the type and size of posts, wire mesh reinforcement (if required), and method of installation. Do not use products which have a separate layer of plastic mesh or netting. Provide a durable and effective silt fence that controls sediment comparable to the Design Standards and the E&SC

Manual.

Erect silt fence at upland locations, across ditch-lines and at temporary locations shown in the Plans or approved by the District Representative where continuous construction activities change the natural contour and drainage runoff. Do not attach silt fence to existing trees unless approved by the District Representative.

c. Inspection and Maintenance:

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

Remove sediment deposits when the deposit reaches approximately 1/2 of the volume capacity of the silt fence or as directed by the District Representative. Dress any sediment deposits remaining in place after the silt fence is no longer required to conform with the finished grade, and prepare and seed them in accordance with Section 02570.

7. Floating Turbidity Barriers and Staked Turbidity Barriers:

Install, maintain, and remove turbidity barriers to contain turbidity that may occur as the result of dredging, filling, or other construction activities which may cause turbidity to occur in the waters of the State. The Contractor may need to deploy turbidity barriers around isolated areas of concern such as seagrass beds, coral communities, etc. both within as well as outside the right-of-way limits. The District Representative will identify such areas. Place the barriers prior to the commencement of any work that could impact the area of concern. Install the barriers in accordance with the details shown in the Plans or as approved by the District Representative. Ensure that the type barrier used and the deployment and maintenance of the barrier will minimize dispersion of turbid waters from the construction site. The District Representative may approve alternate methods or materials.

Operate turbidity barriers in such a manner to avoid or minimize the degradation of the water quality of the surrounding waters and minimize damage to areas where floating barriers installed.

8. Inlet Protection System:

Furnish and install inlet protection systems as shown in the Plans, Design

Standards and the E&SC Manual.

9. Rolled Erosion Control Products (RECPs):

   a. General:
      Install RECPs in locations where temporary protection from erosion is needed. Two situations occur that require artificial coverings. The two situations have differing material requirements, which are described below.

      i. Use RECPs composed of natural or synthetic fiber mats, plastic sheeting, or netting as protection against erosion, when directed by the District Representative, during temporary pauses in construction caused by inclement weather or other circumstances. Remove the material when construction resumes.

      ii. Use RECPs as erosion control blankets, at locations shown in the Plans, to facilitate plant growth while permanent grassing is being established. For the purpose described, use non-toxic, biodegradable, natural or synthetic woven fiber mats. Install erosion control blankets capable of sustaining a maximum design velocity of 6.5 ft/sec as determined from tests performed by Utah State University, Texas Transportation Institute or an independent testing laboratory approved by the District Representative. Furnish to the District Representative, two certified copies of manufacturers test reports showing that the erosion control blankets meet the requirements of this Section. Certification must be attested, by a person having legal authority to bind the manufacturing company. Also, furnish two 4 by 8 inch samples for product identification. The manufacturers test records shall be made available to the District Representative upon request. Leave the material in place, as installed, to biodegrade.

10. Chemical Treatment:

    Provide chemical treatment in accordance with the E&SC Manual. Chemical treatment may be used to clarify turbid or sediment laden water that does not yet meet state water quality standards or as an amendment to other erosion prevention and sediment control products to aid in their performance. The contractor must provide all of the required toxicity testing information in accordance with the E&SC Manual to the District Representative for review and acceptance prior to using any chemical treatment on the project site.

E. Removal of Temporary Erosion Control Features:

In general, remove or incorporate into the soil any temporary erosion control features existing at the time of construction of the permanent erosion control

features in an area of the project in such a manner that no detrimental effect will result. The District Representative may direct that temporary features be left in place.

3.02 Maintenance of Erosion and Sediment Control Features.

Provide routine maintenance of permanent and temporary erosion and sediment control features, at no expense to the District, until the project is complete and accepted. If reconstruction of such erosion and sediment control features is necessary due to the Contractor's negligence or carelessness or, in the case of temporary erosion and sediment control features, failure by the Contractor to install permanent erosion control features as scheduled, the Contractor shall replace such erosion control features at no expense to the District. If reconstruction of permanent or temporary erosion and sediment control features is necessary due to factors beyond the control of the Contractor, the Contractor shall replace such erosion control features at no expense to the District..

Inspect all erosion and sediment control features at least once every seven calendar days and within 24 hours of the end of a storm of 0.50 inches or greater. Maintain all erosion control features as required in the Stormwater Pollution Prevention Plan, Contractor's Erosion Control Plan and as specified in the State of Florida Department of Environmental Protection Generic Permit for Stormwater Discharge from Large and Small Construction Activities.

3.03 Protection During Suspension of Contract Time.

If it is necessary to suspend the construction operations for any appreciable length of time, shape the top of the earthwork in such a manner to permit runoff of rainwater, and construct earth berms along the top edges of embankments to intercept runoff water. Provide temporary slope drains to carry runoff from cuts and embankments that are in the vicinity of rivers, streams, canals, lakes, and impoundments. Locate slope drains at intervals of approximately 500 feet, and stabilize them by paving or by covering with waterproof materials. Should such preventive measures fail, immediately take such other action as necessary to effectively prevent erosion and siltation. The District Representative may direct the Contractor to perform, during such suspensions of operations, any other erosion and sediment control work deemed necessary.

END OF SECTION

SECTION 02110

CLEARING AND GRUBBING

PART I – GENERAL

1.01 SCOPE OF WORK

A. Clear and grub within the areas of the proposed Work and any other areas shown in the Plans to be cleared and grubbed. Unless otherwise specified in the Plans, remove and dispose of all trees, stumps, roots and other such protruding objects, buildings, structures, appurtenances, existing flexible asphalt pavement, and other facilities necessary to prepare the area for the proposed construction. Remove and dispose of all product and debris not required to be salvaged or not required to complete the construction.

Also, perform certain miscellaneous work the District Representative considers necessary for the complete preparation of the overall project site, as follows:

1. Plug any water wells that are encountered within the project area and that are to be abandoned.

2. Level the terrain outside the limits of construction for purposes of facilitating maintenance and other post-construction operations in accordance with Section 02110-3.09.

3. Trim trees and shrubs within the project area that are identified in the Contract Documents.

Meet the requirements for such miscellaneous work as specified in Section 02110-3.09.

PART II – PRODUCTS
(NOT USED)

PART III - EXECUTION

3.01 STANDARD CLEARING AND GRUBBING

A. Work Included:

Unless otherwise specified on the Plans, completely remove and dispose of all buildings, timber, brush, stumps, roots, rubbish, debris, and all other obstructions resting on or protruding through the surface of the existing ground and the surface of excavated areas, and all other structures and obstructions necessary to be removed and for which other items of the Contract do not specify the

removal thereof, including septic tanks, building foundations, and pipes.

Perform Standard Clearing and Grubbing within the following areas:

- All areas where excavation is to be done, including borrow pits, lateral ditches, right-of-way ditches, etc.
- All areas where embankments will be constructed.
- All areas where structures will be constructed, including pipe culverts and other pipe lines.

B. Depths of Removal of Roots, Stumps, and Other Debris

In all areas where excavation is to be performed, or embankments are to be constructed, remove roots and other debris to a depth of 12 inches below the ground surface. Remove roots and other debris from all excavated material to be used in the construction of embankments. Plow the surface to a depth of at least 6 inches, and remove all roots thereby exposed to a depth of at least 12 inches. Completely remove and dispose of all stumps as identified in the Contract Documents.

Remove all roots, etc., protruding through or appearing on the surface of the completed excavation within roadway areas and for structures, to a depth of at least 12 inches below the finished excavation surface.

Remove or cut off all stumps, roots, etc., below the surface of the completed excavation in borrow pits, material pits, and lateral ditches.

Within all other areas where Standard Clearing and Grubbing is to be performed remove roots and other debris projecting through or appearing on the surface of the original ground to a depth of 12 inches below the surface, but do not plow or harrow these areas.

C. Trees to Remain

As an exception to the above provisions, where so directed by the District Representative, trim, protect, and leave standing desirable trees within the project area. Trim branches of trees extending over the area occupied by any roadway as directed, to give a clear height of 16 feet above the roadway.

D. Boulders

Remove any boulders encountered in the excavation (other than as permitted under the provisions of Section 02120) or found on the surface of the ground. When approved by the District Representative, place boulders in neat piles within the Project limits. The Contractor may stockpile boulders encountered in

furnished borrow areas, which are not suitable for use in the embankment construction, within the borrow area.

3.02 SELECTIVE CLEARING AND GRUBBING

A. The Contractor shall remove and dispose of all vegetation, obstructions, etc., as provided above except that, where so elected, the Contractor may cut roots, etc., flush with the ground surface. Completely remove and dispose of stumps. Entirely remove undergrowth except in specific areas designated by the District Representative to remain for aesthetic purposes. Trim, protect, and leave standing desirable trees, with the exception of such trees as the District Representative may designate to be removed in order to facilitate site maintenance. Remove undesirable or damaged trees as so designated by the District Representative. Perform Selective Clearing and Grubbing only in areas so designated in the Plans.

3.03 PROTECTION OF PROPERTY REMAINING IN PLACE

A. Protect and do not displace property obstructions which are to remain in place, such as buildings, sewers, drains, water or gas pipes, conduits, poles, walls, posts, bridges, etc.

3.04 REMOVAL OF BUILDINGS

A. Parts to be Removed

Completely remove all parts of the buildings, including utilities, plumbing, foundations, floors, basements, steps, connecting concrete sidewalks or other pavement, septic tanks, and any other appurtenances, by any practical manner which is not detrimental to other property and improvements. Remove utilities to the point of connection to the utility authority's cut-in. After removing the sewer connections to the point of cut-in, construct a concrete plug at the cut-in point, as directed by the District Representative, except where the utility owners may elect to perform their own plugging. Contact the appropriate utility companies prior to removal of any part of the building to ensure disconnection of services.

B. Removal by Others

Where buildings within the area to be cleared and grubbed are so specified to be removed by others, remove and dispose of any foundations, curtain walls, concrete floors, basements or other foundation parts which might be left in place after such removal of buildings by others.

3.05 REMOVAL OF EXISTING STRUCTURES

A. Structures to be Removed:

Remove and dispose of the materials from existing structures. Remove the following:

1. Those structures, or portions of structures, shown in the Plans to be removed;
2. Those structures, or portions of structures, found within the limits of the area to be cleared and grubbed, and directed by the District Representative to be removed;
3. Those structures, or portion of structures, which are necessary to be removed in order to construct new structures; and
4. Other appurtenances or obstructions which may be designated in the Contract Documents as to be included in an item of payment for the work under this Article. Provide detailed schedule information to the District Representative 15 working days prior to the commencement of any demolition or renovation of any structures, even if asbestos is not found on the project, for the District Representative's use in notifying the Department of Environmental Protection (DEP) on DEP Form 62-257.900(1) "Notice of Asbestos Renovation or Demolition".

B. Method of Removal

1. General

Remove the structures in such a way so as to leave no obstructions to any proposed new structures or to any waterways. Pull, cut off, or break off pilings to the requirements of the permit or other Contract Documents, or if not specified, not less than 2 feet below the finish ground line. In the event that the Plans indicate channel excavation to be done by others, consider the finish ground line as the limits of such excavation. For materials which are to remain the property of the District or are to be salvaged for use in temporary structures, avoid damage to such materials, and entirely remove all bolts, nails, etc. from timbers to be so salvaged. Mark structural steel members for identification as directed.

2. Removal of Steel Members With Hazardous Coatings:

Provide to the District Representative for approval, a copy of the "Contractor's Lead in Construction Compliance Program" from the firm actually removing and disposing of these steel members before any members are disturbed.

Vacuum power tool clean any coated steel member to bare metal as defined by SSPC-SP11 a minimum of 4 inches either side of any area to be heated (torch cutting, sawing, grinding, etc.) in accordance with 29 CFR 1926.354. Abrasive blasting is prohibited.

Provide air supplied respirators in accordance with 29 CFR 1926.62 and 29

CFR 1910.134.

C. Partial Removal of Bridges

On concrete bridges to be partially removed and widened, remove concrete by manually or mechanically operated pavement breakers, by concrete saws, by chipping hammers, or by hydro-demolition methods. Do not use explosives. Where concrete is to be removed to neat lines, use concrete saws or hydro-demolition methods capable of providing a reasonably uniform cleavage face. If the equipment used will not provide a uniform cut without surface spalling, first score the outlines of the work with small trenches or grooves. For all demolition methods, submit for review and approval of the District Representative, a demolition plan that describes the method of removal, equipment to be used, types of rebar splices or couplers, and method of straightening or cutting rebars. In addition, for hydrodemolition, describe the method for control of water or slurry runoff and measures for safe containment of concrete fragments that are thrown out by the hydro-demolition machine.

D. Authority of U.S. Coast Guard

For structures in navigable waters, when constructing the project under authority of a U.S. Coast Guard permit, the U.S. Coast Guard may inspect and approve the work to remove any existing structures involved therein, prior to acceptance by the District.

