RESOLUTION NO. 17-02-20

A RESOLUTION OF THE TOWN COMMISSION OF THE TOWN OF LAKE PARK, FLORIDA, AUTHORIZING AND DIRECTING THE TOWN MANAGER TO PROCEED WITH STORMWATER INFRASTRUCTURE REPAIRS WITH HINTERLAND GROUP INC. PER THE TERMS OF ITS PREVIOUSLY EXECUTED AGREEMENT WITH THE TOWN; AND PROVIDING FOR AN EFFECTIVE DATE.

WHEREAS, the Town of Lake Park, Florida ("Town") is a municipal corporation of the State of Florida with such power and authority as has been conferred upon it by the Florida Constitution and Chapter 166, Florida Statutes; and

WHEREAS, the Town is empowered to enter into contractual arrangements with public agencies, private corporations or other persons; and

WHEREAS, the Town is responsible for the repair and maintenance of its stormwater infrastructure system and requires a contractor to provide such services; and

WHEREAS, on December 20, 2017, the Town executed a "piggy back" contract with Hinterland Group, Inc. ("Contractor") per the terms and conditions of City of Palm Beach Gardens contract number ITB2016-O59PS to provide stormwater infrastructure maintenance and repairs ; and

WHEREAS, pursuant to the terms and conditions of the Town's contract with the Contractor, the Contractor and Town have agreed to a work authorization whereby the Contractor has agreed to provide pipe rehabilitation services at two locations (Flagler Drive and Jasmine Drive)

WHEREAS, the cost of the work authorization is $59,902.03; and

WHEREAS, Town Manager has recommended to the Town Commission that it is in the best interest of the Town to approve the work authorization for pipe rehabilitation from the Contractor.

NOW THEREFORE, BE IT RESOLVED BY THE TOWN COMMISSION OF THE TOWN OF LAKE PARK, FLORIDA, AS FOLLOWS:

Section 1. The foregoing recitals are incorporated herein by reference.

Section 2. The Commission hereby authorizes and directs the Town Manager to expend budgeted funds to proceed with the repair of the Town's Stormwater infrastructure per the Contractor's price proposals, and to issue any purchase orders or other documents required to effectuate procurement . A copy of the proposals are attached hereto and incorporated herein as Exhibit A.

Section 3. This Resolution shall take effect upon execution.

The foregoing Resolution was offered by Vice-Mayor Glas-Castro, who moved its adoption. The motion was seconded by Commissioner Flaherty and upon being put to a roll call vote, the vote was as follows:

	AYE	NAY
MAYOR MICHAEL O'ROURKE	✓	
VICE-MAYOR KIMBERLY GLAS-CASTRO	✓	
COMMISSIONER ERIN FLAHERTY	✓	
COMMISSIONER JOHN LINDEN	✓	
COMMISSIONER ROGER MICHAUD	✓	

The Town Commission thereupon declared the foregoing Resolution No. 17-02-30 duly passed and adopted this 19 day of February, 2020.

TOWN OF LAKE PARK, FLORIDA

BY: _____
MICHAEL O'ROURKE
MAYOR

ATTEST:

_____
VIVIAN MENDEZ
TOWN CLERK

(TOWN SEAL)

Approved as to form and legal sufficiency:

BY: _____
THOMAS J. BAIRD
TOWN ATTORNEY

Date Prepared: 1/29/2020
Cost Estimate / Proposal: Town of Lake Park 18-0001-08
Customer Information: Richard Scherle
Town of Lake Park
650 Old Dixie Hwy,
Lake Park, FL 33403

Job Location:
1600 Flagler Dr
Town of Lake Park , FL 33403

Internal Job Number: 18-0001-08
Customer Job Number: 18187.13
Job Name: 1600 Flagler Dr
Contract: Palm Beach Gardens ITB2016-059PS
Terms: 30 Days

Line Item	Unit Price	Unit	QTY	Total
96. Construction Foreman	$120.00	HR	40	$ 4,800.00
97. Equipment Operator	$75.00	HR	40	$ 3,000.00
99. Pipe Layer	$70.00	HR	80	$ 5,600.00
103. Track Excavator	$150.00	HR	20	$ 3,000.00
105. Wheel Loader	$ 85.00	HR	20	$ 1,700.00
109. Vibratory Plate Compactor	$ 30.00	HR	16	$ 480.00
111. Dewatering	$ 65.00	HR	48	$ 3,120.00
112. Asphalt Pavement Replacement	$ 250.00	Tons	9	$ 2,250.00
113. Lime Rock	$ 125.00	Tons	3	$ 375.00
120. Floratan Sod	$ 1.00	Sq Ft	635	$ 635.00
125. Maintenance of Traffic	$ 1,000.00	EA	1	$ 1,000.00
126. Mobilization	$ 25,000.00	EA	0.12	$ 3,000.00
127. Material Markup	$ 22.40	LF	45	$ 1,008.00
15" RCP 35' x 15%	$ 151.20	15% Markup	1	$ 151.20
				$ -
				$ -
Total				**$30,119.20**

Exclusions from Scope:

1. **Permitting and Bonding**
2. **Any major MOT Required (road closures, lane closures, detours, etc.)**
3. **Sizes shown on plans are assumed to be correct**
4. **This quote does not provide any bypass or manhole lining.**
5. **Hinterland Group will not be held liable for line collapse during clean and tv due to the unknown condition of existing piping**
6. **Any other work not specifically listed in inclusions above.**
7. **Hinterland is not responsible for pipe collapse during calcium deposit removal due to unknown conditions located in host pipe.**

NOTE: Due to the fragile condition of the existing pipe(s), the possibility of the pipe collapsing exists during the construction phase. If this unlikely event occurs, we will provide you with an additional estimate for a necessary point repair to complete the lining process. Due to the poor condition of the original host pipe, residual settling may appear at the surface grade post lining. This condition is not covered under warrantee. Unforeseen conditions can affect the amount of time to complete the work, therefore increasing or decreasing estimate.

Prepared By: Brett Konchak
Hinterland Group Inc
2051 W Blue Heron Blvd
West Palm Beach, FL 33404

Town of Lake Park agrees to the terms listed above.

Accepted By:
Print, Sign and Date: 2-21-2020

A Higher Standard of Excellence
engenuity group inc.
ENGINEERS • SURVEYORS • GIS MAPPERS

1280 N Congress Ave, Suite 101
West Palm Beach, FL 33409
TEL: 561.655.1151 FAX: 561.832.9390
E-Mail: info@engenuitygroup.com
Website: www.engenuitygroup.com

January 24, 2020

SUBMITTAL TO TOWN OF LAKE PARK
904 JASMINE DRIVE DRAINAGE IMPROVEMENTS

Richard Scherle
Town of Lake Park
Dept. of Public Works
Lake Park, FL

Re: Drainage Pipe Improvements
Town of Lake Park, Florida
Engenuity Group Project No. 18187.17

Dear Mr. Scherle:

Please see enclosed one set of the construction documents consisting of engineering plans and a project manual with specifications.

Thank you very much and please let me know if you have any questions or other comments.

Sincerely,

Adam Swaney, PE
Project Manager

ENGINEERING PLANS
FOR
904 JASMINE DRIVE STORMWATER IMPROVEMENTS

JANUARY 2020

PREPARED FOR:
TOWN OF LAKE PARK

LOCATION MAP

DRAWING INDEX:

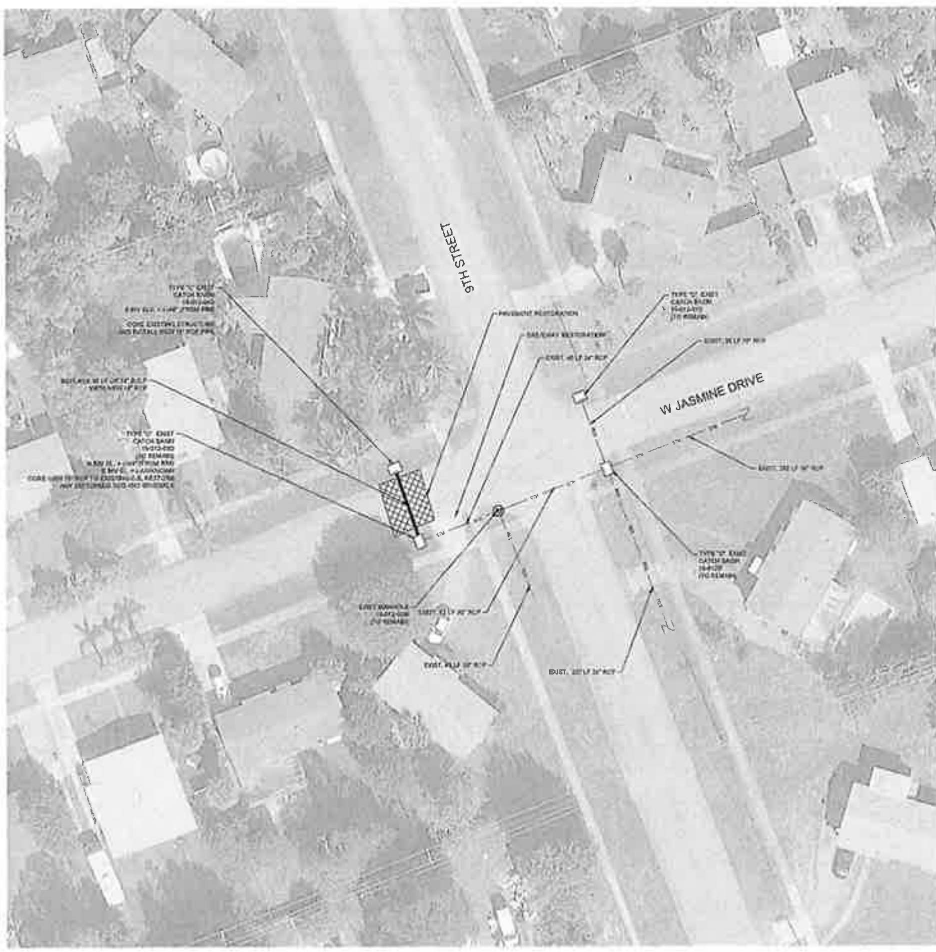
811
Know what's below.
Call before you dig.

904 JASMINE DRIVE DRAINAGE IMPROVEMENTS
904 JASMINE DRIVE
TOWN OF LAKE PARK, FLORIDA
COVER

engenuity group inc.

1
3

18187.17



LOCATION MAP

GRAPHIC SCALE

SCALE: 1" = 20'

LEGEND:

PROPOSED

PAVEMENT RESTORATION

CIPP — CURE IN PLACE

EXISTING

STORM

CATCH BASIN

MANHOLE

GENERAL NOTES

1. NO SURVEY WILL BE OBTAINED. THEREFORE CONTRACTOR IS TO FIELD VERIFY ALL EXISTING UTILITIES AND DRAINAGE LINES.
2. PIPE INVERT DEPTHS SHOWN ON THIS PLAN ARE APPROXIMATE VALUES OBTAINED AT A FIELD VISIT. CONTRACTOR TO FIELD VERIFY INVERT AND TOPOGRAPHIC ELEVATIONS.
3. CONTRACTOR TO RESTORE ANY DISTURBED SIDEWALK, SOD, DRIVEWAY, PAVEMENT AREAS TO EXISTING CONDITIONS OR BETTER.
4. ALL PAVEMENT STRIPING SHALL BE REFLECTIVE PAINT AND MATCH EXISTING UNLESS NOTED OTHERWISE.
5. ALL AREAS DISTURBED BY CONSTRUCTION SHALL BE RESTORED TO THEIR ORIGINAL CONDITION.
6. FINISHED GRADE AT EDGE OF NEW PAVEMENT SHALL BE 1/4 INCH ABOVE EDGE OF EXISTING CONCRETE HEADER CURB.
7. MAINTAIN DRAINAGE THROUGH WORK AREA DURING CONSTRUCTION.
8. FINISHED GRADES SHALL MATCH EXISTING UNLESS OTHERWISE NOTED.
9. CAUTION-NOT ALL UNDERGROUND UTILITIES ARE SHOWN ON PLANS.
10. LANDSCAPE AREAS TO BE RESTORED TO ORIGINAL CONDITION.
11. CONTRACTOR TO PROVIDE MAINTENANCE OF TRAFFIC PLAN (MOT) PREPARED BY AN ATSSA CERTIFIED PREPARER PRIOR TO COMMENCING WORK.
12. CONTRACTOR SHALL LOCATE EXISTING UNDERGROUND UTILITIES IN THE AREA OF THE WORK AS CONSTRUCTION PROCEEDS. IF UTILITIES ARE TO REMAIN IN PLACE, PROVIDE ADEQUATE MEANS OF PROTECTION.
13. PROTECT STRUCTURES, UTILITIES, SIDEWALKS, PAVEMENTS, BENCHMARKS, AND OTHER FACILITIES FROM DAMAGE CAUSED BY SETTLEMENT, LATERAL MOVEMENT, UNDERMINING, WASHOUT, AND OTHER HAZARDS CREATED BY EXCAVATING OPERATIONS.