E. Asbestos Containing Materials (ACM) Not Identified Prior to the Work:

When encountering or exposing any condition indicating the presence of asbestos, cease operations immediately in the vicinity and notify the District Representative.

Make every effort to minimize the disturbance of the ACM. Immediately provide for the health and safety of all workers at the job site and make provisions necessary for the health and safety of the public that may be exposed to any potentially hazardous conditions. Provisions shall meet all applicable laws, rules or regulations covering hazardous conditions and will be in a manner commensurate with the gravity of the conditions.

The District Representative will notify the District Contamination Assessment Coordinator who will coordinate selecting and tasking the District's Asbestos Contractor or contamination Assessment/Remediation Contractor (CAR). Provide access to the potential contamination area. Preliminary investigation by the Asbestos/CAR Contractor will determine the course of action necessary for site security and the steps necessary to resolve the contamination issue.

The Asbestos/CAR Contractor will delineate the contamination area(s), any

staging or holding area required. Coordinate with the Asbestos/CAR Contractor and the District Representative to develop a work plan that will provide the Asbestos/CAR Contractor's operations schedule with projected completion dates for the final resolution of the contamination issue.

The Asbestos/CAR Contractor will maintain jurisdiction over activities inside any outlined contaminated areas and any associated staging holding areas. The Asbestos/CAR Contractor will be responsible for the health and safety of workers within the delineated areas. Provide continuous access to these areas for the Asbestos/CAR Contractor and representatives of regulatory or enforcement agencies having jurisdiction.

Both Contractors will use the schedule as a basis for planning the completion of both work efforts. The District may grant the Contract Time extensions in accordance with the Contract Documents.

Cooperate with the Asbestos/CAR Contractor to expedite integration of the Asbestos/CAR Contractor's operations into the construction project. The Prime Contractor is not expected to engage in routine construction activities involving asbestos containing materials. Adjustments to quantities or to Contract unit prices will be made according to work additions or reductions on the part of the Prime Contractor.

The District Representative will direct the Prime Contractor when operations may resume in the affected area.

3.06 REMOVAL OF EXISTING PAVEMENT

Remove and dispose of existing rigid portland cement concrete pavement, sidewalk, slope pavement, ditch pavement, curb, and curb and gutter etc., where shown in the Plans or ordered by the District Representative to be removed or where required because of the construction operations. Retaining walls, drainage structures and flexible asphalt pavement are not included in the work under this Article.

3.07 OWNERSHIP OF MATERIALS

Except as may be otherwise specified in the Contract Documents, the Contractor shall take ownership of all buildings, structures, appurtenances, and other materials removed by him and shall dispose of them in accordance with Section 02110-3.08.

3.08 DISPOSAL OF MATERIALS

A. General

Stack materials designated to remain the property of the District in neat piles within the Project Area as directed by the District Representative. Dispose of

timber, stumps, brush, roots, rubbish, and other objectionable material resulting from clearing and grubbing in areas and by methods meeting the applicable requirements of all Local, State and Federal regulations. Do not block waterways by the disposal of debris.

B. Burning Debris

Where burning of such materials is permitted, perform all such burning in accordance with the applicable laws, ordinances, and regulations. Perform all burning at locations where trees and shrubs adjacent to the cleared area will not be harmed.

C. Timber and Crops

The Contractor may not sell any merchantable timber, trees, and crops that are cleared under the operations of clearing and grubbing. The timber, trees, or crops be burned at or near the site of their removal, as approved by the District Representative.

D. Disposal of Treated Wood

Treated wood, including that which comes from bridge channel fender systems, must be handled and disposed of properly during removal. Treated wood should not be cut or otherwise mechanically altered in a manner that would generate dust or particles without proper respiratory and dermal protection. The treated wood must be disposed of in at least a lined solid waste facility or through recycling/reuse. Treated wood shall not be disposed by burning or placement in a construction and demolition (C&D) debris landfill. All compensation for the cost of removal and disposal of treated wood will be included in the Cost of Removal of Existing Structures.

E. Hazardous Materials/Waste

Handle, transport and dispose of hazardous materials in accordance with all Local, State and Federal requirements including the following:

- SSPC Guide 7
- Federal Water Pollution Control Act, and
- Resource Conservation and Recover Act (RCRA).

Accept responsibility for the collection, sampling, classification, packaging, labeling, accumulation time, storage, manifesting, transportation, treatment and disposal of hazardous waste, both solid and liquid. Separate all solid and liquid waste and collect all liquids used at hygiene stations and handle as hazardous materials/waste. Obtain written approval from the District Representative for all

hazardous materials/waste stabilization methods before implementation.

Obtain an EPA/FDEP Hazardous Waste Identification Number (EPA/FDEP ID Number) before transporting and/or disposal of any hazardous materials/waste.

List the District as the generator of all hazardous materials/waste
.
Submit the following for the District Representatives' approval before transporting, treatment or disposal of any hazardous materials/waste:

- Name, address and qualifications of the transporter,
- Name, address and qualifications of the treatment facility,
- Proposed treatment and/or disposal of all Hazardous Materials/Waste.

Transport all hazardous materials/waste in accordance with applicable 40 CFR 263 Standards. Provide a copy of all completed Hazardous Materials/Waste manifest/bills of lading to the District Representative within 21 days of each shipment.

1. Steel Members With Hazardous Coating

   Dispose of steel members with hazardous coating in one of the following manners:

   - Deliver the steel members and other hazardous waste to a licensed recycling or treatment facility capable of processing steel members with hazardous coating.
   - Deliver the steel members with hazardous coating to a site designated by the District Representative for use as an offshore artificial reef. Deliver any other hazardous materials/waste to a licensed hazardous materials/waste recycling treatment facility.

   Dismantle and/or cut steel members to meet the required dimensions of the recycling facility, treatment facility or offshore artificial reef agency.

   All compensation for the cost of removal and disposal of hazardous materials/waste will be included in the Cost of Removal of Existing Structures.

2. Certification of Compliance:

   Furnish two copies of Certification of Compliance from the firm actually removing and disposing of the hazardous materials/waste stipulating, the hazardous materials/waste has been handled, transported and disposed of in accordance with this Specification. The Certification of Compliance shall be

attested to by a person having legal authority to bind the company.

Maintain all records required by this Specification and ensure these records are available to the District upon request.

3.09 MISCELLANEOUS OPERATIONS

A. Water Wells Required to be Plugged:

Fill or plug all water wells within the Project Area, including areas of borrow pits and lateral ditches that are not to remain in service, in accordance with applicable Water Management District rules or the Department of Environmental Protection regulations.

Cut off the casing of cased wells at least 12 inches below the ground line or 12 inches below the elevation of the finished excavation surface, whichever is lower. Water wells, as referred to herein, are defined either as artesian or non-artesian, as follows:

1. An artesian well is an artificial hole in the ground from which water supplies may be obtained and which penetrates any water-bearing rock, the water in which is raised to the surface by natural flow or which rises to an elevation above the top of the water bearing bed. Artesian wells are further defined to include all holes drilled as a source of water that penetrate any water-bearing beds that are a part of the artesian water system of Florida, as determined by representatives of the applicable Water Management District.

2. A non-artesian (water-table) well is a well in which the source of water is an unconfined aquifer. The water in a non-artesian well does not rise above the source bed.

   When the Plans do not indicate whether a non-flowing well is artesian or nonartesian, obtain this information from the District Representative.

B. Landscape Areas

When certain areas of the District Property, outside of the limits of construction, are shown in the Plans or designated by the District Representative to be landscaped, either under the construction Contract or at a later time, remove undesirable trees, stumps, undergrowth, and vegetation, as directed, and preserve and trim natural growth and trees as directed by the District Representative.

C. Leveling Terrain

Within the areas between the limits of construction and the outer limits of clearing and grubbing, fill all holes and other depressions, and cut down all mounds and ridges. Make the area of a sufficient uniform contour so that the District's subsequent mowing and cutting operations are not hindered by irregularity of terrain. Perform this work regardless of whether the irregularities were the result of construction operations or existed originally.

D. Mailboxes

When the Contract Documents require furnishing and installing mailboxes, permit each owner to remove the existing mailbox. Work with the Local Postmaster to develop a method of temporary mail service for the period between removal and installation of the new mailboxes. Install the mailboxes in accordance with the Design Standards.

END OF SECTION

SECTION 02140

TEMPORARY DEWATERING

PART I -GENERAL

1.01 DESCRIPTION

A. The Work to be performed includes the furnishing of all equipment, materials and labor necessary to remove surface or subsurface waters from excavation areas in accordance with the requirements set forth and as shown on the Drawings or as specified.

1.02 QUALITY ASSURANCE

A. The dewatering of any excavation areas and the disposal of the water produced shall be in strict accordance with the latest revision of all Laws and Regulations; with the local, State and Federal permits for the project

PART II - PRODUCTS (Not Applicable)

PART III – EXECUTION

3.01 TEMPORARY DEWATERING

A. The dewatering system shall be in conformity with the overall construction plan.

B. The Contractor shall provide adequate equipment for the removal of surface or subsurface waters that may accumulate in the excavation. Flotation and migration of fines shall be prevented by the Contractor by maintaining a positive and continuous operation of the dewatering system. The Contractor shall be fully responsible and liable for all damages that may result from the operation and/or failure of this system.

C. If subsurface water is encountered, the Contractor shall utilize suitable equipment to adequately dewater the excavation so that it will be dry to a depth of 12-inches below the pipeline subgrade compaction level or over-excavation level, whichever is lower, but not more than 5-feet, to facilitate effective subgrade compaction and to provide for a stable trench bottom. A wellpoint system, trench drain, sump pump operation, or other dewatering method shall be utilized to maintain the excavation in a dry condition for preparation of the trench bottom and until the fills, structures or pipes to be built thereon have been completed to such extent that they will not be floated or otherwise damaged by allowing water levels to return to natural levels. No

water shall be allowed to contact masonry or concrete within 24 hours after being placed.

D. Dewatering shall at all times be conducted in such a manner as to preserve the undisturbed bearing capacity of the subgrade soils at proposed bottom of excavation and to preserve the integrity of adjacent structures and utilities. Well or sump installations shall be constructed and operated continuously with proper sand filters to prevent drawing of finer grained soil from the surrounding ground. Dewatering by trench pumping shall not be permitted if migration of fine grained natural material from bottom, side walls, or bedding material may occur.

E. In the event that satisfactory dewatering cannot be accomplished due to subsurface conditions, or where dewatering could damage existing structures, the Contractor shall obtain the District Representative's approval of wet trench construction or procedure before commencing construction.

F. Engine-driven dewatering pumps shall be equipped with residential type mufflers. Where practical and feasible, electrical "power drops" and electric motor-driven equipment shall be used in lieu of portable generators.

G. The Contractor shall take all additional precautions to prevent uplift of any structure during construction.

H. The Contractor shall take all precautions to preclude the accidental discharge of fuel, oil, etc. to prevent adverse effects on groundwater quality. All costs associated with any such adverse effects shall be borne by the Contractor.

I. The Contractor shall, at no expense to the District, be required to excavate below grade and refill with approved fill material if the District Representative determines that adequate drainage has not been provided.

3.02 DISPOSAL

A. All product water from dewatering shall be pumped from the trench or other excavation and shall be disposed of in strict accordance with the Permits. The Contractor will be allowed to discharge product water from dewatering offsite into storm sewers, or ditches having adequate capacity, canals or suitable disposal pits, or other surface waters in accordance with the Dewatering Plan, provided that the water has been sampled and tested by the Contractor, is in compliance with the concentration limits specified in 62-621.300(2) FAC, and the Contractor has obtained a Generic Permit for the Production of Groundwater. The frequency of water sampling and testing shall be determined by the District Representative based on existing conditions and field observations.

B. Permission to use any storm sewers, or drains, for water disposal purposes shall be obtained from the authority having jurisdiction. Any requirements and costs for such use shall be the responsibility of the Contractor. However, the Contractor shall not cause flooding by overloading or blocking up the flow in the drainage facilities, and shall leave the facilities unrestricted and as clean as originally found. Any damage to existing facilities shall be repaired or restored as required by the District Representative or the authority having jurisdiction, at no cost to the District.

C. Contractor shall be responsible for acquiring and complying with all permits required to discharge the product water from dewatering and shall protect waterways from turbidity during the operation.

D. In areas where adequate disposal sites are not available, partially backfilled trenches may be used for water disposal only when the Contractor's plan for trench disposal is approved in writing by the District Representative. The Contractor's plan shall include temporary culverts, barricades and other protective measures to prevent damage to property or injury to any person or persons.

E. No flooding of streets, roadways, driveways or private property shall be permitted.

3.03 EQUIPMENT REMOVAL

A. Removal of dewatering equipment shall be accomplished after the system is no longer required. All materials and equipment constituting the system shall be removed by the Contractor.

B. All sock drains shall be filled with grout when no longer needed, and abandoned in place.

END OF SECTION

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SECTION 02160

STABILIZING

PART I – GENERAL

1.01 SCOPE OF WORK

A. Stabilize designated portions of the roadbed and/or trail to provide a firm and unyielding subgrade, having the required bearing value specified in the Plans. Perform work in accordance with an approved Quality Control Plan.