811 Know what's below. Call before you dig.

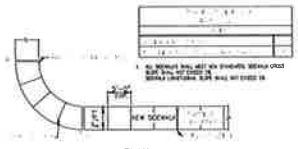
904 JASMINE DRIVE DRAINAGE IMPROVEMENTS
904 JASMINE DRIVE
TOWN OF LAKE PARK, FLORIDA
ENGINEERING PLAN

engenuity group, inc.

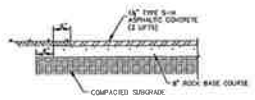
DATE: JANUARY 2020

SHEET 2 of 3

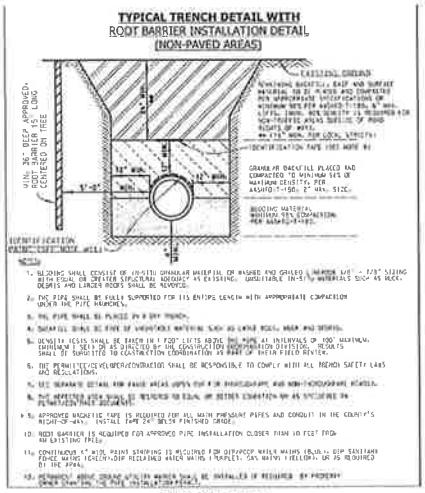
JOB NO. 18187.17

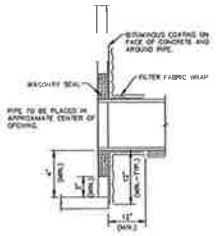


CONCRETE SIDEWALK

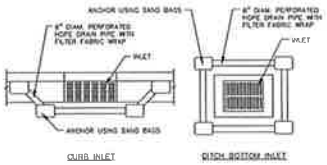


ASPHALT PAVEMENT SECTION





FILTER FABRIC WRAP ON GROUTED PIPE TO STRUCTURE JOINT



STORM DRAIN INLET PROTECTION

904 JASMINE DRIVE DRAINAGE IMPROVEMENTS
904 JASMINE DRIVE
TOWN OF LAKE PARK, FLORIDA
DETAILS

engenuity group inc.

JOB NO. 18187.17

PROJECT MANUAL

904 JASMINE DRIVE
DRAINAGE PIPES REPAIRS

TOWN OF LAKE PARK

JANUARY 2020

A Higher Standard of Excellence
engenuity group inc.

ENGENUITY GROUP, INC.
1280 N CONGRESS AVE, SUITE 101
WEST PALM BEACH, FL 33409
(561) 655-1151

PROJECT NO.18187.17

TABLE OF CONTENTS

00850
DRAWINGS TABLE OF CONTENTS

The Drawings which form a part of the Contract Documents and show the Work to be performed are as follows:

Drawing Title	Date	No. of Sheets
Paving, Grading, and Drainage Plan and Details	January, 2020	3

SECTION 01000

GENERAL REQUIREMENTS

PART 1 GENERAL

1.01 WORK INCLUDED

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

B. The cost of incidental Work described in these General Requirements, for which there are no specific Contract 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 items. No additional payment will be made therefore.

C. The CONTRACTOR shall provide and maintain such modern plant, tools, and equipment as may be necessary in the opinion of the ENGINEER, to perform in a satisfactory and acceptable manner all the Work required by the 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 ENGINEER notwithstanding.

1.02 MOBILIZATION

A. Perform preparatory Work and operations in mobilizing for beginning Work on the Project, including, but not limited to, those operations necessary for the movement of personnel, equipment, supplies, and incidentals to the Project site and for the establishment of temporary offices, buildings, safety equipment and first aid supplies, and other facilities. Include the costs of bonds and any required insurance and any other preconstruction expense necessary for the start of the Work, excluding the cost of construction materials.

B. When the Bid Form includes a separate pay item for Mobilization, partial payments will be made therefore in accordance with the following:

Percent of Contract Amount Earned	Allowable Percent of the Contract Lump Sum Price for the Item
5	25
10	50
25	75
50	10

C. When the Bid Form does not include a separate item for Mobilization, all Work and incidental costs specified as being covered in this paragraph will be included for payment under the several scheduled items of the overall Contract and no separate payment will be made therefore.

1.03 MAINTENANCE OF TRAFFIC

A. Prepare and submit a Maintenance of Traffic Plan for review. A professional engineer licensed in the State of Florida shall prepare the plan.

B. CONTRACTOR shall be responsible to maintain traffic control through the work area for the duration of construction. Provide access to residence, businesses, etc., that are located in the temporary traffic control zone. Provide traffic control devices that are on the Florida Department of Transportation's "Qualified Product List".

1.04 PROVISIONS FOR CONTROL OF POLLUTION

A. Sufficient precautions shall be taken during construction to prevent the run-off of polluting substances such as silt, clay, fuels, oils, bitumen's or other polluting materials harmful to humans, fish, or other life, into the supplies and surface waters of the State of Florida. 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 background unless otherwise permitted. Special precautions shall be taken in the use of construction equipment to prevent operations which promote erosion. Erosion evident within the limits of construction or other areas affected by the CONTRACTOR shall be the responsibility of the CONTRACTOR.

B. CONTRACTOR shall prepare a Pollution Prevention Plan, submit it to the ENGINEER for review, and implement the plan prior to commencing Work on the site. The plan must include the following:

1. A site evaluation of how and where pollutants may be mobilized by stormwater.
2. A plan for managing stormwater runoff.
3. Identification of appropriate erosion and sediment controls and stormwater best management practices to reduce erosion, sedimentation, and stormwater pollution.
4. A maintenance and inspection schedule.
5. A record keeping process.
6. Identification of stormwater exit areas.

C. Fill out a Notice of Intent form (FDEP Form 62-621.300(4)(b) and submit it to the Florida Department of Environmental Protection.

1.05 PROGRESS SCHEDULE

A. Prepare a construction progress schedule covering all the Work involved in the Contract. This includes submittal and approval of Shop Drawings on critical items, fabrication and delivery of identifiable materials and equipment, specific items or Work in the scope,

interfaces required with other contracts that may be part of an overall project, and specific dependencies upon acts or activities of parties not under the control of CONTRACTOR.

B. The Bar Graph Method or Critical Path Method are acceptable for scheduling construction activity.

C. Progress schedule shall be updated monthly and submitted to ENGINEER with progress payment applications.

1.06 SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

A. Submit at least eight (8) copies of all required Shop Drawings, product data and samples for ENGINEER's review.

B. Shop Drawings, product data, samples and transmittal letters pertaining thereto shall be identified with the title of the project, submission date, and the CONTRACTOR's acknowledgement that he has reviewed them and found them acceptable.

C. Notify ENGINEER in writing, at the time of submittal, of any deviations in the submittals from the requirements of the Contact Documents.

D. The review and approval of shop drawings, samples or product data by the ENGINEER shall not relieve the CONTRACTOR from his/her responsibility with regard to the fulfillment of the terms of the Contract Documents. All risks of error and omission are assumed by the CONTRACTOR and the ENGINEER will have no responsibility therefore.

1.07 BORING LOGS, OTHER REPORTS AND DRAWINGS UTILIZED BY ENGINEER

A. Boring logs, other reports and Drawings utilized by ENGINEER, if enclosed, are provided for CONTRACTOR's information and are not a part of the Contract Documents. There is no technical data in the boring logs, other reports or Drawings that should be relied on by the CONTRACTOR.

PART 2 PRODUCTS (Not Used)

PART 3 EXECUTION

3.01 CONSTRUCTION STAKING

A. The baselines and benchmarks for primary control, necessary to establish lines and grades needed for construction are shown on the Drawings. These baselines and benchmarks shall be used as the origin of all surveys, layouts and measurements to establish construction lines and grades. CONTRACTOR shall take all necessary precautions to prevent the loss or damage of primary control points. Any stakes and/or

control points lost or damaged by construction activity will be re-established by CONTRACTOR at no additional expense to OWNER.

B. Construction staking shall be performed by a professional surveyor and mapper licensed in the State of Florida.

3.02 PROTECTION/ADJUSTMENT OF UTILITIES

A. Utility installations and structures shall be understood to include all poles, tracks, pipes, wires, conduits, house service connections, vaults, manholes and all other appurtences and facilities pertaining thereto whether owned or controlled by the OWNER, 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.

B. CONTRACTOR shall protect all utility installations and structures from damage during Work. Access across any buried public utility installation or structure shall be made only in such locations and by means approved by the utility owner. The CONTRACTOR shall so arrange operations as to avoid any damage to these facilities. All required protective devices and construction shall be provided by the CONTRACTOR. All existing public utilities damaged by the CONTRACTOR which are shown on the Drawings or have been located in the field by the utility owner shall be repaired by the CONTRACTOR.

C. Public utility installations or structures owned or controlled by the OWNER or other governmental body, which are shown on the Drawings to be removed, relocated, replaced or rebuilt by the CONTRACTOR shall be included in the prices bid for the various contract items. No separate payments shall be made therefore.

D. Where public utility installations or structures owned or controlled by the OWNER or other governmental body are encountered during the course of the Work, and are not indicated on the Drawings or in the Specifications, and when in the opinion of the ENGINEER, 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 ENGINEER, 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 the General and Supplementary Conditions.

E. CONTRACTOR shall give written notice to OWNER and governmental utility departments and other owners of public utilities of the location of the proposed construction operations, at least seventy-two (72) hours in advance of breaking ground in any area or on any unit of the Work.

F. 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 utility owner.

3.03 FIELD OBSERVATIONS AND TESTING

A. Field observations will be performed by ENGINEER and all field testing of materials will be performed by an independent testing laboratory. The cost of passing tests will be paid by OWNER. Failing tests shall be paid by the CONTRACTOR.

B. For tests specified to be made by the CONTRACTOR (for equipment/material prior to delivery to the project site), 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 Contact Documents. Six (6) copies of the reports shall be submitted and authoritative certification thereof must be furnished to the ENGINEER as a prerequisite for the acceptance of any material or equipment.

C. If, in the making of any test of any material, it is ascertained by the ENGINEER that the material does not comply with the Contract, the CONTRACTOR will be notified thereof and will be directed to refrain from delivering said material, or to remove it promptly from the site or from the Work and replace it with acceptable material, without additional cost to the OWNER.

D. The CONTRACTOR shall be fully responsible for the proper operation of material during tests and construction periods and shall neither have nor make any claim for damage that may occur to material prior to the time when the OWNER formally takes over the operation thereof.

E. CONTRACTOR is responsible for scheduling field testing.

3.04 SALVAGE MATERIAL

A. All salvageable material and equipment removed from the existing construction for which specific use, relocation or other disposal is not specifically noted on the Drawings or otherwise specified, shall remain the property of the OWNER and shall be turned over to him. All material and equipment not in salvageable condition as determined by the ENGINEER, shall be disposed of by the CONTRACTOR in a legal manner at the Contractor's expense. The actual storage site for salvageable material will be designated by the OWNER.

3.05 STARTING OF SYSTEMS

A. Electrical equipment shall not be energized, or placed in service, nor shall mechanical equipment be operated by the CONTRACTOR until approved by the OWNER and ENGINEER. Such approval shall be granted only after all interested parties have been duly notified, have given approval for placing the equipment in service, and all interested parties are present or waived their right to be present. The CONTRACTOR shall notify the OWNER and ENGINEER as far in advance as possible of the dates that various items and equipment will be completed and ready for start-up.

3.06 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 ENGINEER, such material, debris, or rubbish constitutes a nuisance or is objectionable.