PART II - PRODUCTS

2.01 MATERIALS

A. Commercial Material

1. General

This Section governs materials to be used in stabilization. Meet the following requirements:

Plasticity Index (AASHTO T90)	Maximum 10
Liquid Limit (AASHTLOO T89)	Maximum 40
Passing a 3-1/2 inch screen (AASHTO T27)	Minimum 97%
LBR	No Requirement

2. Materials for Stabilizing (Limerock Bearing Ratio-LBR)

a. Commercial Materials:

Materials may be either limerock, shell rock, cemented coquina or shell base sources.

b. Local Materials

Local materials used for stabilizing may be soils or recyclable materials such as crushed concrete, roof tiles and asphalt coated base or reclaimed pavement provided the following limits for organic content are met.

Average Organic Content* (FM 1-T267)	Maximum 2.5%
Individual Organic Content Sample (FM 1-T267)	Maximum 4%
*Note: A minimum of three samples per source. If the organic content exceeds the allowable values and RAP or RAP-blended material is used as stabilizing material, the District Representative may allow FM 5-563 (with the exception of gradation analysis) in lieu of FM 1-T267 after mixing. The maximum allowable test result is 4.7%.	

Materials that contain hazardous substances or contaminates shall not be used.

If toxic substances, elements or compounds are suspected to exist at concentrations exceeding limits defined by the Environmental Protection Agency (EPA), qualifying tests shall be performed. Test methods for these substances shall be those mandated by EPA and analyzed by a certified laboratory.

B. Local Material

Meet the requirements of Section 02160-2.01A. Test material from each source, or if authorized by the District Representative, test blended materials. Submit test results to the District Representative at least 14 days prior to the stabilization operation.

C. Existing Base

When the material from an existing base is used as all, or a portion, of the stabilizing additives, no further testing is required unless directed by the District Representative.

D. Granular Subbase

The District Representative may allow, at no additional cost to the District, the substitution of 6 inches of Granular Subbase, when 12 inches of Stabilization requiring a Limerock Bearing Ratio (LBR) value of 40 is specified. Substitution must be approved by the District Representative.

PART III – EXECUTION

3.01 GENERAL

A. Prior to the beginning of stabilizing operations, construct the area to be stabilized to an elevation such that, upon completion of stabilizing operations, the completed stabilized subgrade will conform to the lines, grades, and cross-

section shown in the Plans. Prior to spreading any additive stabilizing material, bring the surface of the roadbed to a plane approximately parallel to the plane of the proposed finished surface.

B. Construct mainline pavement lanes, turn lanes, ramps, parking lots, concrete box culverts and retaining wall systems meeting the requirements of 02120-3.07A, except replace “Embankment” with “Subgrade”.

C. Construct shoulder-only areas, sidewalk, and bike/shared use path areas meeting the requirements of 02120-3.07A except replace “Embankment” with “Subgrade” and meet the acceptance criteria of 02160-3.10B.

D. Isolated mixing operations will be considered as separate LOTs. Curb pads and shoulders compacted separately shall be considered separate LOTs. Isolated compaction operations will be considered as separate LOTs. For multiple phase construction, a LOT shall not extend beyond the limits of the phase.

3.02 APPLICATION OF STABILIZING MATERIAL

A. After substantially completing the roadbed grading operations, determine the type and quantity (if any) of stabilizing material necessary for compliance with the bearing value requirements. Notify the District Representative of the approximate quantity to be added before spreading. When additive stabilizing materials are required, spread the material uniformly over the area to be stabilized.

1. Sampling and Testing of Local Material

   Select locations for sampling spaced at a minimum of 200 and test at the minimum frequency listed in the table below before mixing. The District Representative will reject the material for failing QC test results.

Test Name	Quality Control
Liquid Limit (LL), Plastic Index (PI), and Organic Content	One per LOT

3.03 MIXING

A. Perform mixing using rotary tillers, a plant or other equipment meeting the approval of the District Representative. The subgrade may be mixed in one course if the equipment and method of construction provides the uniformity, particle size limitation, compaction and other desired results of 02160-3.10. Thoroughly mix the area to be stabilized throughout the entire depth and width of

the stabilizing limits.

B. Perform the mixing operations, as specified, (either in place or in a plant) regardless of whether the existing soil, or any select soils placed within the limits of the stabilized sections, have the required bearing value without the addition of stabilizing materials.

3.04 MAXIMUM PARTICLE SIZE OF MIXED MATERIALS

A. At the completion of the mixing, ensure that the gradation of the material within the limits of the area being stabilized is such that 97% will pass a 3 1/2 inch sieve and that the material does not have a plasticity index greater than eight or liquid limit greater than 30. Remove any materials not meeting the plasticity requirements from the stabilized area. Break down or remove from the stabilized area materials, including clay lumps or lumps made of clay-size particles (any particle size 2 microns or less), not meeting the gradation requirements.

3.05 BEARING VALUE

Meet the bearing value requirements for the subgrade in accordance with 02160-3.10.

3.06 COMPACTION

A. After completing the mixing operations and satisfying the requirements for bearing value, uniformity, and particle size, compact the materials at a moisture content permitting the specified compaction in 02160-3.10B. If the moisture content of the material is improper for attaining the specified density, either add water or allow the material to dry until reaching the proper moisture content for the specified compaction.

3.07 FINISH GRADING

A. Shape the completed stabilized subgrade to conform to the finished lines, grades, and cross-section indicated in the Plans. Check the subgrade using elevation stakes or other means approved by the District Representative.

3.08 REQUIREMENTS FOR CONDITION OF COMPLETED SUBGRADE

A. After completing the stabilizing and compacting operations, ensure that the subgrade is firm and substantially unyielding to the extent that it will support construction equipment and will have the bearing value required by the Plans.

B. Remove all soft and yielding material, and any other portions of the subgrade which will not compact readily, and replace it with suitable material so that the

whole subgrade is brought to line and grade, with proper allowance for subsequent compaction.

3.09 MAINTENANCE OF COMPLETED SUBGRADE

A. After completing the subgrade as specified above, maintain it free from ruts, depressions, and any damage resulting from the hauling or handling of materials, equipment, tools, etc. The Contractor is responsible for maintaining the required density until the subsequent base or pavement is in place including any repairs, replacement, etc., of curb and gutter, sidewalk, etc., which might become necessary in order to recompact the subgrade in the event of under-wash or other damage occurring to the previously compacted subgrade. Perform any such recompaction at no expense to the District. Construct and maintain ditches and drains along the completed subgrade section.

3.10 ACCEPTANCE PROGRAM

A. Meet the requirements of 02120-3.09, except use 02160-3.10B instead of 02120-3.09B, and 02160-3.10C instead of 02120-3.09C.

B. Acceptance Criteria

1. Bearing Value Requirements

a. General

Within the entire limits of the width and depth of the areas to be stabilized, obtain the required minimum bearing value for each LOT. For any area where the bearing value obtained is deficient from the value indicated in the Plans, in excess of the tolerances established herein, spread and mix additional stabilizing material in accordance with 02160-3.03. Perform this reprocessing for the full width of the roadway being stabilized and longitudinally for a distance of 50 feet beyond the limits of the area in which the bearing value is deficient.

Determine the quantity of additional stabilizing material to be used in reprocessing.

b. Under-tolerances in Bearing Value Requirements

The under-tolerances are allowed for the following specified Bearing Values:

Specified Bearing Value	Under-tolerance
LBR 40	5.0
LBR 35	4.0
LBR 30 (AND UNDER)	2.5

The following unsoaked bearing value requirement is based on tests performed on samples obtained after completing mixing operations:

Specified Bearing Value	Unsoaked Bearing Value Required	Under-tolerance
LBR 40	LBR 43	0.0

2. Mixing Depth Requirements

   a. Do not exceed individual plan depth thickness by more than 2 inches or exceed LOT-average depth thickness by more than 1 inch measured to the nearest 0.25 inch. No undertolerance of mixing depth is allowed.

   b. As an exception to the above mixing requirements, where the subgrade is of rock, the District Representative may waive the mixing operations (and the work of stabilizing), and the District will not pay for stabilization for such sections of the roadway.

3. Density Requirements

   a. General

      Within the entire limits of the width and depth of the areas to be stabilized, other than as provided in the following paragraph, obtain a minimum density at any location of 98% of the Modified Proctor maximum density as determined by FM 1-T 180, Method D.

   b. Exceptions to Density Requirements

      The Contractor need not obtain the minimum density specified in the previous paragraph if within the following limits:

      - The width and depth of areas which are to be subsequently incorporated into a base course under the same contract.
      - The upper 6 inches of areas to be grassed under the same contract. Compact these areas to a reasonably firm condition as directed by the District Representative.

4. Frequency

   Conduct QC sampling and testing at a minimum frequency listed in the table below.

Test Name	Quality Control
Modified Proctor Maximum Density	One per two consecutive LOTs
Density	One per LOT
Stabilizing Mixing Depth	Three per 500 feet
LBR	One per two consecutive LOTs
Gradation, LL/PI & Soil Classification (Local materials)	Not Required

C. Additional Requirements

1. Bearing Values

   Test the Stabilized Subgrade sample collected. Determine the LBR in accordance with FM 5-515 and required frequency from previous paragraph.

   a. Unsoaked LBR

      If Unsoaked LBR is desired, submit request for approval to the District Representative. Upon approval by the District Representative to consider the use of Unsoaked LBR, randomly sample and test from three locations in the initial Lot for both Soaked and Unsoaked LBR in accordance with FM 5-515. Ensure all of the tests demonstrate the material achieves the LBR values in 02160-3.10B. Continue testing Unsoaked LBR at the frequency shown in 02160-3.10B. Discontinue Unsoaked LBR testing if any unsatisfactory QC LBR test result is obtained.

2. Mixing Depths

   Meet required plan mixing-depths by measuring from the proposed Final Grade Line. Determine test locations, including Stations and Offsets, using the Random Number generator approved by the District. Notify the District Representative a minimum of 24 hours before checking mixing depths. Record results on forms supplied by the District.

3. Modified Proctor Maximum Density Requirement

   Collect enough material to split and create three separate samples. Determine test locations, including Stations and Offsets, using the Random Number generator approved by the District for the two LOTs under consideration.

END OF SECTION

SECTION 02200

EARTHWORK

PART I - GENERAL

1.01 SCOPE OF WORK

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

1.02 APPLICABLE PUBLICATIONS

American Society of Testing Materials (ASTM):

D698 – Standard Test Methods for Laboratory Compaction Characteristics of Soil Using the Standard Effort (12,400 ft-lbf/ ft3 (600 kN-m/m3)).

D1556 – Standard Test Method for Density and Unit Weight of Soil in Place by Sand-Cone Method.

D1557 – Standard Test Methods for Laboratory Compaction Characteristics of Soil Using the Modified Effort (56,000 ft-lbf/ ft3 (2,700 kN-m/m3)).

D2487 – Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System).

D2937 – Standard Test Method for Density of Soil in Place by the Drive-Cylinder Method.

D3740 – Standard Practice for Minimum Requirements for Agencies Engaged in Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction.

D4253 – Standard Test Methods for Maximum Index Density and Unit Weight of Soils Using a Vibratory Table.

D4254 – Standard Test Methods for Minimum Index Density and Unit Weight of Soils and Calculation of Relative Density.

D4564 – Standard Test Method for Density and Unit Weight of Soil in Place by the Sleeve Method.

D4914 – Standard Test Methods for Density and Unit Weight of Soil and Rock in Place by the Sand Replacement Method in a Test Pit.

D5030 – Standard Test Method for Density of Soil and Rock in Place by the Water Replacement Method in a Test Pit.

D6938 – Standard Test Method for In-place Density and Water Content of Soil and Soil-Aggregate by Nuclear Method Shallow Depth.

E329 – Standard Specification for Agencies Engaged in Construction Inspection and/or Testing.

Florida Department of Transportation (FDOT):

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

American Association of State Highway Transportation Officials (AASHTO):

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

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

Florida Method (FM) of Test:

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

1.03 DEFINITIONS

A. Select Backfill

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

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

1. Levee and Water Retaining Embankments: CL, ML (These are fine-grained soils with -50-75% by dry weight passing through a No. 200 sieve; CL and ML are inorganic clay and silt, respectively, with a liquid limit less than 50%.) Levee fill material shall not contain any particles larger than 3 inches (76 mm) in diameter, and the upper 1-foot of the levee shall not contain particle sizes larger than 2 inches (51 mm) in diameter.
2. Structure Backfill: SW, SP, SC (These are coarse-grained soils with greater than 50% by dry weight retained on a No. 200 sieve; SP and SW have less than 5% finer than a No. 200 sieve; SC has 12-50% finer than a No. 200 sieve.)

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

SELECT BACKFILL		
STRUCTURE TYPE	**MAXIMUM PARTICLE SIZE**	**MAXIMUM LOOSE LIFT THICKNESS**

Water Bearing Levee	3 inches	6 inches
Non-Water Bearing Levee	3 inches	12 inches
Dam/Embankment	3 inches	12 inches

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

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

B. Random Backfill

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

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

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

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

C. Unclassified Fill

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

D. Levee Fill Material

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

E. Drain/Filter Sand

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

F. Unified Soil Classification System (USCS)

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

G. Chimney Drain

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

H. Blanket Drain

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

I. Core

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

J. Excavation

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

K. Unsuitable Fill

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

L. Cohesionless materials

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

M. Cohesive Materials

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

1.03 SUBMITTALS

A. The CONTRACTOR shall submit field measured cross-sections at each design cross-section for record purposes for canal excavations and levee embankments as described in this SECTION. The submittal of the field measured cross-sections shall be signed and sealed by a State of Florida licensed land surveyor. The CONTRACTOR shall submit to the DISTRICT detailed Work Plans for all work

indicated or specified in this SECTION at least 14 days before the work is scheduled to begin.

1.04 QUALIFICATIONS

A. Geotechnical Testing Agency Qualification

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

B. Earthwork Contractor Qualifications

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

1.05 RESPONSIBILITIES

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

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

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

1.06 CERTIFICATIONS AND TESTING

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

1.07 INSPECTION COORDINATION

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

1.08 WARRANTY

A. The MANUFACTURER shall warrant the EQUIPMENT, MATERIALS and PRODUCTS specified in this SECTION against defective materials and workmanship with the MANUFACTURER'S standard warranty, but for no less than one year from the date of Substantial Completion, and as described in Article 13 of SECTION 00700 - General Terms and Conditions.

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

PART II - PRODUCTS

2.01 MATERIALS ENCOUNTERED

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

B. The CONTRACTOR shall consider all materials encountered, regardless of type, character, composition and condition thereof unclassified other than as indicated in Article 1.03 Definitions. The CONTRACTOR shall estimate the quantity of various materials included prior to submitting the Bid Form. Rock encountered shall be handled by the CONTRACTOR at no additional cost to DISTRICT.

PART III - EXECUTION

3.01 SITE PREPARATION

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

1. Levee Roads: The CONTRACTOR shall place and compact a 6 inch thick by 14 foot wide layer of lime rock or shell rock gravel along the entire top

length of the perimeter and intermediate levees to create the levee road and meet the design grade.

3.02 EXCAVATION AND TRENCHING

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

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

1. Use when required by the specifications or Drawings and where resulting slopes from excavation or trenching might endanger the structural integrity of in-place or proposed structures.
2. Provide materials on site prior to start of excavation. Adjust spacing and arrangement as required by conditions encountered.
3. Remove sheeting and bracing as backfill progresses. Fill voids left after withdrawal with sand or other approved material.
4. In-place structures damaged by sheeting and bracing activities shall be repaired by the ONTRACTOR at no additional cost to the District.
5. Comply with all applicable sections of OSHA.
6. Comply with all requirements of the Florida Trench Safety Law as specified in the GENERAL TERMS & CONDITIONS.

C. Blasting

If required and approved by the DISTRICT, the CONTRACTOR shall perform blasting in accordance with the SECTION 02211- Blasting.

D. Excavation for Structures

The CONTRACTOR shall perform excavation for structures as shown, required and specified below:

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

E. Canal Excavation

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

1. A construction tolerance of 0.25 foot above or below the lines and grades indicated shall be permitted; however, the canal cross sectional area shall not be less than designed.

    a. The CONTRACTOR shall provide field measured cross-sections of the “As-Built” conditions to the DISTRICT, plotted at the same stations as the detailed cross-sections shown on the plans to show the above specified tolerance has been met.

2. Where select fill is specified, the CONTRACTOR shall exercise care in excavation to void, to the maximum practicable extent, mixing of peat with materials suitable for use in select fill.

3. Materials suitable for use in select fill shall be deposited along the levee foundation in quantities sufficient for subsequent construction of the select fill. Random fill materials shall be deposited along each side of the central portion of the levee.

    a. Sufficient quantities of peat or topsoil may be placed near the limits of fill (levees) for use in final dressing of fill side slopes.

4. Canal Cleaning

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

5. Demucking

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

6. Excavation of Existing Levees and Embankments

    The CONTRACTOR shall perform excavation by any method acceptable to the DISTRICT and by meeting the requirements of these specifications and the Drawings. All materials removed from levees and embankments shall be suitable for reuse as random fill. Excavation limits shall be clearly identified and approved by the DISTRICT prior to initiation of the WORK.

7. Cross-Sections

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

F. EMBANKMENT

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

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

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

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

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

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

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

G. Dam Embankment

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

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

H. Roadway and Access Berm Embankment

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

I. Non-Water Bearing Embankments

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

1. Unless required for roadway or access berm embankment, the cohesive material shall be compacted to 85% of the maximum density at optimum moisture content determined by accordance with ASTM D698. Cohesionless materials shall be compacted to not less than 75% relative density determined in accordance with ASTM D4253 and ASTM D4254.
2. Rock diameter for select fill shall not be more than 3 inches (76 mm) in any direction. The rocks shall be evenly distributed in the embankment and placed to minimize rock to rock contact. This even distribution will permit placement of material without voids and help achieve specified compaction.

J. Stormwater Treatment Areas (STAs)

The CONTRACTOR shall construct STAs with Levee Fill Material.

K. Final Dressing of Slopes

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

1. In areas where the embankment is to have grass, sod, or landscaping, the material within the top one foot of the levee, shall be free of any rocks greater than 2 inches (51 mm) in diameter.
2. The degree of finish shall be that ordinarily obtained from blade grader or similar operations.
3. Provide roundings at bottom of slopes and other breaks in grade.

L. Cross-Sections

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

M. BACKFILLING

1. Pipe Embedment and Backfill

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

2. Structure Backfill

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

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

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

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

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

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

3. Unclassified Backfill

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

N. MAINTENANCE

1. The CONTRACTOR shall protect newly graded areas from actions of the element.
2. The CONTRACTOR shall fill, repair, and re-establish grades to the required elevations and slopes for any area that shows settling or erosion occurring prior to seeding.

END OF SECTION

SECTION 02220

EXCAVATION AND BACKFILLING

PART I - GENERAL

1.01 SCOPE

A. Summary of Work

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

B. Related Work Specified Elsewhere:

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

1.02 APPLICABLE PUBLICATIONS:

A. American Society of Testing Materials (ASTM)

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

D4. 4254 Standard Test Method for Minimum Index Density and Unit Weight of Soils and Calculation of Relative Density

B. Florida Department of Transportation

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

1.03 SUBMITTALST

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

1.04 CERTIFICATIONS AND TESTING

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

1.05 INSPECTION COORDINATION

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

PART II - PRODUCTS

2.01 STRUCTURAL BACKFILL

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

2.02 EMBANKMENT FILL

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

PART III - EXECUTION

3.01 SITE PREPARATION

A. Clearing and Grubbing

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

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

B. Stripping

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

1. Scrape area clean of all brush, grass, weeds, roots, and other material.
2. Strip to depth of approximately six inches or to a sufficient depth to remove excessive roots in heavy vegetation or brush areas and as required segregating topsoil.

3. Stockpile topsoil in areas where it will not interfere with construction operations or existing facilities. Stockpiled topsoil shall be reasonably free of subsoil, debris and stones larger than two inches in diameter.

3.02 DISPOSAL OF SURPLUS AND UNSUITABLE MATERIAL

The CONTRACTOR shall dispose of all excess or unsuitable material off-site or in areas otherwise approved by the DISTRICT.

3.03 STOCKPILE OF EXCAVATED MATERIAL

The CONTRACTOR shall stockpile excavated materials in areas shown on the Drawings or in areas otherwise approved by the DISTRICT.

3.04 PLACEMENT OF STRUCTURAL FILL

The CONTRACTOR shall place structural backfill true to the lines, grades and, cross sections shown in the Drawings or as ordered by the DISTRICT. Structural backfill shall be deposited by the CONTRACTOR in horizontal layers not exceeding eight inches in depth measured loose, and shall be compacted to a density of not less than 95 percent of the maximum density at optimum soil moisture content +/- 2% as determined by ASTM D1557 Standards. Backfill shall not be placed against fresh concrete without the approval of the DISTRICT.

3.05 PLACEMENT OF EMBANKMENT FILL

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

3.06 COMPACTION EQUIPMENT

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

3.07 GRADING

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

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

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

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

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

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

3.08 CLEANUP

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

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

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

3.09 PROTECTION AND MAINTENANCE

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

END OF SECTION

SECTION 02221

TRENCHING, BACKFILLING AND COMPACTING

PART I - GENERAL

1.01 SCOPE

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

1.02 APPLICABLE PUBLICATIONS

A. American Society of Testing Materials (ASTM):

1. D698 - Standard Test Methods for Laboratory compaction Characteristics of Soil Using the Standard Effort (12,400 ft-lbf/ ft3 (600 kN-m/m3))

2.D1557 - Standard Test Methods for Laboratory compaction Characteristics of Soil Using the Modified Effort (56,000 ft-lbf/ ft3 (2,700 kN-m/m3))

3. D4253 - Standard Test Methods for Maximum Index Density and Unit Weight of Soils Using a Vibratory Table

4. D4254 - Standard Test Methods for Minimum Index Density and Unit Weight of Soils and Calculation of Relative Density

B. Florida Department of Transportation (FDOT):

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

C. Miscellaneous Project Data:

1. Subsurface soil data logs are provided for the CONTRACTOR'S reference:

1.03 RESPONSIBILITIES

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

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

1.04 INSPECTION COORDINATION

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

PART II - PRODUCTS

2.01 MATERIALS

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

PART III - EXECUTION

3.01 EXTENT OF OPEN EXCAVATION

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

3.02 CUTTING PAVEMENT

When excavations are required in paved areas the CONTRACTOR shall conform to the following:

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

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

3.03 TRENCH EXCAVATION

The CONTRACTOR shall perform trench excavation in accordance with the following:

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

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

3.04 EXCAVATION BELOW NORMAL GRADE:

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

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

3.05 BACKFILLING TRENCHES:

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

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

C. Place earth embedment as follows:

1. With level bottom layer at proper grade to receive and uniformly support pipe barrel throughout its length.

2. Form shallow depression under each joint to facilitate jointing.

3. Add second layer simultaneously to both sides of the pipe with care to avoid displacement of the pipe.

4. Place material in maximum 12-inch lifts.

3.06 BACKFILLING OF TRENCH UNDER ROADWAY AND AREAS TO BE PAVED

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

3.07 BACKFILLING OF TRENCH OPEN AREAS

The CONTRACTOR shall place material in 12-inch maximum lifts after filling one foot above pipe as previously described. The top one-foot layer shall be compacted to 85 percent maximum dry density as measured by ASTM D1557. Each layer shall

be compacted to at least the density of adjacent soils. Restore the surface to original grade and place sod or seed as required by the contract documents.

END OF SECTION

SECTION 02240

CELLULAR CONFINEMENT SYSTEM

PART 1 GENERAL

1.01 SUMMARY

A. Work Included: This Section includes providing all material, labor, tools and equipment for installation of Cellular Confinement System as shown in the Contract Documents and as specified in this Section.

B. The Cellular Confinement System shall be used for slope protection.

1.02 REFERENCES

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

1. AASHTO M 218 - Steel Sheet, Zinc-Coated (Galvanized) for Corrugated Steel Pipe.

2. AASHTO M 288 - Geotextile Specification for Highway Applications

D. American Society of Testing and Materials (ASTM)

1. ASTM D 1505 - Density of Plastics by the Density-Gradient Technique.

2. ASTM D 1603 - Standard Test for Carbon Black in Olefin Plastics

3. ASTM D 1693 - Environmental Stress-Cracking of Ethylene Plastics.

4. ASTM D 5199 - Measuring Nominal Thickness of Geotextiles and Geomembranes.

5. ASTM E 41 - Terminology Relating to Conditioning.

1.03 SUBMITTALS

E. Submit Manufacturer's shop drawings in accordance with Section 01300, including Manufacturer's product data, samples and section layout.

F. Submit manufacturer's certification of polyethylene used to make Geoweb material including

1. Manufacturer's certification of percentage of carbon black.

2. Resin manufacturer's certification of polyethylene density and Environmental Stress Crack Resistance (ESCR).

G. No material will be considered as an equivalent to the material specified herein unless it meets all requirements of this specification, without exception. Manufacturers seeking to supply what they represent as equivalent material must submit records, data, independent test results, samples, certifications, and documentation deemed necessary by the District Representative to prove equivalency. The District Representative shall approve or disapprove other Manufacturer's materials in accordance with the General Conditions after all information is submitted and reviewed. Any substitute materials submitted shall be subject to independent lab testing at the Contractor's expense.

1.04 QUALITY ASSURANCE AND CONTROL

H. The cellular confinement system material shall be provided from a single Manufacturer for the entire project.

I. The Manufacturer's Quality management system shall be certified and in accordance with ISO 9001:2008 and CE certification. Any substitute materials submitted shall provide a certification that their cellular confinement manufacturing process is part of an ISO program and a certification will be required specifically stating that their testing facility is certified and in accordance with ISO. An ISO certification for the substitute material will not be acceptable unless it is proven it pertains specifically to the geocell manufacturing operations.