B. At the conclusion of the Work, all tools, temporary structures and materials belonging to the CONTRACTOR shall be promptly taken away and CONTRACTOR shall remove and promptly dispose of all rubbish or any other foreign materials. The CONTRACTOR shall thoroughly clean all material installed and shall deliver such materials undamaged in a clean and new condition.

END OF SECTION

SECTION 01456

FIELD TESTING OF MATERIALS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Field testing of compaction of backfill, embankment, pavement subgrade, and pavement base.

B. Sampling and testing concrete strength and slump.

C. Sampling and analysis of asphalt for paving.

1.02 SUBMITTALS

A. Two certified copies of the laboratory report to ENGINEER.

B. Reports shall include date issued, project title and number, name of inspector, date and time of sampling/inspection, standard designation of the test method and work performed, ambient conditions at the time of sampling, appropriate retest recommendation, identification of product and specifications section, location in the project, type of inspection or test, date of tests, and conformance with Contract Documents.

1.03 QUALIFICATIONS

A. Test laboratory accredited by the Construction Materials Engineering Council, Inc.

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION

3.01 COORDINATION

A. Cooperate with laboratory personnel, and provide access to the work and to manufacturer's facilities.

B. Provide incidental labor and facilities to provide access to work to be tested to obtain and handle samples at the site or at source of products to be tested, to facilitate tests and inspections, storage and cutting of test samples.

C. Notify laboratory 24 hours prior to expected time for operations requiring inspection and testing services.

3.02 TESTING FREQUENCY

A. Wastewater Systems
   1. Manholes – check compaction of backfill at 2 foot vertical intervals beginning 2 feet above the bottom of the manhole.
   2. Gravity Main – check compaction of backfill at 200 foot intervals beginning 1 foot above the top of the pipe and then every 200 feet thereafter.
   3. Force Main – check compaction of backfill 1 foot above the top of the pipe at 200 foot intervals horizontally.

B. Water Systems
   1. Water Mains – check compaction of backfill 1 foot above the top of the pipe at 200 foot intervals horizontally.

C. Drainage Systems
   1. Structures – check compaction of backfill at 2 foot vertical intervals beginning 2 feet above the bottom of the structure.
   2. Pipe – check compaction of backfill beginning at the springline and then at 2 foot vertical intervals and 200 foot horizontal intervals.

D. Roadways
   1. Subgrade – check compaction at 200 foot intervals.
   2. Stabilized Subgrade – check compaction at 200 foot intervals.
   3. Curb and Gutter – check compaction at 300 foot intervals but stagger from one side of the road to the other. Check concrete slump and obtain a set of test cylinders every 800-1000 feet.
   4. Base Rock – analyze material when it is delivered to the site for compliance with the specifications. Check compaction at 300 foot intervals but alternate left side to right side.
   5. Asphalt – verify asphalt temperature.

END OF SECTION

SECTION 01573

STORMWATER POLLUTION PREVENTION PLAN

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Precautions to be taken during construction to prevent the run-off of polluting substances such as silt, clay, fuels, oils, bitumens, or other polluting materials harmful to humans, fish, or other life.

B. Inspections and maintenance of the controls to prevent the run-off of polluting substances.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 EROSION AND SEDIMENT CONTROL MEASURES

A. Excavation of water management facilities should occur immediately after clearing and grubbing to serve as a sediment trap or catchment for stormwater runoff from exposed soils.

B. Construct perimeter berm or grade site to prevent off-site discharge of stormwater runoff.

C. Place silt fences or hay bales to contain erosion in areas prone to stormwater runoff erosive velocities.

D. Protect each inlet that may receive runoff from the construction site with silt fence/filter fabric staked in place.

E. Install turbidity screens within the receiving body before commencement of bank improvements and outfall installations.

F. Take all reasonable precautions to control dust and unconfined particulate matter. The application of water is an acceptable dust suppressant on roadways, stockpiles, and any other areas within the project boundaries. Dust suppressant water shall be applied in such a manner so as not to produce excess runoff and erosion.

G. Turbidity in receiving water shall not be increased more than 29 nephelometric turbidity units (NTU) above background.

H. Take precautions in the use of construction equipment to prevent operations which promote erosion.

3.02 OTHER CONTROLS AND MATERIAL MANAGEMENT PRACTICES

A. Fertilizers – Apply fertilizers only in the minimum amount recommended by the manufacturer. If stored onsite, provide covered storage. Transfer the contents of any partially used bags of fertilizer to a sealable container to avoid spills.

B. Hazardous Waste – Dispose of in a manner specified by local or State regulations.

C. Noise – Minimize noise caused by the operation of equipment. Abide by all local regulations covering noise control.

D. Odors – Do not cause objectionable odors to be generated.

E. Offsite Vehicle Tracking - Provide a rock construction entrance to reduce vehicle tracking of sediments. Dump trucks hauling material from the construction site shall be covered with a tarpaulin.

F. Open Burning - No open fires or burning of materials other than vegetative land clearing debris. Obtain prior approval to burn from the local authority and applicable Fire Marshall.

G. Paints - All containers shall be tightly sealed and stored when not required for use. Excess paint shall not be discharged to the storm sewer system, but will be properly disposed of according to the paint manufacturer's instructions and State or local regulations.

H. Pesticides and Herbicides - Any pesticide and herbicide usage will be by State licensed applicators.

I. Petroleum Products - Monitor onsite vehicles and tanks for leaks. They shall receive regular preventive maintenance to reduce the chance of leakage. Store petroleum products in tightly sealed containers, which are clearly labeled. Use asphalt substances according to the manufacturer's recommendations. Provide secondary containment for all above ground fuel tanks.

J. Sanitary Waste - Collect all sanitary waste from the portable units at least twice per week.

K. Waste Materials - Collect and store all waste materials in a securely covered metal dumpster provided by a licensed solid waste management company. Deposit all trash and construction debris from the site in the dumpster. The dumpster is to be emptied as needed so there is no overflow. Haul trash to a State approved landfill facility.

3.03 MAINTENANCE / INSPECTION PROCEDURES

A. Inspect all control measures at least once per week and following any storm event of 0.5 inches or greater.

B. Maintain all measures in good working order. If a repair is necessary, it must be initiated within 24 hours of the onsite inspection report.

C. Remove built up sediment from silt fence when it has reached one-third the height of the fence.

D. Inspect silt fence for depth of sediment, tears, to see if the fabric is securely attached to the fence posts, and to see that the fence posts are firmly in the ground.

E. Prepare a maintenance inspection report after each inspection. A copy of the report form to be completed by the inspector is found at the end of this Section.

F. The CONTRACTOR shall designate a qualified person to be responsible for inspections, maintenance and repair activities, and completing the inspection and maintenance reports.

G. Non-stormwater discharges are permissible provided that discharge does not cause erosion or create turbidity within the receiving body and are in compliance with regulatory requirements. These discharges may include water line flushing, fire fighting activities, fire hydrant flushing, dust control, irrigation drainage, air conditioning condensation, and water used to spray off loose solids from vehicles.

END OF SECTION

STORMWATER POLLUTION PLAN INSPECTION REPORT FORM

Project Name _____

FDEP NPDES Stormwater Identification Number: FLR10_____

Location	Rain Data	Type of control (see below)	Date installed/ modified	Current Condition (see below)	Corrective Action /Other Remarks

Condition Code:

G = Good M = Marginal, needs maintenance or replacement soon O = Other

C= Needs to be cleaned P = Poor, needs immediate maintenance or replacement

Control Type Codes:

1	Silt Fence	12	Vegetative preservation area	23	Permanent seed / sod
2	Earth dikes	13	Retention Pond	24	Mulch
3	Structural diversion	14	Construction entrance stabilization	25	Hay Bales
4	Swale	15	Perimeter ditch	26	Geotextile
5	Sediment Trap	16	Curb and gutter	27	Rip-rap
6	Check dam	17	Paved road surface	28	Tree protection
7	Subsurface drain	18	Rock outlet protection	29	Detention pond
8	Pipe slope drain	19	Reinforced soil retaining system	30	Waste disposal / housekeeping
9	Level spreaders	20	Gabion	31	Sand Bag
10	Storm drain inlet protection	21	Sediment Basin	32	Dam
11	Vegetative buffer strip	22	Temporary seed / sod	33	Other

Inspector Information:

_____ _____ _____

Name Qualification Date

The above signature certifies that this facility is in compliance with the Stormwater Pollution Prevention Plan and the State of Florida Generic Permit for Stormwater Discharge from Large and Small Construction Activities if there are not any incidents of non-compliance identified above.

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who managed the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

_____ _____

Name (Responsible Authority) Date

SECTION 01700

PROJECT CLOSE OUT

PART 1 GENERAL

1.01 DESCRIPTION

A. The items listed in this Section shall not be considered as a complete listing and shall in no way limit requirements that may be stated in other parts of the Contract Documents, but rather should be considered as an aid in preparing for final inspection and project close out.

1.02 BASIC REQUIREMENTS PRIOR TO SUBSTANTIAL COMPLETION

A. Punch List: The following items shall be completed prior to request for final inspection.

1. All general construction completed and the project components shall be clean.

2. All mechanical and electrical work substantially complete, fixtures in place, connected, cleaned and ready for use.

3. All electrical circuits shall be scheduled in panels, and all panels and disconnect switches properly labeled.

4. All painting shall be completed, all signs installed.

5. All surfaces, glass and metal work shall be cleaned.

6. All finish hardware and furniture shall be installed.

7. Project site shall be cleared of the Contractor's equipment and/or building supplies. All temporary structures and construction shall be removed.

8. All landscaping and sod planted and in place.

9. All signs and striping mounted, replaced and installed.

B. Record Drawings: The project record drawings shall be submitted by the Contractor for all structural work, paving, drainage, water, wastewater and any other construction done under this contract.

1.03 BASIC REQUIREMENTS PRIOR TO FINAL COMPLETION

A. All of the above items for Substantial Completion shall be complete; in addition, the punch list items noted at the time of substantial completion shall have been corrected and the work completed.

B. Warranties: Furnish all manufacturers' warranties and maintenance manuals for all equipment. For corrective work during the warranty period, submit a complete list of contact persons and phone numbers for General Contractor and all Subcontractors.

C. Guarantees and Bonds: Furnish the following written guarantees and bonds, in duplicate, signed by an authorized representative of manufacturer, supplier and/or subcontractor in accordance with the General Conditions, Supplementary General Conditions and the technical sections of the specifications.

D. Keys and Special Wrenches: All keys and special wrenches shall be tagged with the room number or with designed use and turned over to the Owner.

E. Maintenance Materials: Deliver to the Owner, prior to final completion of the work, maintenance materials (extra stock) as required in the technical sections of the specifications.

F. Manuals and Instructions:

1. Deliver to the Owner, prior to final completion of the work, three bound copies of maintenance and instruction manuals customarily supplied by manufacturers for items incorporated in this work and as set forth in the General Requirements for Mechanical and Electrical work.

2. Contractor and subcontractors shall provide hands on demonstrations and verbal instructions for the proper operation and maintenance of appliances, machines and equipment to the Owner or their designated representative.

3. Arrange, with the Owner, an appointment for specific time to give demonstrations and instructions.

G. Listing of Equipment: A tabular listing shall be presented to the Engineer prior to Final Completion of the project and prior to final payment, which shall include all plumbing, mechanical, electrical and special equipment by name, manufacturer, model number and serial number of each item provided.

H. Affidavits: Provide affidavits prior to final payment as follows:

1. Affidavit that all work has been properly paid for and all obligations for payment to material suppliers, subcontractors, etc. have been satisfied (A.I.A. Form G-706).

2. Consent of Surety (A.I.A. Form G-707).

3. Release and Waivers of Liens (A.I.A. Form G-706A).

END OF SECTION

SECTION 01788

PROJECT RECORD DOCUMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Obtaining and recording Record information to indicate changes in project conditions, locations, dimensions, elevations, materials, sizes, configurations, and any other deviations from the original Contract Documents.

B. Submittal of Record information.

1.02 MAINTENANCE

A. ENGINEER will provide CONTRACTOR with an electronic set of the construction drawings in Autocad (Release 2000 or later) and PDF for marking Record information on.

B. All elevations and site dimensions are to be verified by a professional surveyor and mapper licensed in the State of Florida and recorded on the Record drawings.