J. The Manufacturer shall provide certification of compliance to all applicable testing procedures and related specifications upon the customer's written request. Request for certification shall be submitted no later than the date of order placement. The Manufacturer shall have a minimum of 20 years experience producing cellular confinement systems.

1.05 DELIVERY, STORAGE, AND HANDLING

K. Deliver materials to site in Manufacturer's original, unopened containers and packaging, with labels clearly identifying product name and Manufacturer.

L. The materials shall be stored in accordance with Manufacturer's instructions. The materials shall be protected from damage and out of direct sunlight.

M. The materials shall be delivered, unloaded and installed in a manner to prevent damage.

1.06 WARRANTY

N. The Manufacturer shall warrant each Geoweb section that it ships to be free from defects in materials and workmanship at the time of manufacture. The Manufacturer's exclusive liability under this warranty or otherwise will be to furnish without charge to the original f.o.b. point a replacement for any section which proves to be defective under normal use and service during the 10-year period which begins on the date of shipment. The Manufacturer reserves the right to inspect any allegedly defective section in order to verify the defect and ascertain its cause.

O. This warranty shall not cover defects attributable to causes or occurrences beyond the Manufacturer's control and unrelated to the manufacturing process, including, but not limited to, abuse, misuse, mishandling, neglect, improper storage, improper installation, improper alteration or improper application.

P. In no event shall the Manufacturer be liable for any special, indirect, incidental or consequential damages for the breach of any express or implied warranty or for any other reason, including negligence, in connection with the cellular confinement system.

PART 2 PRODUCTS

2.01 ACCEPTABLE MANUFACTURER

A. Presto Geosystems, PO Box 2399, Appleton, Wisconsin 54912 2399. Toll Free (800) 548 3424. Phone (920) 738 1328. Fax (920) 738 1222. E Mail info@prestogeo.com. Website www.prestogeo.com.

2.02 GEOWEB CELLULAR CONFINEMENT SYSTEM

B. Base Materials

1. Polyethylene Stabilized with Carbon Black

a) Density shall be 58.4 to 60.2 pound/ft3 in accordance with ASTM D 1505.

b) Environmental Stress Crack Resistance (ESCR) shall be 5000 hours in accordance with ASTM D 1693.

c) Ultra-Violet light stabilization with carbon black.

d) Carbon Black content shall be 1.5 to 2 percent by weight, through addition of a carrier with certified carbon black content.

e) Carbon black shall be homogeneously distributed throughout material.

f) The manufacturer must have an in-place quality control to prevent irregularities in strip material.

C. Cell Properties

1. Individual cells shall be uniform in shape and size when expanded.

2. Individual cell dimensions (nominal) shall be plus or minus 10%.

3. GW30V-Cell

a) Length shall be 11.3 inches.

b) Width shall be 12.6 inches.

c) Nominal area shall be 71.3 in^2 plus or minus 1%.

4. Nominal cell depth shall be 4 inches or 6 inches as specified in the Contract Documents.

D. Strip Properties and Assembly

1. Perforated Textured Strip/Cell

a) Strip sheet thickness shall be 50 mils, minus 5 percent, plus 10 percent in accordance with ASTM D 5199. Determine thickness flat, before surface disruption.

b) Polyethylene strips shall be textured surface with a multitude of rhomboidal (diamond shape) indentations.

c) Textured sheet thickness shall be 60 mils, plus or minus 6 mils.

d) Indentation surface density shall be 140 to 200 per in^2.

e) Perforated with horizontal rows of 0.4 inch diameter holes.

f) Perforations within each row shall be 0.75 inches on-center.

g) Horizontal rows shall be staggered and separated 0.50 inches relative to hole centers.

h) Edge of strip to nearest edge of perforation shall be a minimum of 0.3 inches.

i) Centerline of spot weld to nearest edge of perforation shall be a minimum of 0.7 inches.

j) A slot with a dimension of 3/8 inch x 1-3/8 inch is standard in the center of the non-perforated areas and at the center of each weld.

2. Assembly of Cell Sections

a) Fabricate using strips of sheet polyethylene each with a length of 142 inches and a width equal to cell depth.

b) Connect strips using full depth ultrasonic spot-welds aligned perpendicular to longitudinal axis of strip.

c) Ultrasonic weld melt-pool width shall be 1.0 inch maximum.

d) Weld spacing for GW30V-cell sections shall be 17.5 inches plus or minus

0.10 inch.

E. Cell Seam Strength Tests

1. Minimum seam strengths are required by design and shall be reported in test results. Materials submitted with average or typical values will not be accepted. Written certification of minimum strengths must be supplied to the District Representative at the time of submittals.

2. Short-Term Seam Peel-Strength Test

a) Cell seam strength shall be uniform over full depth of cell.

b) Minimum seam peel strength shall be 320 lbf (1,420 N) for 4 inch (100 mm) depth.

3. Long-Term Seam Peel-Strength Test

a) Conditions: Minimum of 7 days in a temperature-controlled environment that undergoes change on a 1 hour cycle from room temperature to 130 degrees F (54 degrees C).

b) Room temperature shall be in accordance with ASTM E41.

c) Test samples shall consist of two, 4 inch (100 mm) wide strips welded together.

d) Test sample consisting of 2 carbon black stabilized strips shall support a 160 pound (72.5 kg) load for test period.

2.03 INTEGRAL COMPONENTS

F. ATRA® Clip

1. The ATRA Clip is a molded, high-strength polyethylene device available in standard (0.5 inch) and metric (10-12 mm) versions.

2. ATRA clips can be installed as an end cap on standard (0.5 inch) and metric (10-12 mm) steel reinforcing rods to form ATRA Anchors.

G. ATRA® Key

1. ATRA keys shall be constructed of polyethylene and provide a high strength connection.

2. ATRA keys shall be used to connect Geoweb panels together at each interleaf and end to end connection.

3. ATRA keys shall provide minimum break strength of 265 lbf.

2.04 STAKE ANCHORAGE

H. ATRA® Glass Fiber Reinforced Polymer (GFRP) Anchors

1. ATRA GFRP Anchors shall be pre-assembled units consisting of the ATRA Clip inserted onto a GFRP stake.

2. The glass reinforcement content shall be 75% minimum by weight and shall be continuous longitudinal filament.

3. Polymer shall be vinyl ester, isophthalic polyester or other matrix material.

4. The outer surface shall be sand coated and deformed by a helical wrap of glass.

5. The minimum compressive strength shall be 95 kips (655 MPa) in accordance with ASTM D 638.

6. The stake shall be non-magnetic, non-conducting and corrosion resistant.

7. The stake length shall be as shown in the Contract Documents.

2.05 CELL INFILL MATERIALS

I. Where rock-filled Geoweb is called out on the construction plans, cell infill material shall be gravel, crushed aggregate or stone with a particle size of 1.5 to 3 inches (FDOT Size No. 2 Stone).

J. Where concrete-filled Geoweb is called out on the construction plans, cell infill material shall be Portland cement concrete. The minimum 28-day compressive strength for concrete shall be 3,000 psi.

K. Infill material shall be free of any foreign material.

L. Clays and silts are not acceptable infill material.

M. Infill material shall be free-flowing and not frozen when placed in the Geoweb sections.

2.06 GEOTEXTILE

N. The geotextile underlayer shall be Mirafi FW700, or approved equal.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify site conditions are as indicated on the drawings. Notify the District Representative if site conditions are not acceptable. Do not begin preparation or installation until unacceptable conditions have been corrected.

B. Verify layout of structure is as indicated on the drawings. Notify the District Representative if layout of structure is not acceptable. Do not begin preparation or installation until unacceptable conditions have been corrected.

3.02 INSTALLATION

C. Prepare subgrade and install Geoweb protection system in accordance with Manufacturer's recommendations.

D. Subgrade Preparation:

1. Excavate or fill foundation soils so top of installed Geoweb section is flush with or slightly lower than adjacent terrain or final grade as indicated on the drawings or as directed by the District Representative.

2. Install geotextile underlayer on prepared surfaces ensuring required overlaps are maintained and outer edges of geotextile are buried in accordance with the Manufacturer's recommendations.

E. Anchorage with ATRA GFRP Anchors

1. Position collapsed Geoweb sections at the crest of the slope.

2. Drive ATRA GFRP anchors at the crest of the slope to secure the Geoweb sections in place and allow expansion of the Geoweb sections into position.

3. After the Geoweb sections are expanded as desired, drive ATRA GFRP Anchors so the arm of the ATRA Clip is through the internal slots in the Geoweb cell wall and do not protrude over the top of the cell wall.

4. Anchorage pattern and stake length shall be as indicated on the Contract Documents.

5. Fill the anchorage trench with the specified material and compact as required by the Contract Documents.

F. Geoweb Section Placement and Connection

1. Verify all Geoweb sections are expanded uniformly to required dimensions and that outer cells of each section are correctly aligned. Interleaf or overlap edges of adjacent sections. Ensure upper surfaces of adjoining Geoweb sections are flush at joint and adjoining cells are fully aligned at the cell wall slot.

2. Connect the Geoweb sections with ATRA keys at each interleaf and end to end connection. Insert the ATRA key through the cell wall slot before inserting

through the adjacent cell. Turn the ATRA key 90 degrees to lock the panels together.

G. Aggregate Infill Placement (Rock or Concrete)

1. Place specified infill in expanded cells with suitable material handling equipment, such as a backhoe, front-end loader, conveyor, or crane-mounted skip.

2. Limit drop height to a maximum of 3 feet to avoid damage or displacement of the cell walls.

3. Fill Geoweb sections from the crest of the slope to toe or in accordance with District Representative 's direction.

4. Infill material shall be free-flowing and not frozen when placed into the Geoweb sections.

5. Evenly spread infill and ensure the infill is flush with the Geoweb cell walls.

H. Surface Treatment

1. Backfill and vegetation shall be as specified in the Contract Documents and installed immediately after the infill is placed and protected with mulch.

2. Surface protection shall be installed immediately after placement of the infill material and installed and secured per the Manufacturer's instructions.

END OF SECTION

SECTION 02514

PLASTIC FILTER FABRIC (GEOTEXTILE)

PART I – GENERAL

PART II - PRODUCTS

2.01 FABRIC

A. General
Geotextiles shall be woven or nonwoven fabrics that will allow the passage of water. Geotextiles shall be packaged in a protective covering sufficient to protect it from sunlight, dirt, and other debris during shipment and storage, upon which the manufacturer's name, product name, style number, roll dimensions and LOT numbers are clearly labeled.

B. Application
The applications of geotextile fabrics are divided into the following three main classes:

1. Drainage- under all rubble riprap, including cyclopean stone and under gabions; wrapped around drains, pipe joints, and edge-drains; filter behind walls, etc.
2. Erosion Control- silt fence, staked silt barrier, plastic erosion mat.
3. Stabilization- separator between embankment and soft subsoil, reinforcement and pipe bedding.

2.02 PHYSICAL REQUIREMENTS

A. Unless restricted in the Plans or Specifications, the geotextile fabric shall be a woven or non-woven fabric consisting of long-chain polymeric filaments or yarns such as polypropylene, polyethylene, polyester, polyamides or polyvinylidene chloride formed into a stable network such that the filaments or yarns retain their relative position to each other. The base plastic shall contain stabilizers and/or inhibitors to make the filaments resistant to deterioration due to ultraviolet light (except for subsurface and stabilization classification), heat exposure and potential chemically damaging environment. The fabric shall be free of any treatment which may significantly alter its physical properties. The edges of the fabric shall be salvaged or otherwise finished to prevent the outer yarn from pulling away from the fabric. The fabric shall conform to the physical requirements on Design Standards, Index No. 199 according to its application.

2.03 OVERLAPS AND SEAMS

A. Overlaps shall be as specified in the Plans, Specifications, or Design Standards for each particular application. To reduce overlaps, the geotextile fabric may be sewn together. Seams of the fabric shall be sewn with thread meeting the chemical requirements and minimum seam strength requirements given for the fabric and application as shown on Design Standards, Index No. 199.

2.04 CERTIFICATION

A. Furnish two certified copies of a test report from the manufacturer certifying that the geotextile to be incorporated into the completed project meets the requirements of this Specification and the Design Standards, Index No. 199. The certified test reports shall be attested to by a person having legal authority to bind the manufacturing company. Also, furnish two (4 inch by 8 inch) samples of the geotextile for product identification. The manufacturer shall maintain test records as required by this Specification. These records shall be made available to the District upon request.

PART III – EXECUTION

3.01 CONSTRUCTION METHODS

A. General: Place the fabric in the manner and locations as shown on the construction drawings, in accordance with the manufacturer's directions, and as specified in these Specifications. Place the fabric on areas with a uniform slope that are reasonably smooth, free from mounds and windrows, and free of any debris or projections which might damage the fabric.

B. Loosely lay the material. Do not stretch the material. Replace or repair any fabric damaged or displaced before or during placement of overlying layers to the satisfaction of the District Representative and at no expense to the District.

C. When overlapping is necessary, the Contractor may sew the seams to reduce overlaps as specified in Section 02514-2.03.