C. Label each drawing in the lower right corner "RECORD DRAWING" in neat large printed letters.

D. On each drawing where a professional surveyor and mapper obtains the information, indicate surveyor's name and license number, company name and address, and the phone number.

E. Design data shall be lined-out. Record data shall be added next to each lined-out design dimension or elevation.

F. Maintain documents in a clean, dry, legible condition, and in good order. Do not use Record documents for construction purposes.

G. Make documents available at all times for review by the ENGINEER.

H. Record information concurrently with construction progress.

I. Do not conceal any Work until required information is recorded.

1.03 REQUIRED RECORD DRAWING INFORMATION

A. Drainage
   1. Rim/grate elevations on inlets and manholes.
   2. Flowline elevations of pipes.
   3. Linear distance along pipes from structure to structure.

4. Recalculated pipe slopes based on flowline elevations and distance between structures.
5. Horizontal location of inlets, manholes and structures based on stationing/coordinate/dimensioning on Drawings.
6. Top of pipe/bottom of pipe elevations as applicable at all pipe crossings.

B. Grading
1. Verify all elevations on Drawings.

C. Roadways
1. Alignment ties for road centerlines at all intersections and horizontal curves (point of curvature and point of tangency).
2. Horizontal and vertical geometry.

D. Sanitary Sewer
1. Rim elevation on manholes.
2. Invert elevation for all pipes in manholes.
3. Linear distance along pipe from manhole to manhole.
4. Recalculated pipe slope based on invert elevations and linear distance between manholes.
5. Horizontal location of manholes based on stationing/coordinates on Drawings.
6. Stationing of each service wye from sewer nearest manhole and offset distance and stationing of cleanout from sewer main.
7. Lift station wet well bottom and top elevations, and influent pipe invert elevation. Lift station piping, electrical, and pumping elements.
8. Finished grade and top of pipe elevations at 100 feet on center along force mains.
9. Horizontal ties to all force main bends, plugs, tees and valves.
10. Horizontal tie of force main at 100 feet on center
11. Invert and finished grade elevations at cleanouts.
12. Pipe clearances where services cross watermains and storm drainage.

E. Stormwater Management
1. Top of bank and bottom elevations of retention/detention areas.
2. Cross section lake side slopes from top of bank to bottom of toe at 200 feet on center.

F. Watermain
1. Breakaway flange elevation on fire hydrants.
2. Horizontal ties to all bends, tees, plugs, valves, and hydrants.
3. Finished grade and top of pipe elevations at 100 feet on center as well as any major changes in direction and/or elevation.
4. Horizontal location of watermain at 100 feet on center.
5. Top of pipe or bottom of pipe elevations, as applicable, at all pipe crossings.
6. Horizontal location of the ends of all service lines.

1.04 SUBMITTALS

A. Submit two (2) sets of prints of progress Record drawings with each pay application.

B. No pavement placement until Record drawing information for facilities under pavement is complete, the drawings have been reviewed by the ENGINEER, and facilities under pavement are determined to be acceptable.

C. Record drawings for the sanitary sewer system are to be reviewed and approved by the ENGINEER prior to pressure testing of force mains, lamping of gravity sewer and start-up of lift stations.

D. Submit four (4) sets of final Record drawings on paper (drawing size shall match construction drawings) and a CD containing final electronic Record drawings in Autocad (Release 2000 or later) and PDF (formatted to match paper drawing size). Record drawings prepared by surveyor are to be signed and sealed.

PART 2 PRODUCTS (not used)

PART 3 EXECUTION (not used)

END OF SECTION

SECTION 02050

DEMOLITION

PART 1 - GENERAL

1.01 DESCRIPTION

Work Included

Demolition includes the complete wrecking of structures and the removal and disposal of demolished materials, as shown on the drawings and/or specified.

1.02 JOB CONDITIONS

A. Condition of Structures

The owner assumes no responsibility for the actual condition of structures to be demolished. Demolition drawings are provided for general information. The contractor shall field verify the conditions to be encountered in the work to be performed.

B. Salvage

Items of salvable value to the Owner shall be removed from the structure as the work progresses. Salvaged items must be transported to the locations as directed by the Owner.

C. Explosives

The use of explosives will not be permitted.

D. Traffic

Conduct demolition operations and the removal of debris to ensure minimum interference with roads, streets, walks, and other adjacent occupied or used facilities.

E. Protection

Ensure the safe passage of persons around the area of demolition. Conduct operations to prevent injury to adjacent buildings, structures, other facilities, and persons.

F. Damages

Promptly repair damages caused to adjacent facilities by demolition operations at no cost to the Owner.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.01 DEMOLITION

A. Pollution Controls

1. Use water sprinkling, temporary enclosures, and other suitable methods to limit the amount of dust and dirt rising and scattering the air to the lowest practical level.

2. Comply with governing regulations pertaining to environmental protection.

3. Clean adjacent structures and improvements of dust, dirt, and debris caused by demolition operations, as directed by the Architect/Engineer. Return adjacent areas to condition existing prior to the start of the work.

4. Demolish concrete and masonry in small sections.

3.02 DISPOSAL OF DEMOLISHED MATERIALS

A. General

1. Remove from the site debris, rubbish, and other materials resulting from demolition operations.

2. Burning will not be permitted on the site.

3. Concrete from sidewalks, curbs, bulkhead caps etc. suitable for recycling will be transported to a licensed recycling business. The Contractor is to make a good faith effort to recycle all disposed and discarded items.

B. Removal

Transport materials removed from demolished structures and dispose of them offsite.

END OF SECTION

SECTION 02232

CLEARING AND GRUBBING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Removal and disposal 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.

1.02 REGULATORY REQUIREMENTS

A. Conform to all applicable federal, state, and local codes pertaining to the disposal of materials and debris.

B. Coordinate clearing work with utility companies.

PART 2 PRODUCTS (not used)

PART 3 EXECUTION

3.01 PREPARATION

A. Verify that existing plant life and features designated to remain are tagged or identified.

3.02 PROTECTION

A. Protect from damage all utilities that are to remain.

B. Protect trees, plant growth, understory growth, and features designated to remain as final landscaping.

C. Protect existing benchmarks, monuments, and other reference points. If disturbed or destroyed, they shall be replaced in their original condition and location by a professional surveyor and mapper licensed in the State of Florida.

D. Traffic: Conduct site clearing operations to ensure minimum interference with roads, streets, walks and other adjacent occupied or used facilities. Do not close or obstruct streets, walks, or other occupied or used facilities without permission from authorities having jurisdiction.

3.03 CLEARING

A. Remove and dispose of all trees, stumps, shrubs, grass, roots, and other such protruding objects, and buildings, structures, appurtenances, existing pavement, and other facilities necessary to prepare the area for the proposed construction.

3.04 GRUBBING

A. Remove roots and other debris in the Work areas to a depth of at least 12 inches below the ground surface.

B. 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.

C. Completely remove and dispose of all stumps.

3.05 REMOVAL

A. Abandonment or removal of certain underground pipe of conduits may be shown on mechanical or electrical drawings, and is included under work of those sections. Removal of abandoned underground piping or conduit interfering with construction is included under this Section.

B. Remove and dispose of existing structures or portions of existing structures specified on the Drawings, or those found within the limits of the area to be cleared and grubbed.

C. Remove the structures in such a way as to leave no obstructions to any proposed new structures.

D. Remove and dispose of existing asphalt pavement, Portland cement concrete pavement, sidewalk, curb, and curb and gutter where specified on the Drawings.

3.06 DISPOSAL OF MATERIALS

A. Dispose of timber, stumps, brush, roots, rubbish, and other objectionable material resulting from clearing and grubbing in a legal manner offsite.

B. Ensure that all hazardous materials and waste are handled and disposed of in accordance with all Local, State and Federal requirements. Submit the name, address and qualifications of the transporter, treatment facility, proposed treatment and disposal methods for ENGINEER's approval prior to transport.

END OF SECTION

SECTION 02316

EXCAVATION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Excavation for underground pipelines.

1.02 REGULATORY REQUIREMENTS

A. CONTRACTOR shall obtain a "Dewatering General Water Use Permit" from the South Florida Water Management District prior to commencing dewatering unless the Work qualifies for a 'No-Notice' authorization as described in Rule 40E-20.302(3) of the Florida Administrative Code.

PART 2 PRODUCTS (Not Used)

PART 3 EXECUTION

3.01 EXAMINATION

A. CONTRACTOR shall locate existing underground utilities in the area of the Work as construction proceeds. If utilities are to remain in place, provide adequate means of protection.

B. Should uncharted or incorrectly charted piping or other utilities be encountered during excavation, notify the ENGINEER immediately. Cooperate with responsible utility companies in keeping respective services and facilities in operation.

C. Do not interrupt existing utilities serving facilities occupied and used by OWNER or others, except when permitted in writing by the respective utility owner.

D. CONTRACTOR shall sustain in their places and protect from direct or indirect injury all pipes, poles, utilities, walls, buildings, and other structures or property in the vicinity of Work, whether above or below the ground, or that may appear in the trench. CONTRACTOR shall take all risks attendant to the presence or proximity of pipes, poles, walls, buildings, and other structures and property, of every kind and description, in or over his trenches, excavations or in the vicinity of his Work whether above or below the ground and shall be responsible for all damage and assume all expense for direct or indirect injury, caused by his Work, to any of them, or to any person or property by reason of injury to them, whether such structures are or are not shown on the Drawings.

3.02 PREPARATION

A. Protect structures, utilities, sidewalks, pavements, benchmarks, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by excavating operations.

B. Provide erosion control measures to prevent erosion or displacement of soils and discharge of soil bearing water runoff or airborne dust to adjacent properties and walkways.

C. When excavations exceed 5 feet in depth, CONTRACTOR shall meet the Occupational Safety and Health Administration's excavation safety standards 29 C.F.R.s. 1926.650, Subpart P.

D. Where relocation of existing utilities is noted on Drawings, the CONTRACTOR is to notify appropriate utility companies at the earliest possible date of intent to relocate any of their facilities. It is the CONTRACTOR's responsibility to maintain utility service to users during relocation procedures and to replace the facility to the utility companies' specifications.

3.03 DEWATERING

A. At all times during construction, provide and maintain proper equipment and facilities to remove all water entering excavations, and keep such excavations dry so as to obtain a satisfactory undisturbed subgrade foundation condition 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.

B. Conduct dewatering in such a manner as to preserve the undisturbed bearing capacity of the subgrade soils at proposed bottom of excavation. Construct well or sump installations with proper sand filters to prevent drawing of finer grained soil from the surrounding area.

C. Take all additional precautions to prevent uplift of any structure during construction.

D. Dispose of water so that flow or seepage back into the excavated area will be prevented. No water from dewatering activities will be allowed to be discharged directly offsite. In addition, the dewatering activity must not impact any onsite or offsite wetlands.

E. Prevent flotation by maintaining a positive and continuous operation of the dewatering system. If for any reason the dewatering system is found to be inadequate, make additions, changes and replacements, as necessary, to provide a satisfactory system. All damage resulting from failure to properly dewater excavations shall be repaired to the satisfaction of the ENGINEER. Remove the dewatering equipment after the system is no longer required.

F. Take all necessary precautions to preclude accidental discharge of fuel oil, etc. in order to prevent adverse effects on groundwater quality.

3.04 EXCAVATION

A. Excavation shall be carried to suitable lines and grades indicated on the Drawings. All irregularities in the bottom of excavations shall be filled to the required level with suitable select backfill and firmly compacted before pipe is laid or foundation and slab are constructed.

B. Trenches shall be excavated to the lines and grades as indicated on the Drawings. Trenches shall provide continuous and uniform support and bearing for piping and structures.

C. Rock and other unsuitable material, when encountered, shall be removed to minimum depth of six inches below the pipe or structure and the same depth below the pipe bell.

D. Material below subgrade deemed unsuitable shall be removed and replaced with clean granular material.

E. Excavation in the vicinity of adjacent facilities shall be performed by means that will not damage the facilities. Any damage to existing facilities caused by the CONTRACTOR's operations shall be repaired to the satisfaction of the facility's owner at no additional cost to OWNER.

F. Trench bottom shall be shaped to conform to pipe bells or other shape irregularities of special appurtenances.

G. Where a trench crosses existing paved areas or roadways which have not been scheduled to be repaved on the Drawings, the paved area shall be saw cut. Ripping of pavement for trenches with excavation equipment will not be allowed.

H. Satisfactory excavated materials shall be stockpiled until required for backfill. Stockpiles shall be placed, graded and shaped for proper drainage.

I. Soil materials shall be located and retained away from edges of excavations.

J. Excess and/or unsatisfactory materials shall be disposed of offsite.

END OF SECTION

SECTION 02323

BACKFILL AND COMPACTION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Backfill and compaction for underground pipes and structures.

1.02 REFERENCES

A. ASTM D1557-02 – Laboratory Compaction Characteristics of Soil Using Modified Effort.

B. ASTM D2487-00 – Classification of Soils for Engineering Purposes.

C. ASTM D2922-05 – Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods.

PART 2 PRODUCTS

2.01 SOIL MATERIALS

A. General: Provide borrow soil materials when sufficient satisfactory soil materials are not available from excavations.

B. Satisfactory Soils: ASTM D2487 soil classification groups GW, GP, GM, SW, SP, and SM, or a combination of these groups, free of rock or gravel larger than 3 inches in any dimension, debris, waste, vegetation, and other deleterious matter.

C. Unsatisfactory Soils: ASTM D2487 soil classification groups GC, SC, ML, MH, CL, CH, OL, OH and PT, or a combination of these groups.
   1. Unsatisfactory soils also include satisfactory soils not maintained within 2 percent of optimum moisture content at time of compaction.

D. Backfill and Fill: Satisfactory soil materials.

PART 3 EXECUTION

3.01 PLACEMENT

A. Material placed under and around structures shall be deposited within the lines and to the grades shown on the Drawings, making due allowance for settlement of the material. Material shall be placed on properly prepared surfaces which have been reviewed by the Engineer. If sufficient common fill material is not available from excavation on site, the Contractor shall provide borrow as may be required.

B. If the compacted surface of any layer of material is determined to be too smooth to bond properly with the succeeding layer, it shall be loosened by harrowing or by another approved method before the succeeding layer is placed.

C. All backfill materials shall be placed and compacted "in-the-dry". Contractor shall dewater excavated areas as required to perform the Work.

3.02 COMPACTION

A. Backfill shall be placed in layers not to exceed twelve inches in depth as measured before compaction. Each layer shall be compacted to at least the minimum percentage of a modified proctor (ASTM D1557) specified in the Compaction Scheduled in paragraph 3.03.

B. Areas adjacent to structures and other confined areas inaccessible to a vibratory roller shall be compacted with a manually operated vibratory compactor.

C. It is the intention that the fill materials with respect to moisture be used in the condition they are excavated insofar as this is practicable. Material which is too wet shall be spread on the fill area and permitted to dry, assisted by harrowing if necessary, until the moisture content is reduced to allowable limits.

D. If added moisture is required, water shall be applied by sprinkler tanks or other sprinkler systems which will insure uniform distribution of the water over the area to be treated and give complete and accurate control of the amount of water to be used. If too much water is added the area shall be permitted to dry before compaction is continued.

E. Supply all hose, piping, valves, sprinklers, pumps, sprinkler tanks, hauling equipment, and all other materials and equipment necessary to place the water on the fill.

3.03 COMPACTION SCHEDULE

Location	Minimum Compaction
Under paved areas	98%
Structures	98%
Under landscaped areas	95%

3.04 DISPOSAL OF UNSUITABLE AND SURPLUS MATERIAL

A. Unsuitable and surplus excavated materials become the property of the Contractor and are to be removed and disposed of off site.

B. Suitable excavated material may be used for fill or backfill if it meets these specifications.

3.05 TESTING

A. Allow testing laboratory to inspect and test subgrades and each fill or backfill layer. Proceed with subsequent earthwork only after test results from previously completed Work complies with requirements.

B. Testing agency will test compaction of soils in place according to ASTM D2922.

C. When testing agency reports that subgrades, fills or backfills have not achieved degree of compaction specified, scarify and moisten or aerate, or remove and replace soil to depth required; recompact and retest until specified compaction is obtained.

3.06 PROTECTION

A. Protect newly graded areas from traffic and erosion. Keep free of trash and debris.

B. Repair and re-establish grades to specified tolerances where completed or partially completed surfaces become eroded, rutted, settled, or where they lose compaction due to subsequent construction operations or weather conditions.

END OF SECTION

SECTION 02630

STORM DRAINAGE

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Storm drainage piping, structures, and accessories.

1.02 RELATED SECTIONS

A. AASHTO M-196-92 – Corrugated Aluminum Pipe for Sewers and Drains.

B. AASHTO M 294-06- Corrugated Polyethylene Pipe.

C. ASTM C76-07 – Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe.

D. ASTM C443-05 – Joints for Concrete Pipe and Manholes, Using Rubber Gaskets.

E. ASTM C444-03 – Perforated Concrete Pipe.

F. ASTM C478-07 – Precast Reinforced Concrete Manhole Sections.

G. ASTM C507-07 – Reinforced Concrete Elliptical Culvert, Storm Drain, and Sewer Pipe.

H. ASTM F477-07 – Elastomeric Seals (Gaskets) for Joining Plastic Pipe.

1.03 SUBMITTALS

A. Shop drawings for pre-cast concrete structures.

B. Supplier's certification for aluminum and concrete pipe.

1.04 QUALITY ASSURANCE

A. Corrugated polyethylene pipe shall be clearly marked with the manufacturer's name or trademark, nominal size, specification designation, plant designation code, and date of manufacture.

1.05 DELIVERY, STORAGE AND HANDLING

A. Handle precast concrete structures according to the manufacturer's written rigging instructions.

B. Verify damage has not occurred in delivery of materials.

C. Store flexible gasket materials not cemented to the pipe, including joint lubricating compounds, in a cool dry place.

PART 2 PRODUCTS

2.01 CONCRETE PIPE

A. Round pipe – ASTM C76, Class III, wall type B.

B. Elliptical Pipe – ASTM C507, Class III.

C. Perforated Round Pipe – ASTM C444, Class III, Wall B, Type 1 circular perforations.

2.02 CORRUGATED ALUMINUM PIPE

A. AASHTO M196. Minimum of two annular corrugations formed into each end of the pipe to accommodate a coupling band. Minimum thickness of the metal shall be as specified below:

Nominal Diameter or Equivalent (inches)	Sheet Gauge No.	Mean Thickness of Metal (inches)
15	16	0.060
18	16	0.060
24	16	0.060
30	14	0.075
36	14	0.075
42	12	0.105
48	12	0.105
54	12	0.105
60	10	0.135
66	10	0.135
72	8	0.164

2.03 CORRUGATED POLYETHYLENE PIPE

A. AASHTO M294, Type S smooth wall interior. Corrugations may only be annular. Bell and spigot joints with a gasket meeting ASTM F477. When perforated pipe is specified on the Drawings, the perforations shall conform to the requirements of Class 1.

2.04 CONCRETE STRUCTURES

B. ASTM C478.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that excavation base is ready to receive work and excavations, dimensions, and elevations are as indicated on the Drawings.

3.02 PREPARATION

A. Hand trim excavations to required elevations. Correct over excavation with fill material, lean concrete or other approved material.

B. Remove large stones or other hard matter which could damage pipe or impede consistent backfilling and compaction.

C. Excavation of trenches, preparation of trench bottoms, backfilling, and other earthwork in connection with installation of storm sewers shall be in accordance with other applicable sections of these specifications.

D. Inspect piping before installation to detect apparent defects. Mark defective materials with white paint and promptly remove from site.

3.03 INSTALLATION – PIPE

A. Pipe shall be protected during storage and handling against impact shocks and free fall. Pipe shall be kept clean at all times.

B. Lay pipe to slope gradients noted on the Drawings with a maximum variation from true slope of 1/8 inch in 10 feet.

C. All pipe shall be carefully installed starting at the lowest end, with hubs upgrade and tongue end fully entered into the hub.

D. Any pipe that is not in true alignment or which shows any settlement after installation shall be taken up and re-installed at no additional cost to OWNER.

E. Place plugs in ends of uncompleted pipe at end of day or whenever work stops.

F. Rubber gaskets for concrete pipe joints shall meet the requirements of the 2007 edition of FDOT Standard Specifications for Road and Bridge Construction, Section 942. The gasket and the surface of the pipe joint, including the gasket recess, shall be clean and free from grit, dirt, and other foreign matter at the time the joints are made.

G. Pipe shall be set firmly, according to the lines and grade; and preparatory to making joints, all surfaces of the portion of the pipe to be jointed shall be thoroughly cleaned. The pipe shall be laid with the groove upstream. A shallow excavation shall be made underneath the pipe at the joint.

H. Immediately prior to installation of concrete pipe, the entire interior of the groove of the pipe already installed, and the rubber gasket of the pipe to be installed shall be coated with an approved vegetable soap lubricant. The groove and spigot ends shall be cleaned prior to application of the lubricant. The pipe shall then be aligned with the previously installed pipe and the joint pulled together. The joint shall be pulled by the use of interior or exterior pull jacks or winches, anchored by suitable means. The choice of method and type of equipment will depend on trench conditions, type and size of pipe, and its ability to properly seat the gasket. If, while making the joint, the gasket becomes loose and can be seen through the exterior joint recess when the joint is pulled up to within one inch (1") of closure, the pipe shall be removed and the joint remade

I. Repair concrete pipe lift holes by use of a hand-placed stiff, non-shrink, 1 to 1 mortar of cement and fine sand, after washing out the hole with water. Completely fill the void created by the lift hole with mortar. Cover the repaired area with a 24 inch by 24 inch piece of filter fabric secured to the pipe. Use a Class D filter fabric meeting the requirements shown in Index 199 of the Florida Department of Transportation's Roadway and Traffic Design Standards. Secure the filter fabric to the pipe using a method that holds the fabric in place until the backfill is placed and compacted. Use a grout mixture, mastic, or strapping device to secure the fabric to the pipe.

J. When shown on the Drawings, seal the ends of the pipe with a masonry plug a minimum of 8 inches in thickness.

K. Install filter fabric jacket around the first joint of all pipe entering or leaving a drainage structure and at all concrete pipe joints. Use a filter fabric jacket consisting of a piece of woven or non-woven filter fabric which provides an apparent opening size of a No. 70 to No. 100 sieve, 24 inches in width and a length sufficient to provide a minimum overlap of 24 inches. Secure the filter fabric jacket against the outside of the concrete pipe by steel or plastic strapping.

3.04 INSTALLATION – STRUCTURES

A. Form bottom of excavation clean and smooth to correct elevation.

B. Establish elevations and pipe inverts for inlets and outlets as indicated.

C. Mount lid and frame level in grout, secured to top cone and set to the specified elevation.

D. Where unsuitable material for foundations is encountered, the CONTRACTOR shall excavate the unsuitable material and backfill with suitable material prior to constructing or setting inlets, manholes, and junction boxes.

END OF SECTION

SECTION 02722

AGGREGATE BASE COURSES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Preparation of the subgrade.

B. Aggregate base course for asphaltic concrete pavement.

1.02 REFERENCES

A. AASHTO T180

B. Florida Department of Transportation Standard Specifications for Road and Bridge Construction, 2010. Hereinafter referred to as the FDOT Specifications.

1.03 FIELD SAMPLES

A. Deliver a representative load of the rock material to the site for a testing laboratory to sample. Allow sufficient time for test laboratory to analyze before commencing placement on the road. Testing laboratory will determine lab density per AASHTO T180 and the limerock bearing ratio.

B. Representative load of rock is to remain in stockpile form throughout rock delivery so that ENGINEER can monitor quality of rock material being delivered.

PART 2 PRODUCTS

2.01 MATERIALS

A. Rock Base: Minimum limerock bearing ratio of 100. At least 97 percent of the material shall pass a 3-1/2 inch sieve and the material shall be graded uniformly down to dust. All crushing or breaking-up which might be necessary in order to meet such size requirement shall be done before the material is placed on the road. Material shall not contain cherty or other extremely hard pieces, or lumps, balls or pockets of sand or clay size material in sufficient quantity as to be detrimental to the proper bonding, finishing, or strength of the rock base.

B. Stabilizing: Meet the requirements of Section 914 of the FDOT Specifications.

PART 3 EXECUTION

3.01 PREPARATION

A. Stabilize designated portions of the roadbed to provide a firm and unyielding subgrade having the required bearing value specified on the Drawings. Perform work in accordance with Section 160 of the FDOT Specifications.