D. Schedule work so that covering the fabric with the specified material does not exceed the manufacturer's recommendations for exposure to ultraviolet light or five days, whichever is less. If the District Representative determines the exposure time was exceeded, the Contractor shall replace the fabric at no expense to the District.

3.02 SUBSURFACE DRAINAGE

A. When indicated in the Plans, place the fabric with the long dimension parallel to the trench. Place the fabric to provide a minimum 12 inch overlap for each joint. Do not drop the filter material from heights greater than 3 feet.

3.03 STABILIZATION AND REINFORCEMENT

A. Overlap adjacent strips of fabric a minimum of 24 inches.

3.04 RIPRAP FILTER

A. Overlap adjacent strips of fabric a minimum of 24 inches, and anchor them with securing pins (as recommended by the manufacturer) inserted through both strips of fabric along a line through the midpoint of the overlap and to the extent necessary to prevent displacement of the fabric.

B. Place the fabric so that the upstream (upper) strip of fabric overlaps the downstream (lower) strip.

C. Stagger vertical laps a minimum of 5 feet. Use full rolls of fabric whenever possible in order to reduce the number of vertical laps.

D. Do not drop bedding stone or riprap from heights greater than 3 feet onto the fabric.

END OF SECTION

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SECTION 02530

RUBBLE RIPRAP

PART I – GENERAL

1.01 SCOPE OF WORK

A. Construct riprap composed of sand-cement or rubble (consisting of broken stone or broken concrete) as shown in the Design Standards and in the Plans. Place Type D-2 geotextile filter fabric, meeting the requirements shown on Design Standards, Index No. 199. District Representative

PART II – PRODUCTS

2.01 MATERIALS

A. Rubble (Bank and Shore Protection)

Provide sound, hard, durable rubble, free of open or incipient cracks, soft seams, or other structural defects, consisting of broken stone with a bulk specific gravity of at least 2.20. Ensure that stones are rough and angular. For this application, use broken stone meeting the following gradation and thickness requirements:

Weight Maximum Pounds	Weight 50% Pounds	Weight Minimum Pounds	Minimum Blanket Thickness in Feet
670	290	60	2.5
Ensure that at least 97% of the material by weight is smaller than Weight Maximum pounds. Ensure that at least 50% of the material by weight is greater than Weight 50% pounds Ensure that at least 85% of the material by weight is greater than Weight Minimum pounds.			

B. Rubble (Ditch Lining)

Use sound, hard, durable rubble, free of open or incipient cracks, soft seams, or other structural defects, consisting of broken stone or broken concrete with a bulk specific gravity of at least 1.90. Ensure that stones or broken concrete are rough and angular. Use broken stone or broken concrete meeting the following gradation and thickness requirements:

Weight Maximum Pounds	Weight 50% Pounds	Weight Minimum Pounds	Minimum Blanket Thickness in Feet
75	30	4	1.5
Ensure that at least 97% of the material by weight is smaller than Weight Maximum pounds. Ensure that at least 50% of the material by weight is greater than Weight 50% pounds Ensure that at least 90% of the material by weight is greater than Weight Minimum pounds.			

C. Physical Requirements of Broken Stone and Broken Concrete

Use broken stone and broken concrete meeting the following physical requirements:

Absorption (FM 1-T85)	Maximum 5%
Los Angeles Abrasion (FM 1-T096)	Maximum loss 45%*
Soundness (Sodium Sulphate) (AASHTO T104)	Maximum loss 12%** (after five cycles)
Flat and elongated pieces	Materials with least dimension less than one third of greatest dimension not exceeding 10% by weight.
Dirt and Fines	Materials less than 1/2 inch in maximum dimension accumulated from interledge layers, blasting or handling operations not exceeding 5% by weight
Drop Test***(EM 1110-2-2302)	No new cracks developed, or no existing crack widened additional 0.1 inch, or final largest dimension greater than or equal to 90% original largest dimension of dropped piece.
* Ensure that granite does not have a loss greater than 55% and that broken concrete does not have a loss greater than 45%. ** The District Representative may accept rubble exceeding the soundness loss limitation if performance history shows that the material will be acceptable for the intended use. The District Representative will waive the soundness specification for rubble riprap (broken stone and broken concrete) when project documents indicate it will be placed in or adjacent to water or soil with a sulfate content less than 150 parts per million and a pH greater than 5.0. *** The District Representative will waive the Drop Test unless required to ensure structural integrity. Provide all equipment, labor and testing at no expense to the District. EM refers to the US Army Corps of District Representative's Specification Engineering Method.	

2.02 SOURCE APPROVAL AND PROJECT CONTROL

A. The District Representative will approve mineral aggregate sources in accordance with the following:

1. The District Representative may perform Independent Verification tests on all materials placed on the project.

2. The District Representative will check the gradation of the riprap by visual inspection at the project site. Resolve any difference of opinion with the District Representative in accordance with the method provided in FM 5-538. Provide all equipment, labor, and the sorting site at no expense to the District.

3. The District Representative may test components in a blend of rubble processed from different geologic formations, members, groups, units, layers or seams. The District Representative may select components based on like color, surface texture, porosity, or hardness. The District Representative will reject any blend if a component that makes up at least five percent by volume of the blend does not meet these specifications.

2.03 GEOTEXTILE FABRIC

A. Meet the requirements of Section 02514 and Design Standards, Index 199.

2.04 CONSTRUCTION METHODS

A. Rubble: Dump rubble in place forming a compact layer conforming to the neat lines and thickness specified in the Plans. Ensure that rubble does not segregate so that smaller pieces evenly fill the voids between the larger pieces.

END OF SECTION

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SECTION 02570

PERFORMANCE TURF

PART I – GENERAL

1.01 SCOPE OF WORK

Establish a growing, healthy turf over all areas designated in the Plans. Use sod in areas designated in the Plans to be sodded. Use seed, hydroseed, bonded fiber matrix, or sod in all other areas. Maintain turf areas until final acceptance of all contract work.

PART II - PRODUCTS

2.01 TURF MATERIALS

A. General

The types of seed and sod will be specified in the Contract Documents. All seed and sod shall meet the requirements of the Florida Department of Agriculture and Consumer Services and all applicable state laws, and shall be approved by the District Representative before installation.

All seed, sod and mulch shall be free of noxious weeds and exotic pest plants, plant parts or seed listed in the current Category I “List of Invasive Species” from the Florida Exotic Pest Plant Council (FLEPPC, http://www.fleppc.org). Any plant officially listed as being noxious or undesirable by any Federal Agency, any agency of the State of Florida or any local jurisdiction in which the project is being constructed shall not be used. Any such noxious or invasive plant or plant part found to be delivered in seed, sod or mulch will be removed by the Contractor at his expense and in accordance with the law.

All materials shall meet plant quarantine and certification entry requirements of Florida Department of Agriculture & Consumer Services, Division of Plant Industry Rules.

B. Seed

The seed shall have been harvested from the previous year’s crop. All seed bags shall have a label attached stating the date of harvest, LOT number, percent purity, percent germination, noxious weed certification and date of test.

Each of the species or varieties of seed shall be furnished and delivered in separate labeled bags. During handling and storing, the seed shall be cared for in such a manner that it will be protected from damage by heat, moisture, rodents and other causes.

All permanent and temporary turf seed shall have been tested within a period of six months of the date of planting.

All permanent and temporary turf seed shall have a minimum percent of purity and germination as follows:

- All Bahia seed shall have a minimum pure live seed content of 95% with a minimum germination of 80%.
- Bermuda seed shall be of common variety with a minimum pure live seed content of 95% with a minimum germination of 85%.
- Annual Type Ryegrass seed shall have a minimum pure live seed content of 95% with a minimum germination of 90%.

C. SOD

1. Types

Unless a particular type of sod is called for in the Contract Documents, sod may be either centipede, bahia, or bermuda at the Contractor's option. It shall be well matted with roots. Where sodding will adjoin, or be in sufficiently close proximity to, private lawns, other types of sod may be used if desired by the affected property owners and approved by the District Representative.

2. Dimensions

The sod shall be taken up in commercial-size rectangles, or rolls, preferably 12 inches by 24 inches or larger, except where 6 inch strip sodding is called for, or as rolled sod at least 12 inches in width and length consistent with the equipment and methods used to handle the rolls and place the sod. Sod shall be a minimum of 1-1/4 inches thick including a 3/4 inch thick layer of roots and topsoil. Reducing the width of rolled sod is not permitted after the sod has been taken up from the initial growing location. Any netting contained within the sod shall be certified by the manufacturer to be degradable within three years.

3. Condition

The sod shall be sufficiently thick to secure a dense stand of live turf. The sod shall be live, fresh and uninjured, at the time of planting. It shall have a soil mat of sufficient thickness adhering firmly to the roots to withstand all necessary handling. It shall be planted within 48 hours after being cut and kept moist from the time it is cut until it is planted. No sod which has been cut for more than 48 hours may be used unless specifically authorized by the District Representative. A letter of certification from the turf Contractor as to when the sod was cut, and what type, shall be provided to the District Representative upon delivery of the sod to the job site.

The source of the sod may be inspected and approved by the District Representative prior to being cut for use in the work.

D. MULCH

1. The mulch material shall be compost, hardwood barks, shavings or chips; or inorganic mulch materials as approved by the District Representative; or hydraulically applied wood fiber mulch or bonded fiber matrix (BFM) for the establishment of turf material.

2. Compost used for mulch shall meet the following requirements:

- Meet the requirements of Florida Department of Environmental Protection Rule 62.709.550 Type Y (yard waste), Type YM (yard waste and manure), Type A (municipal solid waste compost) or Rule 62.640.850 Type AA (composted biosolids) and have unrestricted distribution.

- The compost for use as mulch shall contain no foreign matter, such as glass, plastic or metal shards. The compost shall be slightly coarse to coarse in nature (over half of the solids shall be from particles 1/2 inches in size and no greater than 6 inches). Preference shall be given to compost or mulch made from uncontaminated woody waste materials.

2.02

Water for Grassing

A. The water used in the grassing operations may be obtained from any approved source. The water shall be free of any substance which might be harmful to plant growth. Effluent water shall meet all Federal, State and local requirements.

PART III EXECUTION

3.01 GENERAL

A. Incorporate turf installation into the project at the earliest practical time.

B. Shape the areas to be planted to the plan typical sections and lines and grade shown in the Contract Documents.

C. Except in areas where the Contract Documents requires specific types of grass to match adjoining private property, any species of grass designated in Section PART II above may be used. Use the methods and materials necessary to establish and maintain the initial grassing until acceptance of the Contract work. All of the permanent grassing material shall be in place prior to final acceptance.

D. The District will only pay for replanting as necessary due to factors determined by the District Representative to be beyond control of the Contractor.

E. Complete all grassing on shoulder areas prior to the placement of the friction course on adjacent pavement.

3.02 SEEDING

A. At the Contractor's option, wildflower seed may be included in the turf seeding operation or performed separately from the turf seeding.

B. Use of compost meeting the following requirements as mulch is acceptable unless otherwise specified.

C. Meet the requirements of Florida Department of Environmental Protection Rule 62.709.550 Type Y (yard waste), Type YM (yard waste and manure), Type A (municipal solid waste compost) or Rule 62.640.850 Type AA (composted biosolids) and have unrestricted distribution.

D. The compost for use as mulch shall contain no foreign matter, such as glass, plastic or metal shards. The compost shall be slightly coarse to coarse in nature (over half of the solids shall be from particles 1/2 inches in size and no greater than 6 inches). Preference shall be given to compost or mulch made from uncontaminated woody waste materials.

3.03 SOD

A. Place the sod on the prepared surface, with edges in close contact. Do not use sod which has been cut for more than 48 hours.

B. Place the sod to the edge of all landscape areas as shown in the Plans and as shown in the Design Standards.

C. Place rolled sod parallel with the roadway and cut any exposed netting even with the sod edge.

D. Monitor placed sod for growth of pest plants and noxious weeds. If pest plants and/or noxious weeds manifest themselves within 30 days of placement of the sod during the months April through October, within 60 days of placement of the sod during the months of November through March treat affected areas by means acceptable to the District at no expense to the District. If pest plants and/or noxious weeds manifest themselves after the time frames described above from date of placement of sod, the District Representative, at his sole option, will determine if treatment is required and whether or not the Contractor will be compensated for such treatment.

E. Remove and replace any sod as directed by the District Representative.

3.04 HYDROSEEDING

A. Use equipment specifically designed for mixing the mulch, seed, fertilizer, tackifier and dye, and applying the slurry uniformly over the areas to be hydroseeded.

B. Use mulch that does not contain reprocessed wood or paper fibers. Ensure that 50% of the fibers will be retained on a twenty-five mesh screen.

C. Mix fertilizer as required into the hydroseeding slurry.

D. Ensure that the dye does not contain growth or germination inhibiting chemicals.

E. When polyacrylamide is used as part of hydroseeding mix, only anionic polymer formulation with free acrylamide monomer residual content of less than 0.05% is allowed. Cationic polyacrylamide shall not be used in any concentration. Do not spray polyacrylamide containing mixtures onto pavement. These may include tackifiers, flocculants or moisture holding compounds.