B. Compact subgrade to at least 98 percent of the maximum density determined by ASTM D1557 (AASHTO T180).

3.02 EXAMINATION

A. Verify subgrade is ready to receive base material.

3.03 PLACEMENT

A. Spread the rock uniformly. Remove all segregated areas of fine or coarse rock and replace them with properly graded rock.

B. After spreading of the base is completed, the entire surface shall be scarified and shaped so as to produce the exact grade and cross section after compaction. For double course base, this scarifying shall extend to a depth sufficient to penetrate slightly the surface of the first course.

C. When the specified thickness of the rock base is greater than 6 inches, construct the base in multiple courses of equal thickness. Individual courses shall not be less than 3 inches.

D. When the material does not have the proper moisture content to insure the required density, wetting or drying will be required. If the material is deficient in moisture, water will be added and uniformly mixed in by disking the base course to its full depth. If the material contains an excess of moisture, it shall be allowed to dry before being compacted. Wetting or drying operations shall involve manipulation of the entire width and depth of the base as a unit. As soon as proper conditions of moisture are attained, the material shall be compacted to an average density not less than ninety-eight (98) percent of the maximum density determined by AASHTO T-180.

E. Unless otherwise directed by the ENGINEER, the surface shall be "hard-planed" with a blade grader immediately prior to the application of the prime coat to remove the thin glaze or cemented surface and to allow free penetration of the prime material. The materials planed from the base shall be removed from the base area.

3.04 FIELD QUALITY CONTROL

A. If, at any time, the subgrade material becomes mixed with the base course material, dig out and remove the mixture, and reshape and compact the subgrade. Then replace the materials removed with clean base material, and shape and compact. Perform this Work at no additional expense to the OWNER.

B. In the presence of the ENGINEER, check the finished surface of the base course with a template cut to the required crown and with a 15-foot straightedge laid parallel to the centerline of the road. Correct all irregularities greater than ¼ inch to the satisfaction of the ENGINEER by scarifying and removing or adding rock as required, and recompact the entire area.

3.05 CORRECTION OF DEFECTS

A. If at any time the subgrade material should become mixed with the base course material, the CONTRACTOR shall, without additional compensation, dig out and remove the mixture, reshape and compact the subgrade and replace the materials removed with clean base material, which shall be shaped and compacted as specified above.

B. If cracks or checks appear in the base, either before or after priming, which in the opinion of the ENGINEER would impair the structural efficiency of the base course, the CONTRACTOR shall remove such cracks or checks by rescarifying, reshaping, adding base material where necessary and recompacting.

END OF SECTION

SECTION 02743

ASPHALT PAVING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Materials and placement of superpave asphalt concrete.

1.02 REFERENCES

A. Florida Department of Transportation Standard Specifications for Road and Bridge Construction, 2018. Hereinafter referred to as the FDOT Specifications.

1.03 SUBMITTALS

A. Asphalt mix design for each asphalt type specified on the Drawings. Mix design shall include the information specified in paragraph 334-3 of the FDOT Specifications.

PART 2 PRODUCTS

2.01 MATERIALS

A. Primer: Provide cutback asphalt, RC-70 or RC-250 complying with FDOT Specification 916-3.

B. Tack Coat: RA-500 meeting the requirements of FDOT Specification 916-2.

C. Superpave Asphalt Concrete: Meets the requirements of Section 334 of the FDOT Specifications.

D. Leveling Course: Meet the requirements of Section 330-8 of the FDOT Specifications.

PART 3 EXECUTION

3.01 EXAMINATION

A. Spread the asphalt mixture only when the surface upon which it is to be laid has been previously prepared, is intact, firm, and properly cured, and is dry.

B. Verify gradients and elevations of base are correct.

C. Do not begin paving installation without ENGINEER acceptance of the substrate.

D. Spread the asphalt mixture only when the air temperature in the shade and away from the artificial heat is at least 40°F for layers greater than 1-inch in thickness and at least 45°F for layers 1-inch or less in thickness.

3.02 PREPARATION

A. Clean the surface of the base or pavement to be covered of all loose and deleterious material by the use of power brooms or blowers, supplemented by hand brooming where necessary.

B. Where an asphalt mix is to be placed on an existing pavement or old base which is irregular, fill all depressions in the existing surface more than 1 inch deep by spot patching with a leveling course mixture, and then compact them thoroughly. Fill cracks larger than ¼ inch in width with a slurry mixture of sand and emulsion.

C. PRIMER

1. Apply primer over substrate at a uniform rate of not less than 0.15 gallon/square yard for shellrock bases and not less than 0.10 gallon/square yard for limerock bases.

2. Apply to contact surfaces of curbs, gutters, and other cement surfaces.

3. Use clean sand to blot excess primer.

D. TACK COAT

1. Apply tack coat on existing pavements that are to be overlaid.

2. Apply tack coat in accordance with manufacturer's published instructions and FDOT Specifications, Section 300-8.

3. Coat surfaces of manholes, catch basins, and steel frames with oil to prevent bond with asphalt paving. Do not tack coat these surfaces.

4. Apply tack coat at the rate of application between 0.02 to 0.08 gallons per square yard.

3.03 PLACEMENT

A. Maintain the temperature of the mix at the time of spreading within ±25°F of the established mix temperature. ENGINEER will take mix temperatures at an average frequency of one per five trucks. If the temperature fails to fall within the specified tolerance range, take corrective action.

B. Immediately cease transportation of asphalt mixtures from the plant when rain begins at the roadway. Do not place asphalt mixtures while rain is falling, or when there is water on the surface to be covered.

C. Before starting any rolling, check the surface; correct any irregularities; remove all drippings, fat sandy accumulations from the screed, and fat spots from any source and

replace them with satisfactory material. When correcting a depression while the mixture is hot, scarify the surface and add fresh mixture.

D. Compact mixture in accordance with paragraph 330-10 of the FDOT Specifications.

E. Obtain a smooth surface on all pavement courses placed and then straightedge all intermediate and final courses with a 15-foot rolling straightedge. Furnish a 15-foot straightedge and make it available at the job site at all times during the paving operation for checking joints and surface irregularities.

F. Produce a finished surface of uniform texture and compaction with no pulled, torn, or loosened portions and free of segregation, and streaks, sand spots, or ripples.

G. Upon completion of final surface course ENGINEER will test finished surface with a 15-foot rolling straightedge. Correct all deficiencies in excess of 3/16-inch in accordance with paragraph 330-12 of the FDOT Specifications.

H. ENGINEER will determine pavement thickness from the depth of core borings. The maximum allowable deficiency in thickness for pavement of a specified thickness of 2½ inches or more is ½ inch. For pavement of a specified thickness of less than 2½ inches is ¼ inch.

3.04 PROTECTION

A. Immediately after placement, protect pavement from mechanical injury for as long as required until accepted by ENGINEER.

END OF SECTION

SECTION 02765

PAVEMENT MARKINGS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Thermoplastic pavement markings.

B. Reflective paint pavement markings.

C. Reflective pavement markers.

1.02 REFERENCES

A. Florida Department of Transportation Standard Specifications for Road and Bridge Construction, 2007 revision. Hereinafter referred to as the FDOT Specifications.

1.03 QUALITY ASSURANCE

A. Perform work in accordance with the Contract Documents in a neat and accurate manner.

B. Equipment shall be of a type and design which will readily obtain the required uniformity of application of the pavement markings both as to thickness of coating and as to alignment.

PART 2 PRODUCTS

2.01 THERMOPLASTIC PAVEMENT MARKINGS

A. Conform with the requirements of Section 971-5 of the FDOT Specifications.

B. Set to bear traffic in not more than 2 minutes.

2.02 REFLECTIVE PAINT PAVEMENT MARKINGS

A. Conform to Section 971-4 of the FDOT Specifications.

B. Set to bear traffic in not more than 2 minutes.

2.03 REFLECTIVE PAVEMENT MARKERS

A. Conform to the requirements of Section 970 of the FDOT Specifications. Class B.

PART 3 EXECUTION

3.01 PREPARATION

A. Do not apply markings within 5 days of pavement placement with the exception of Friction Course which is 30 days.

B. Prior to applying pavement markings, remove any material that would adversely affect the bond.

C. Do not apply when winds are sufficient to cause spray dust.

D. Prior to application of thermoplastic material to Portland cement concrete surfaces, apply a two-part epoxy primer sealer recommended by the manufacturer.

E. Establish tack points at appropriate intervals for use in aligning markings.

F. Apply only during daylight hours and, as far as practical, shall be terminated in time to permit sufficient drying by sunset.

G. The surface which is to be painted shall be cleaned, by compressed air or other effective means, immediately before the start of painting and shall be clean and dry when the paint is applied. Any vegetation or loose soil shall be removed from the pavement before striping begins.

H. Thoroughly mix paint before pouring into the painting machine. No thinning of the paint in the machine will be allowed at any time. Before the start of each day's work the paint container, the connections, and the spray nozzles on the machine shall be thoroughly cleaned with paint thinner or other suitable cleaner.

3.02 APPLICATION – THERMOPLASTIC

A. Apply thermoplastic to the pavement by extrusion.

B. Edges of markings are to be well defined.

C. Thickness to be at least 90 mils.

D. Apply reflective glass spheres immediately behind the striping mechanism.

3.03 APPLICATION – REFLECTIVE PAINT

A. Apply paint to the pavement by spray.

B. Edges of markings are to be well defined.

C. Apply paint to attain a minimum wet film thickness of 15 mils.

D. Apply spheres immediately and uniformly following the paint application.

3.04 APPLICATION – REFLECTIVE PAVEMENT MARKERS

A. Set reflective pavement markers 1 inch to the left or right of the line.

B. Apply the adhesive to the bonding surface (not the marker) so that 100 percent of the bonding area of the marker will be covered.

C. Apply sufficient adhesive to ensure that the marker is pressed down into the adhesive and adhesive will be forced around the perimeter of the marker.

D. Immediately remove excess adhesive from the bonding surface and the external surface of the marker.

3.05 PROTECTION

A. Do not allow traffic onto newly painted traffic stripes and markings until they are sufficiently dry to permit vehicles to cross them without damage.

B. Warning signs shall be set up before the beginning of each operation and extra signs shall be kept well ahead of the application equipment. The equipment shall be so operated that traffic may pass safely. Warning signs are to be placed only where operations are in progress and are to be relocated as often as is necessary.

C. Erect adequate warning signs, and take necessary precautions for the protection of the wet pavement markings and the safety of the public. Cones, rubber "Z" guards, or similar protective devices, shall be placed along the newly-painted stripe to prevent traffic from crossing the wet paint. Any such devices used shall be of a type that will not cause damage to vehicular traffic in the event that these objects are accidentally passed over.

D. Any portions of the pavement markings damaged by passing traffic or from any other cause shall be reworked at no additional cost to the OWNER.

E. If more than 2 percent of the reflective pavement markers fail in adhesion or alignment within the 45 days under traffic, replace all failed markers at no additional cost to the OWNER.

3.06 CORRECTIVE MEASURES

A. Pavement markings which fail to meet the guidelines, including the permissible tolerances and the appearance requirements, are marred or damaged by traffic or from any other cause shall be corrected at no additional cost to OWNER. Drips and spattered paint shall be removed. Whenever it is necessary to remove paint it shall be done by means which will not damage the underlying surface of the pavement. When necessary to correct a deviation which exceeds the permissible tolerance in alignment, that portion of the strip affected shall be removed and repainted in accordance with these guidelines.

B. Misalignment, defective surfaces, and the like, shall be corrected by sandblasting or by any other type of mechanical device which will effectively remove the paint without damage to the pavement surface.

3.07 DIMENSION AND ALIGNMENT TOLERANCE

A. No marking shall be less than the indicated width. No marking shall exceed the indicated width by more than ½ inch.

B. Corrections of variation in the width of, and the alignment of strips shall not be made abruptly but the stripes should be returned to the design width at the rate of at least 10 feet for each ½ inch of correction.

C. Where a stripe deviates from the correct alignment, as indicated by the string line, by more than one inch in any 20 foot length, it shall be obliterated and the stripe corrected.

END OF SECTION

SECTION 02770

CURBS, DRIVEWAYS AND SIDEWALKS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Portland cement concrete curbs, driveways, and sidewalks.

1.02 REFERENCES

A. ASTM C309-03 – Liquid Membrane-Forming Compounds for Curing Concrete.

B. ASTM D1557-02 – Laboratory Compaction Characteristics of Soil Using Modified Effort.

C. ASTM D1751-04 – Preformed Expansion Joint Filler for Concrete Paving and Structural Construction.

1.03 SUBMITTALS

A. Concrete mix design.

PART 2 PRODUCTS

2.01 CONCRETE

A. 28 day minimum compressive strength of 2500 PSI. Type II Portland Cement. Minimum cement content of 400 lb/cy of concrete. Maximum water cement ratio of 0.66 lb/lb. Slump range of 0-6 inches.

2.02 PRE-MOLDED JOINT FILLER

A. Asphalt impregnated fiberboard conforming to ASTM D1751.

2.03 MEMBRANE CURING COMPOUND

A. ASTM C309, Type 2, Class A

PART 3 EXECUTION

3.01 PREPARATION

A. Compact subgrade to at least 98 percent of the maximum density determined by ASTM D1557 (AASHTO T180).

B. Dampen subgrade.

3.02 PLACEMENT

A. Place the concrete in the forms, and tamp and spade it to prevent honeycombing, and until the top of the concrete can be floated smooth and the edges rounded to the radius shown on the Drawings.

3.03 JOINTS

A. Saw contraction joints as soon as the concrete has hardened to the degree that excessive raveling will not occur and before uncontrolled shrinkage cracking begins.

B. Construct contraction joints for curb at intervals of 10 feet except where closure requires a lesser interval, but do not allow any section to be less than 4 feet in length. Construct contraction joints for sidewalks and driveways at intervals specified on the Drawings.

C. Construct expansion joints in curb at all inlets, at all radius points, and at other locations as specified on the Drawings. Ensure that the joint is ½ inch in width. Construct expansion joints for sidewalks and driveways at intervals and locations specified on the Drawings.

3.04 FINISHING

A. Fill minor defects with mortar composed of one part Portland cement and two parts fine aggregate.

B. Finish exposed surfaces while the concrete is still green.

C. Curb is to have a brush finish.

D. Sidewalk and driveways are to have a broom finish. Strike-off concrete perpendicular to forms.

E. Finish the edge of driveways and sidewalks with an edging tool having a radius of ½ inch.

3.05 CURING

A. Continuously cure concrete for a period of at least 72 hours. Commence curing after completely finishing and as soon as the concrete has hardened sufficiently to permit application of the curing material without marring the surface.

B. Cure concrete using one of the following methods:

1. Wet Burlap: Cover entire exposed surface with wet burlap and keep it thoroughly wet throughout the curing period.
2. Membrane Curing Compound: Apply curing compound over the entire concrete surface in a single coat continuous film at a uniform coverage rate of at least 200 square feet per gallon.
3. Polyethylene Sheeting: Place polyethylene sheeting over the entire exposed surface of the concrete. Hold the sheeting securely in place and in continuous contact with the concrete at all times.

END OF SECTION

SECTION 02924

SODDING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Furnishing, placing, and maintaining grass sod.

PART 2 PRODUCTS

2.01 SOD

A. Argentine bahia grass unless noted otherwise on the Drawings. Sod need to match existing.

B. Taken up in commercial-size rectangles, preferably 12 by 24 inch or larger. Minimum thickness of 2 inches.

C. Sufficiently thick to secure a dense stand of live grass. Live, fresh, and uninjured, at the time of planting. Have a soil mat of sufficient thickness adhering firmly to the roots to withstand all necessary handling. Free of noxious weeds and seeds. Keep shaded and moist from the time it is dug until it is planted. Plant as soon as possible after being dug. No sod that has been cut for more than 72 hours shall be used.

2.02 STAPLES

A. Black iron wire not smaller than 14 gauge, and bent from a length of wire at least 25 inches long into a "U" with 1-inch width at the crown.

2.03 WATER

A. Free of excess and harmful chemicals, acids, alkalies, or any substance that is harmful to plant growth.

PART 3 EXECUTION

3.01 PREPARATION OF GROUND

A. Scarify or loosen areas requiring sod to a depth of 6 inches.

B. Remove all loose rock, woody material, and other obstructions that will interfere with sodding.

C. Eliminate uneven areas and low spots. Maintain lines, levels, profiles, and contours. Make changes in grade gradual.

D. Limit preparation to those areas that can be sodded within 72 hours after preparation.

E. ENGINEER to review finished grading prior to placement of sod.

F. Prior to sodding, thoroughly water areas and allow water to percolate into soil. Allow surface moisture to dry before sodding to prevent a muddy soil condition.

3.02 PLACING SOD

A. Place sod immediately after ground preparation.

B. Do not sod when weather and soil conditions are unsuitable for proper results.

C. Do not place sod on eroded or washed out sites.

D. Place sod on prepared surface, with edges in close contact. Do not stretch or overlap sod pieces.

E. Lay sod strips in a staggered pattern with snug, even joints. All joints shall be butted tight to prevent voids.

F. Place sod to the edge of all paving and shrub areas and 1 inch below adjoining pavement.

G. Place sod parallel with the roadway.

H. Roll or tamp sod to insure solid contact of root mat and soil surface.

I. Where sodding in drainage ditches, the soil shall be evenly graded to a line 2 inches below the elevation shown on the Drawings. Stagger the setting of the sod pieces to avoid a continuous seam along the line of flow. Ensure that the offsets of individual strips do not exceed 6 inches. Tamp the outer pieces of sod to produce a feather edge effect.

J. When slopes are greater than 3:1, securely anchor sod to the soil by pinning with staples. Pin every 3 feet along each strip of sod.

3.03 WATERING

A. Thoroughly water sod immediately after placing. Provide a minimum of ½ inch of water.

B. The rate of application for irrigation water shall not exceed ¾ inch per hour and the distribution pattern will not be such as to create an erosive condition at the site.

C. Keep sod in a moist condition until Substantial Completion.

3.04 MAINTENANCE

A. Maintain sodded areas in a condition satisfactory to the ENGINEER until Substantial Completion. This includes, but is not limited to, watering, weeding, mowing, and repair of washed or eroded areas.

END OF SECTION

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engenuity group inc.
ENGINEERS • SURVEYORS • GIS MAPPERS

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Website: www.engenuitygroup.com

January 24, 2020

SUBMITTAL TO TOWN OF LAKE PARK
1600 FLAGLER BLVD DRAINAGE IMPROVEMENTS

Richard Scherle
Town of Lake Park
Dept. of Public Works
Lake Park, FL

Re: Drainage Pipe Improvements
Town of Lake Park, Florida
Engenuity Group Project No. 18187.16

Dear Mr. Scherle:

Please see enclosed one set of the construction documents consisting of engineering plans and a project manual with specifications.

Thank you very much and please let me know if you have any questions or other comments.

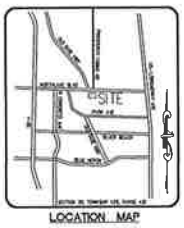
Sincerely,

Adam Swaney, PE
Project Manager

ENGINEERING PLANS
FOR
1600 FLAGLER BLVD STORMWATER IMPROVEMENTS

JANUARY 2020

PREPARED FOR:
TOWN OF LAKE PARK



LOCATION MAP

DRAWING INDEX:

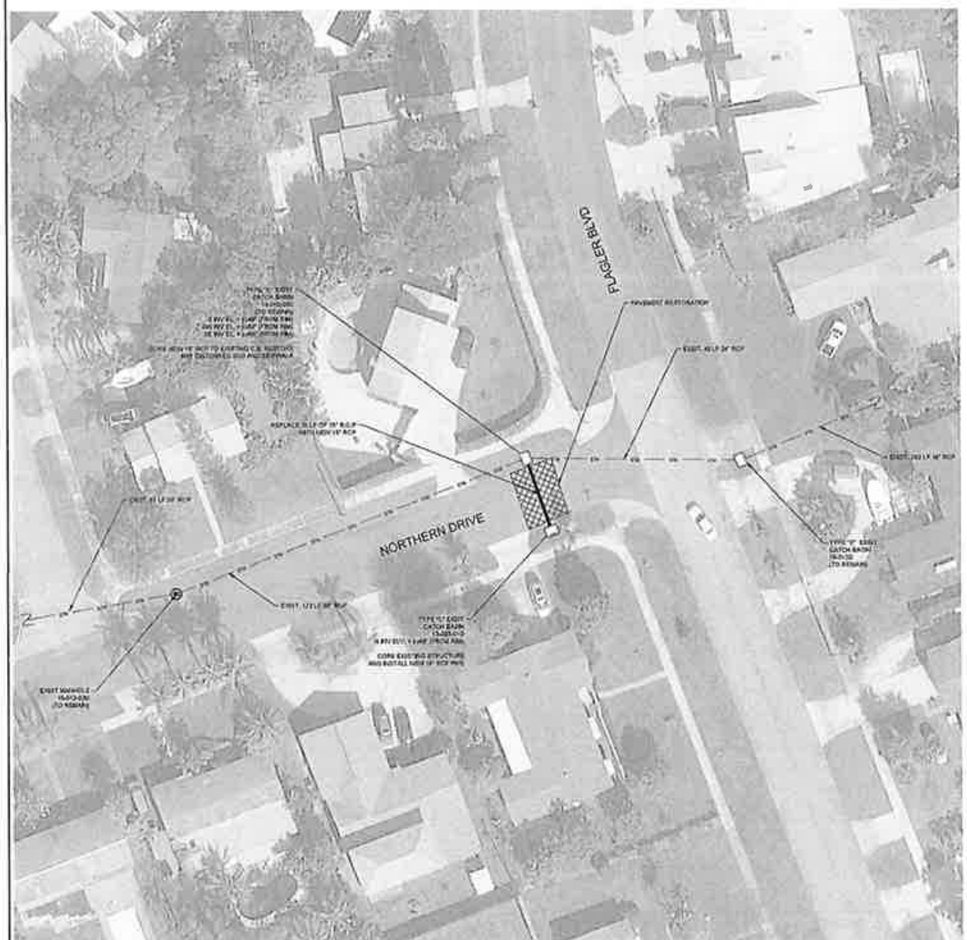
811
Know what's below.
Call before you dig.

1600 FLAGLER BLVD DRAINAGE IMPROVEMENTS
1600 FLAGLER BLVD
TOWN OF LAKE PARK, FLORIDA
COVER

engenuity group inc.

DATE: JANUARY 2020
DESIGN: KL
DRAWN: KCS
CHECKED: LW
APPROVED: KCS

SHEET 1 OF 3
JOB No. 18187.16



LOCATION MAP

GRAPHIC SCALE

LEGEND:

PROPOSED

PAVEMENT RESTORATION

CIPP CURE IN PLACE

EXISTING

STORM

CATCH BASIN

MANHOLE

GENERAL NOTES:

1. NO SURVEY WILL BE OBTAINED, THEREFORE CONTRACTOR IS TO FIELD VERIFY ALL EXISTING UTILITIES AND DRAINAGE LINES.
2. PIPE INVERT DEPTHS SHOWN ON THIS PLAN ARE APPROXIMATE VALUES OBTAINED AT A FIELD VISIT. CONTRACTOR TO FIELD VERIFY INVERT AND TOPOGRAPHIC ELEVATIONS.
3. CONTRACTOR TO RESTORE ANY DISTURBED SIDEWALK, SOD, PAVEMENT AREAS TO EXISTING CONDITIONS OR BETTER.
4. ALL PAVEMENT STRIPING SHALL BE REFLECTIVE PAINT AND MATCH EXISTING UNLESS NOTED OTHERWISE.
5. ALL AREAS DISTURBED BY CONSTRUCTION SHALL BE RESTORED TO THEIR ORIGINAL CONDITION.
6. FINISHED GRADE AT EDGE OF NEW PAVEMENT SHALL BE 1/4 INCH ABOVE EDGE OF EXISTING CONCRETE HEADER CURB.
7. MAINTAIN DRAINAGE THROUGH WORK AREA DURING CONSTRUCTION.
8. FINISHED GRADES SHALL MATCH EXISTING, UNLESS OTHERWISE NOTED.
9. CAUTION/NOT ALL UNDERGROUND UTILITIES ARE SHOWN ON PLANS.
10. LANDSCAPE AREAS TO BE RESTORED TO ORIGINAL CONDITION.
11. CONTRACTOR TO PROVIDE MAINTENANCE OF TRAFFIC PLAN (MOT) PREPARED BY AN ATSSA CERTIFIED PREPARER PRIOR TO COMMENCING WORK.
12. CONTRACTOR SHALL LOCATE EXISTING UNDERGROUND UTILITIES IN THE AREA OF THE WORK AS CONSTRUCTION PROCEEDS. IF UTILITIES ARE TO REMAIN IN PLACE, PROVIDE ADEQUATE MEANS OF PROTECTION.
13. PROTECT STRUCTURES, UTILITIES, SIDEWALKS, PAVEMENTS, BENCHMARKS, AND OTHER FACILITIES FROM DAMAGE CAUSED BY SETTLEMENT, LATERAL MOVEMENT, UNDERMINING, WASHOUT, AND OTHER HAZARDS CREATED BY EXCAVATING OPERATIONS.