3.05 BONDED FIBER MATRIX (BFM)

A. Meet the minimum physical and performance criteria of this Specification for use of BFM in hydroseeding operations or temporary nonvegetative erosion and sediment control methods.

B. Provide evidence of product performance testing, manufacturer’s certification of training and material samples to the District Representative at least 7 calendar days prior to installation.

C. Provide documentation to the District Representative of manufacturer’s testing at an independent laboratory, demonstrating superior performance of BFM as measured by reduced water runoff, reduced soil loss and faster seed germination in comparison to erosion control blankets.

D. Use only BFMs that contain all components pre-packaged by the manufacturer to assure material performance. Deliver materials in UV and weather resistant factory labeled packaging. Store and handle products in strict compliance with the manufacturer’s directions.

E. When polyacrylamide is used as part of hydroseeding mix, only anionic polymer formulation with free acrylamide monomer residual content of less than 0.05% is allowed. Cationic polyacrylamide shall not be used in any concentration. Do not spray polyacrylamide containing mixtures onto pavement. These may include tackifiers, flocculants or moisture holding compounds.

F. Meet the following requirements after application of the formed matrix:

- Ensure that the tackifier does not dissolve or disperse upon re-wetting.

- Ensure that the matrix has no gaps between the product and the soil and that it provides 100% coverage of all disturbed soil areas after application.

- Ensure that the matrix has no germination or growth inhibiting properties and does not form a water-repelling crust.

- Ensure that the matrix is comprised of materials which are 100% biodegradable and 100% beneficial to plant growth.

G. Mix and apply the BFM in strict compliance with the manufacturer's recommendations.

H. Apply the BFM to geotechnically stable slopes at the manufacturer's recommended rates.

I. Degradation of BFM will occur naturally as a result of chemical and biological hydrolysis, UV exposure and temperature fluctuations. Re-application, as determined by the District Representative, will be required if BFM-treated soils are disturbed or water quality or turbidity tests show the need for an additional application. The work and materials for re-application, will be paid for by the Contractor.

3.06 WATERING

A. Water all turf areas as necessary to produce a healthy and vigorous stand of turf. Ensure that the water used for turf irrigation meets the requirements of Section 02570-2.03.

3.07 FERTILIZING

A. Fertilize as necessary based on recommendation from soil testing laboratory. Refer to Section 02570-2.02 for fertilizer rates.

B. For bid purposes, base estimated quantities on an initial application of 265 lbs/acre and one subsequent application of 135 lbs/acre of 16-0-8.

3.08 TURF ESTABLISHMENT

A. Perform all work necessary, including watering and fertilizing, to sustain an established turf until final acceptance, at no additional expense to the District. Provide the filling, leveling, and repairing of any washed or eroded areas, as may be necessary.

B. Established turf is defined as follows:

1. An established root system (leaf blades break before seedlings or sod can be pulled from the soil by hand).
2. No bare spots larger than one square foot.
3. No continuous streaks running perpendicular to the face of the slope.
4. No bare areas comprising more than 1% of any given 1,000 square foot area.
5. No deformation of the turf areas caused by mowing or other Contractor equipment.
6. No exposed sod netting.
7. No pests or noxious weeds.

C. Monitor turf areas and remove all competing vegetation, pest plants, and noxious weeds (as listed by the Florida Exotic Pest Plant Council, Category I "List of Invasive Species", Current Edition, http://www.fleppc.org). Remove such vegetation regularly by manual, mechanical, or chemical control means, as necessary. When selecting herbicides, pay particular attention to ensure use of chemicals that will not harm desired turf or wildflower species.

D. If at the time that all other work on the project is completed, but all turf areas have not met the requirements for established turf set forth in this Section, continuously maintain all turf areas until the requirements for established turf set forth in this Section have been met.

E. During the entire establishment period and until turf is established in accordance with this specification, continue inspection and maintenance of erosion and sedimentation control items in accordance with Section 02104. Take responsibility for the proper removal and disposal of all erosion and sedimentation control items after turf has been established.

F. Notify the District Representative, with a minimum of seven calendar days advance notice, to conduct inspections of the turf at approximate 90-day intervals during the establishment period to determine establishment. Results of such inspections will be made available to the Contractor within seven calendar days of the date of inspection. Determination of an established turf will be based on the entire project and not in sections.

G. Upon the determination by the District Representative that the requirements of this Section have been met and an established turf has been achieved and all erosion and sedimentation control items have been removed, the District Representative will release the Contractor from any further responsibility provided for in this Specification.

H. The Contractor's establishment obligations of this specification will not apply to deficiencies due to the following factors, if found by the District Representative to be beyond the control of the Contractor, his subcontractors, vendors or suppliers:

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

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

END OF SECTION

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SECTION 02900

WETLAND PLANTINGS

PART 1 GENERAL

1.01 SUMMARY

A. Install, establish and maintain wetland plantings as indicated in the Contract Documents.

B. Upon completion of all planting and the acceptance by the District Representative, the plant establishment period shall commence. The Contractor is responsible for maintaining installed plant material in a healthy growing condition for 365 days from acceptance of the planted areas by the District Representative. Contractor is responsible for watering as necessary to ensure plant survival during the 365 day establishment period.

C. Vegetation maintenance shall be conducted for a total of two years following final acceptance of construction.

D. Maintenance shall be conducted in accordance with Section 2910.

1.02 QUALITY ASSURANCE

A. Referenced Standards:

1. Grades and Standards for Nursery Plants and Trees "State of Florida, latest edition (FDAC)

2. Control of Non-Native Plants in Natural Areas of Florida, K. A. Langeland and R. K. Stocker, Florida Cooperative Extensions Services, Institute of Food and Agricultural Sciences, University of Florida.

3. American Standard for Nursery Stock (ASNS).

4. Standard Methods of the Association of Official Agricultural Chemists.

5. Federal Specifications (FS):

a. A-A-2671, Agricultural Seeds.

6. United States Department of Agriculture, (USDA):

a. Federal Seed Act.

7. FDOT Standard Specifications, Latest Edition, as supplemented

8. Florida Pesticides Laws and Rules, Chapter 487, Florida Statutes, Florida Department of Agriculture and Consumer Services, June 1986.

1.03 SUBMITTALS

A. Shop Drawings: See Section 01341.

B. Product technical data including:

1. Acknowledgement that products submitted meet requirements of standards referenced.

2. Manufacturer's installation instructions.

3. Other documents:

a. Delivery schedule.

b. Prior to delivery of materials, certificates of compliance attesting that materials meet specified requirements. Certified copies of the material certificates shall include the classification, botanical name, common name, size, quantity by species, and location where grown.

c. Maintenance Record.

d. NPDES Pesticide General Permit Treatment Report.

1.04 DELIVERY, STORAGE, AND HANDLING

A. A delivery schedule shall be provided at least 10 calendar days prior to the first day of delivery.

B. Comply with Referenced Documents and manufacturer’s recommendations for delivery, storage and handling of herbicides.

C. Plant Materials:

1. Protection during delivery: Plant material shall be protected during delivery to prevent desiccation and damage to the branches, trunk, root system, or earth ball. Branches shall be protected by tying-in. Exposed branches shall be covered during transport.

2. Inspection: Plant material shall be well shaped, vigorous and healthy with a healthy, well branched root system, free from disease, harmful insects and insect eggs, sun scald injury, disfigurement or abrasion. Plant material shall be checked by the District Representative for unauthorized substitutions and to establish nursery-grown status. Plant material showing desiccation, abrasion, sunscald injury, disfigurement, or unauthorized substitution shall be rejected. The plant material shall exhibit typical form of branch to height ratio, and meet the caliper and height measurements specified. Plant material that measures less than specified, or has been poled, topped off or headed back, shall be rejected. Container-grown plant material shall show new fibrous roots and the root mass shall contain its shape when removed from the container. Plant material with broken or cracked balls; or broken containers shall be rejected. Except as noted in the plans, bare-root plant material shall be rejected. Other materials shall be inspected for compliance with Part 2 - PRODUCTS.

3. Storage: Plant material not installed on the day of arrival at the site shall be stored and protected in designated areas. Plant material shall not be stored longer than 24 hours. Plant material shall be protected from direct exposure to wind and sun. All plant material shall be kept in a moist condition until installed by watering in a manner acceptable to the District Representative.

4. Handling: Plant material shall not be damaged in handling. Cracking or breaking the earth ball of balled and burlapped plant material shall be avoided. Plant material shall not be handled by the trunk or stems. Materials shall not be dropped from vehicles.

1.05 SEQUENCING AND SCHEDULING

A. Installation Schedule:

1. The Contractor shall provide a schedule showing when trees, shrubs, groundcovers and other plant materials are anticipated to be planted.

2. The Contractor shall indicate the schedule of planting in relation to schedule for finish grading and/or topsoiling if specified in the Construction Plans.

3. The Contractor shall indicate the anticipated dates when the District Representative will be required to review installation for initial acceptance and final acceptance.

1.06 SPECIAL PROJECT WARRANTY

A. Furnished plant material shall have a warranty for plant growth to be in a vigorous growing condition and survival of at least 90% of the planted species for one (1) year (365 days) from acceptance of the planted areas by the District Representative. When plant material is determined to be unhealthy and survival is below 90 percent by species in accordance with this specification, it shall be replaced under this warranty.

B. Remove and replace trees, shrubs, or emergent plants found to be dead or in unhealthy condition during the 365 day establishment period.

PART 2 PRODUCTS

2.01 MATERIALS

A. Plants:

1. See plant list on Drawings.

2. All specified plantings will be container grown material. Bare-root plant material shall be rejected unless pre-approved by District.

3. Plantings will be sound, healthy, and vigorous, with normal top and root systems, free from disease, insect pests or their eggs, grown in same climatic zone as project. For marsh grasses, all units must have at least 2-3 culms per unit.

4. Unless otherwise specified, minimum grade for all tree, shrub and herbaceous plantings shall conform to Grade No. 2 or better for trees and shrubs with herbaceous plants meeting Wetland Plant standards as referenced in “Grades and Standards for Nursery Plants Parts I and II”; Division of Plant Industry, Florida Department of Agriculture and Consumer Services and the current American Association of Nurserymen Standards.

5. Container grown plants will have roots well established in soil, grown in container for at least one growing season and acclimated to sun exposure (sun/shade) and inundation characteristics (depth/duration) present at the Project site.

6. All plant material will consist of species and sizes indicated on Drawings and shall be inspected and approved by the District Representative prior to installation.

7. A minimum of two plants of each species must be shipped with tags stating the botanical nomenclature and common name. Should discrepancies arise between nomenclatures; the botanical name will take precedence.

8. The Contractor will provide all other materials necessary to install and maintain survival of the planted material for the 365-day warranty period.

PART 3 EXECUTION

3.01 SOIL PREPARATION

A. General:

1. Limit preparation to areas that will be planted soon after.

2. Finished soil conditions (texture, composition, moisture, salinity) and grades shall be conducive to plant health/survival and shall be free of debris, rock and trash.

3. Provide facilities to protect and safeguard all persons on or about premises.

4. Verify location and existence of all underground utilities. Take necessary precaution to protect existing utilities from damage due to construction activity. Repair all damages to utility items at Contractor's sole expense.

B. Provide facilities such as protective fences and/or watchmen to protect work from vandalism. Contractor will be responsible for vandalism until acceptance of work.

3.02 PLANTING TREES, SHRUBS, AND GROUND COVERS

A. Notification:

1. Notify District of source of plants and plant materials at least 30 days prior to planting to permit District's Project Manager or duly authorized representative to inspect source qualifications.

B. Preparation:

1. Handle plants so that roots or balls are adequately protected from breakage of balls, from sun or drying winds. Ensure tops or roots of plants are not permitted to dry out.

2. During transportation, protect materials from wind and sun to prevent tops and roots from drying out.

3. Protect tops of plants from damage. Plants with damaged tops will be rejected.

4. Do not prune trees and shrubs at nursery.

C. Planting Season:

1. Plant trees, shrubs, and groundcovers any time the ground and moisture conditions are suitable.

D. Planting Procedure:

1. Plant installation shall not begin until the Contractor has staked planting zones for planting areas and the staking is in turn accepted by the District Representative. Wetland plantings shall be installed the same work day as delivered. Upland plants shall be installed no later than twenty-four (24) hours after delivery to the site or provisions shall be made for keeping them shaded and watered in a manner acceptable to the District Representative.

2. Material shall be installed at the soil/sediment depths at which it was originally grown.

3. Furnish and apply all other material including water and such accessory items as may be required to facilitate the planting and establishment of all upland plants specified to be installed.

4. Indicate locations of plants for approval by Engineer of Record or District Representative before excavating plant locations.

5. In the event that underground construction, utilities, obstructions, or rock are encountered in excavation of plantings, secure alternate locations from District Representative. Make said changes without additional compensation. Where tree locations fall under existing overhead wires, or crowd existing trees, adjust locations as approved by Engineer of Record or authorized representative or District Project Manager.

6. Installation of native plants in the soil shall include pushing soil back away from the installed plant such as to form a “watering bowl” around the circumference of the installed plant. After the plant has been placed into its hole, the Contractor shall carefully pack soil around the installed plant and form the earthen watering bowl. For upland plants, soils shall be sufficiently watered (> 3 gallons) and/or packed to eliminate air pockets.

7. Shrub and ground cover beds:

   a. Plant shrubs and ground covers used in mass plantings in individual holes of required size.

8. Each installed upland plant shall be watered with at least three (> 3) gallons, with the intent that soil packing and watering will minimize air pockets around plant roots.

9. Staking: Stake trees only as necessary as detailed on Drawings or in accordance with Nursery Standards. If trees are not in peril of falling over, no staking will be necessary.

10. Remove dead or damaged branches.

11. Furnish and supply all other material including water and accessory items as may be required to facilitate the planting and establishment of all plants specified to be installed, noting that no additional watering should be necessary for intertidal plants.

3.03 MAINTENANCE AND REPLACEMENT

A. General:

1. Begin maintenance of planted areas immediately after each portion is planted and continue until final acceptance or for a specific time period as stated below, whichever is the longer.

2. The Contractor shall guarantee the survival of at least ninety (90) percent of all plant materials per species for a period of 365 days from date of the acceptance of planting by the District Representative; supplementary watering may be necessary to ensure survival of the installed plants at no additional cost to the District. Plants per species that die in excess of the 10% allowance shall be replaced and maintained by the Contractor at no additional cost to the District.

3. Maintenance includes but is not limited to watering and removal of nuisance and exotic species by hand removal and herbicide treatment.

4. The Contractor shall clean up and remove from the premises all surplus and discarded materials and rubbish.

5. Protection of new materials:

   a. Provide barricades, coverings or other types of protection necessary to prevent damage to existing improvements indicated to remain. Repair and pay for all damaged items.

6. Replace unacceptable materials with materials and methods identical to the original specifications unless otherwise approved by the District Representative.

B. Plant Establishment and Maintenance Period:

1. Commencement:

   a. Upon completion of all planting and the acceptance by the District Representative, the plant establishment period shall commence. The Contractor is responsible for maintaining installed plant material in a healthy growing condition for 365 days from acceptance of the planted areas by the District Representative. Contractor is responsible for watering as necessary to ensure plant survival during the 365 day establishment period.

   b. District Representative will inspect completed planting for acceptability of installation. Approval of planting denotes initial acceptance and the beginning of the maintenance period.

2. Maintenance during Establishment Period:

   a. The Contractor shall be responsible for ensuring ninety percent (90%) survival by species of all plants installed from the completion of the last day of planting through a **365** day establishment period.

   b. The Contractor shall be responsible for maintenance for a total of two years following final acceptance of construction.

   c. The Contractor shall, within the first year, replace any and all plants below the ninety percent (90%) threshold survivorship level or that have deteriorated below the level of Florida Grade No. 2 for trees and shrubs and Wetland Plants for herbaceous material as specified in the Nurserymen Standards.

d. Contractor will be required to maintain the Project site and meet the 90% success criteria during the 365 day establishment period. The time clock will commence upon District acceptance of completion of Project construction. The intent of the plant maintenance is to minimize non-native and nuisance plant growth and maximize survivorship, growth, and maturation of the enhanced/restored upland/wetland ecosystem of the project site. Treatment of nuisance/exotic vegetation will be required on a quarterly basis during the 365-day establishment period. Nuisance and non-native plants include but are not necessarily limited to: Brazilian pepper (Schinus terebinthefolius), white leadtree (Leucaena leucocephala) Australian pine (Casuarina spp.), cattail (Typha sp.), torpedo grass (Panicum repens), primrose willow (Ludwigia peruviana), women's tongue (Albizia lebbeck), cogon grass (Imperata spp.), para-grass (Brachiaria mutica), and guinea grass (Panicum maximum). The Contractor shall notify the District prior to making maintenance visits. Following site visits and maintenance, the Contractor will submit to the District an NPDES Pesticide General Permit Treatment Report and summary report detailing site observations, plant conditions, maintenance activities, and any other relevant information appropriate concerning the success of the upland/wetland sectors of the Project. After receipt of the summary report, the District will inspect the site and notify the Contractor if additional maintenance is needed.

e. The Contractor shall be responsible for the labor and materials to replace existing and installed desirable vegetation that may be damaged during maintenance and watering activities.

f. During all planting and maintenance events, any stored materials on District property and/or equipment belonging to the Contractor, as approved by the District, will be the sole responsibility of the Contractor, and will be kept in an orderly condition and in compliance with all applicable regulations. The District will not be responsible or liable for any theft or damage incurred to the Contractor's materials and/or equipment except for that directly caused by the District. Plant containers and other waste associated with planting/maintenance activities will be promptly removed from the project site and disposed of properly.

END OF SECTION

SECTION 02910

NON-NATIVE VEGETATION REMOVAL
AND CONTROL

PART 1 GENERAL

1.01 SUMMARY

A. The work included under this section consists of mechanical and selective removal and/or treatment of non-native (exotic) plant species including nuisance vegetation within the project limits not associated with standard clearing & grubbing of project grading areas (ditch backfills, spoil removal areas, water quality improvement pond grading, etc.) as depicted in the Drawings. Also described in this section will be the re-removal and treatment of non-native and nuisance vegetation that shall occur (re-sprout) following initial clearing and grubbing, mechanical clearing, and/or hand removal efforts during the identified establishment period.

B. In areas designated as “Grading and Non-Native Vegetation Removal”, exotic and nuisance vegetation is to be mechanically removed and disposed of unless mechanical removal would, in the opinion of the District Representative, disturb or damage desirable native vegetation and/or soils. Coverage by Brazilian pepper is very dense in the areas designated for mechanical removal. Organic, mucky soils and flooded conditions prevail in the wetland and ecotone areas during the wet season and/or following heavy rainfall events. Therefore, provisions for conducting the work during dry conditions, using specialized equipment and techniques will be required. In these instances, the Contractor shall carefully carry out designated selective removal being careful not to disturb native vegetation to be preserved on site. Use of a rubber tire backhoe, frontend loader, hydroaxe, forestry mulcher, or similar heavy machinery is allowable to remove non-native and nuisance vegetation in wetland and ecotone areas. The Contractor shall make his own inspection to determine the character, density, and extent of non-native and nuisance vegetation and existing field conditions prior to bid preparation.

C. In areas designated as “Selective Non-Native Vegetation Removal”, it is anticipated that the use of heavy machinery will be limited due to the prevalence of natural, native vegetation to be protected/preserved. Therefore, careful physical removal and/or selective "kill-in-place" of non-native plants will be necessary and generally consist of hand clearing (chain saws, machetes, and other hand tools) by the Contractor in these sensitive areas including removal of the larger woody debris. If “selective” clearing is not possible without disturbing or damaging desirable native vegetation and/or soils, exotic and nuisance vegetation shall be spot treated /killed-in-place with a dye-laced herbicide in accordance with this specification. In some cases, some non-

native plants may be accessible to mechanical equipment within designated "Selective Exotic Removal" areas with minimal risk of damage to other native species. In these instances, the District Representative may direct total (foliage, branches, trunk and root system) mechanical removal of non-native species.

D. In areas designated as "Hand Removal Only", no mechanized equipment other than hand tools will be permitted to facilitate the removal of non-native and nuisance vegetation. No disturbance to soils, the roots of vegetation or damage to desirable native vegetation will be permitted unless authorized by the District Representative. Work will be limited to hand clearing (chain saws, machetes, and other hand tools) by the Contractor with removal of the trimmed biomass, or spot herbicide treatment of non-native and nuisance vegetation using "kill-in-place" techniques, which may include cut and frill, girdled trunks or wick application using approved, dye-laced herbicide. If it is possible to do so without damage to otherwise desirable vegetation, cut woody vegetation shall be removed from the wetland area and treated pursuant to Section 02910 Part 3.03 "DISPOSAL OF WOODY DEBRIS" of these Construction Specifications. All remaining stumps shall be treated with herbicide to prevent re-growth. If possible, the Contractor will perform non-native plant removal when the plants are not producing viable seeds.

E. Non-native and nuisance plants may include, but are not necessarily limited to: Brazilian pepper (*Schinus terebinthifolius*), Australian pine (*Casuarina spp*.), Punk tree (*Melaleuca quinquenervia*), Carrot wood (*Cupaniopsis anacardoides*), cogon grass, guinea grass, white leadtree, air potato, primrose willow, castor bean, natal grass, morning-glory, danglepod and those species listed in the Florida Exotic Pest Plant Council's (FLEPPC) 2013 List of Invasive Plant Species. In addition, nuisance species including Carolina Willow (*Salix caroliniana*) and cattails (*Typha spp*.) will be included for removal and/or treatment under this specification.

1.02 QUALITY ASSURANCE

A. Referenced Standards:

1. "Control of Non-Native Plants in Natural Areas of Florida", K. A. Langeland and R. K. Stocker, Florida Cooperative Extensions Services, Institute of Food and Agricultural Sciences, University of Florida.

2. Florida Pesticides Laws and Rules, Chapter 487, Florida Statutes, Florida Department of Agriculture and Consumer Services, June 1986.

3. Use products found on the following website; www.flpesticide.us/ , that are approved by the Florida Department of Agriculture for the State of Florida. The use of restricted products is prohibited.

4. 2013 Florida Exotic Pest Plant Council’s (FLEPPC)

1.03 SUBMITTALS

A. Shop Drawings: See Section 01341.

B. Product technical data including:

1. Acknowledgement that products submitted meets the requirements of standards referenced.

2. Manufacturer's use instructions.

3. Other documents:

a. Delivery schedule.

b. Prior to delivery of materials, certificates of compliance attesting that materials meet specified requirements shall be provided. Certified copies of the material certificates shall include the classification, botanical name, common name, size, quantity by species, and location where grown.

c. Maintenance Record.

PART 2 PRODUCTS

2.01 SAFETY AND HANDLING

A. A schedule indicating the dates of proposed herbicide maintenance shall be provided at least 10 calendar days prior to the first maintenance event.

B. Comply with Referenced Documents and manufacturer’s recommendations for delivery, storage and handling of herbicides.

C. Use licensed, suitably trained and experienced workers to handle, mix and apply herbicides.

D. Comply with applicable and suitably experienced workers to handle, mix and apply herbicides.

E. Comply with safety recommendations in the Reference Documents and applicable laws and regulations.

2.02 HERBICIDE

A. Refer to species-specific product recommendations in reference documents and to labeling restrictions. Herbicides must be pre-approved by the District Representative for specific location and application methods, as different herbicides may be appropriate for differing non-native vegetation. The use of herbicides and products approved by the FDA/EPA for use in aquatic sites is required for all applications in wetlands or surface water areas.

B. Herbicide application vehicles shall be fueled by "Biodiesel" or equivalent fuel type, as approved by the District Representative.

2.03 PRODUCTS - SPECIAL PROJECT WARRANTY

A. The Contractor shall maintain ALL areas within the project limits free of non-native and/or nuisance plants, for a period of one (1) year after the date of final acceptance of the project by the District.

PART 3 EXECUTION

3.01 GENERAL

A. Comply with recommendations in Referenced Document for mechanical removal.

B. Comply with this section, Referenced Document and manufacturer's recommendations for herbicide application and follow up. Use herbicide, vehicles and solution specified in this Section.

3.02 HERBICIDE APPLICATION

A. Within ALL areas of the project, the Contractor shall apply herbicide to non-native and nuisance plant shoots seedlings, rhizomes and sprouts recurring 30 days after mechanical removal and/or hand removal. Retreat 60 days after initial application. Use minimal concentrations necessary to control re-growth and/or cause death. All herbicides must be dye-laced to allow and assist with visual verification of spraying; the dye color must be mutually agreeable to the Contractor and the District Representative.

B. Care shall be taken to avoid application or spray drift of herbicides to native vegetation or accidental spillage in any location.

C. Apply 3 treatments of herbicide 60 days apart to all live non-native and nuisance plants remaining within the work area. Treat so there are no, live non-native and/or nuisance plants 60 days after the third application. Treat with a fourth application, if necessary. Use in all areas inside the limits of the Work.

3.03 DISPOSAL OF WOODY DEBRIS

A. The disposal of timber, stumps, brush, roots, rubbish and other similar vegetative material resulting from non-native/nuisance plant removal activities shall be by methods approved by the District Representative and in accordance with all applicable laws, ordinances and regulations. The Contractor shall take ownership of all such material and is responsible for all costs, permitting etc. regarding disposal of such materials whether onsite or offsite.

B. The standing biomass removed may not be mulched in place except in designated upland areas. In general, the disposal of woody vegetation obtained from wetland areas shall be transported to an upland location pre-approved by the District Representative where it will be mulched. Following mulching, the material will then be transported to an onsite disposal area designated by the District Representative. The Contractor shall transport and mulch the standing biomass in conformance with industry safety standards and methods, including obtaining required permits and approvals pursuant applicable laws, regulations and ordinances. No mulching or disposal in wetland areas will be permitted.

END OF SECTION

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