811 Know what's below. Call before you dig.

REVISIONS

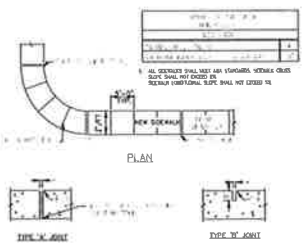
1600 FLAGLER BLVD DRAINAGE IMPROVEMENTS
1600 FLAGLER BLVD
TOWN OF LAKE PARK, FLORIDA
ENGINEERING PLAN

engenuity group inc.

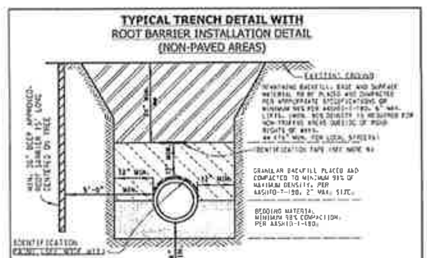
DATE JANUARY 2020

SHEET 2 of 3

JOB NO. 18187.16



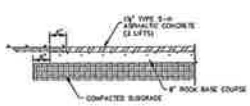
CONCRETE SIDEWALK



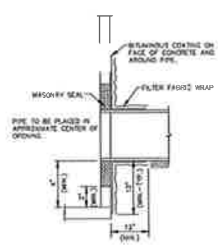
NOTES:

1. BEDDING SHALL CONSIST OF IN-SITU GRANULAR MATERIAL OR WASHED AND GRADED LIMEROCK 3/8" - 1/8" SIZING WITH EQUAL OR GREATER STRUCTURAL ADEQUACY AS EXISTING. UNSUITABLE IN-SITU MATERIALS SUCH AS MUCK, DEBRIS AND LARGER ROCKS SHALL BE REMOVED.
2. THE PIPE SHALL BE FULLY SUPPORTED FOR ITS ENTIRE LENGTH WITH APPROPRIATE COMPACTION UNDER THE PIPE HAUNCHES.
3. THE PIPE SHALL BE PLACED IN A DRY TRENCH.
4. BACKFILL SHALL BE FREE OF UNSUITABLE MATERIAL SUCH AS LARGE ROCK, MUCK AND DEBRIS.
5. DENSITY TESTS SHALL BE TAKEN IN 1 FOOT LIFTS ABOVE THE PIPE AT INTERVALS OF 400' MAXIMUM (MINIMUM 1 SET) OR AS DIRECTED BY THE CONSTRUCTION COORDINATION DIVISION. RESULTS SHALL BE SUBMITTED TO CONSTRUCTION COORDINATION AS PART OF THEIR FIELD REVIEW.
6. THE PERMITTEE/DEVELOPER/CONTRACTOR SHALL BE RESPONSIBLE TO COMPLY WITH ALL TRENCH SAFETY LAWS AND REGULATIONS.
7. SEE SEPARATE DETAIL FOR PAVED AREAS (OPEN CUT FOR THOROUGHFARE AND NON-THOROUGHFARE ROADS).
8. THE AFFECTED AREA SHALL BE RESTORED TO EQUAL OR BETTER CONDITION OR AS SPECIFIED IN PERMIT/CONTRACT DOCUMENTS.
9. APPROVED MAGNETIC TAPE IS REQUIRED FOR ALL MAIN PRESSURE PIPES AND CONDUIT IN THE COUNTY'S RIGHT-OF-WAY. INSTALL TAPE 24" BELOW FINISHED GRADE.
10. ROOT BARRIER IS REQUIRED FOR APPROVED PIPE INSTALLATION CLOSER THAN 10 FEET FROM AN EXISTING TREE.
11. CONTINUOUS 4" WIDE PAINT STRIPING IS REQUIRED FOR DIP/PCCP WATER MAINS (BLUE), DIP SANITARY FORCE MAINS (GREEN), DIP RECLAIMED WATER MAINS (PURPLE), GAS MAINS (YELLOW), OR AS REQUIRED BY THE APWA.
12. PERMANENT ABOVE GROUND UTILITY MARKER SHALL BE INSTALLED IF REQUIRED BY PROPERTY OWNER GRANTING THE PIPE INSTALLATION PERMIT.

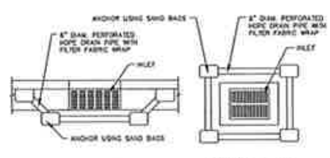
TYPICAL TRENCH DETAIL/
ROOT BARRIER INSTALLATION DETAIL



ASPHALT PAVEMENT SECTION



FILTER FABRIC WRAP ON GROUTED PIPE TO STRUCTURE JOINT



STORM DRAIN INLET PROTECTION

1600 FLAGLER BLVD DRAINAGE IMPROVEMENTS
1600 FLAGLER BLVD
TOWN OF LAKE PARK, FLORIDA
DETAILS

engenuity group inc.

1280 N CONGRESS AVE, SUITE 101
WEST PALM BEACH, FLORIDA 33409

REVISIONS

DATE	JANUARY 2020
PROJECT ENGINEER	ACS
PROJECT MANAGER	LV
CHECKED	ACS

SHEET 3 OF 3

JOB NO. 18187.16

PROJECT MANUAL

1600 FLAGLER BLVD
DRAINAGE PIPES REPAIRS

TOWN OF LAKE PARK

JANUARY 2020

A Higher Standard of Excellence

engenuity group inc.

ENGENUITY GROUP, INC.
1280 N CONGRESS AVE, SUITE 101
WEST PALM BEACH, FL 33409
(561) 655-1151

PROJECT NO.18187.16

TABLE OF CONTENTS

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DRAWINGS TABLE OF CONTENTS

The Drawings which form a part of the Contract Documents and show the Work to be performed are as follows:

Drawing Title	Date	No. of Sheets
Paving, Grading, and Drainage Plan and Details	January, 2020	3

SECTION 01000

GENERAL REQUIREMENTS

PART 1 GENERAL

1.01 WORK INCLUDED

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

B. The cost of incidental Work described in these General Requirements, for which there are no specific Contract 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 items. No additional payment will be made therefore.

C. The CONTRACTOR shall provide and maintain such modern plant, tools, and equipment as may be necessary in the opinion of the ENGINEER, to perform in a satisfactory and acceptable manner all the Work required by the 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 ENGINEER notwithstanding.

1.02 MOBILIZATION

A. Perform preparatory Work and operations in mobilizing for beginning Work on the Project, including, but not limited to, those operations necessary for the movement of personnel, equipment, supplies, and incidentals to the Project site and for the establishment of temporary offices, buildings, safety equipment and first aid supplies, and other facilities. Include the costs of bonds and any required insurance and any other preconstruction expense necessary for the start of the Work, excluding the cost of construction materials.

B. When the Bid Form includes a separate pay item for Mobilization, partial payments will be made therefore in accordance with the following:

Percent of Contract Amount Earned	Allowable Percent of the Contract Lump Sum Price for the Item
5	25
10	50
25	75
50	10

C. When the Bid Form does not include a separate item for Mobilization, all Work and incidental costs specified as being covered in this paragraph will be included for payment under the several scheduled items of the overall Contract and no separate payment will be made therefore.

1.03 MAINTENANCE OF TRAFFIC

A. Prepare and submit a Maintenance of Traffic Plan for review. A professional engineer licensed in the State of Florida shall prepare the plan.

B. CONTRACTOR shall be responsible to maintain traffic control through the work area for the duration of construction. Provide access to residence, businesses, etc., that are located in the temporary traffic control zone. Provide traffic control devices that are on the Florida Department of Transportation's "Qualified Product List".

1.04 PROVISIONS FOR CONTROL OF POLLUTION

A. Sufficient precautions shall be taken during construction to prevent the run-off of polluting substances such as silt, clay, fuels, oils, bitumen's or other polluting materials harmful to humans, fish, or other life, into the supplies and surface waters of the State of Florida. 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 background unless otherwise permitted. Special precautions shall be taken in the use of construction equipment to prevent operations which promote erosion. Erosion evident within the limits of construction or other areas affected by the CONTRACTOR shall be the responsibility of the CONTRACTOR.

B. CONTRACTOR shall prepare a Pollution Prevention Plan, submit it to the ENGINEER for review, and implement the plan prior to commencing Work on the site. The plan must include the following:

1. A site evaluation of how and where pollutants may be mobilized by stormwater.
2. A plan for managing stormwater runoff.
3. Identification of appropriate erosion and sediment controls and stormwater best management practices to reduce erosion, sedimentation, and stormwater pollution.
4. A maintenance and inspection schedule.
5. A record keeping process.
6. Identification of stormwater exit areas.

C. Fill out a Notice of Intent form (FDEP Form 62-621.300(4)(b) and submit it to the Florida Department of Environmental Protection.

1.05 PROGRESS SCHEDULE

A. Prepare a construction progress schedule covering all the Work involved in the Contract. This includes submittal and approval of Shop Drawings on critical items, fabrication and delivery of identifiable materials and equipment, specific items or Work in the scope,

interfaces required with other contracts that may be part of an overall project, and specific dependencies upon acts or activities of parties not under the control of CONTRACTOR.

B. The Bar Graph Method or Critical Path Method are acceptable for scheduling construction activity.

C. Progress schedule shall be updated monthly and submitted to ENGINEER with progress payment applications.

1.06 SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

A. Submit at least eight (8) copies of all required Shop Drawings, product data and samples for ENGINEER's review.

B. Shop Drawings, product data, samples and transmittal letters pertaining thereto shall be identified with the title of the project, submission date, and the CONTRACTOR's acknowledgement that he has reviewed them and found them acceptable.

C. Notify ENGINEER in writing, at the time of submittal, of any deviations in the submittals from the requirements of the Contact Documents.

D. The review and approval of shop drawings, samples or product data by the ENGINEER shall not relieve the CONTRACTOR from his/her responsibility with regard to the fulfillment of the terms of the Contract Documents. All risks of error and omission are assumed by the CONTRACTOR and the ENGINEER will have no responsibility therefore.

1.07 BORING LOGS, OTHER REPORTS AND DRAWINGS UTILIZED BY ENGINEER

A. Boring logs, other reports and Drawings utilized by ENGINEER, if enclosed, are provided for CONTRACTOR's information and are not a part of the Contract Documents. There is no technical data in the boring logs, other reports or Drawings that should be relied on by the CONTRACTOR.

PART 2 PRODUCTS (Not Used)

PART 3 EXECUTION

3.01 CONSTRUCTION STAKING

A. The baselines and benchmarks for primary control, necessary to establish lines and grades needed for construction are shown on the Drawings. These baselines and benchmarks shall be used as the origin of all surveys, layouts and measurements to establish construction lines and grades. CONTRACTOR shall take all necessary precautions to prevent the loss or damage of primary control points. Any stakes and/or

control points lost or damaged by construction activity will be re-established by CONTRACTOR at no additional expense to OWNER.

B. Construction staking shall be performed by a professional surveyor and mapper licensed in the State of Florida.

3.02 PROTECTION/ADJUSTMENT OF UTILITIES

A. Utility installations and structures shall be understood to include all poles, tracks, pipes, wires, conduits, house service connections, vaults, manholes and all other appurtences and facilities pertaining thereto whether owned or controlled by the OWNER, 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.

B. CONTRACTOR shall protect all utility installations and structures from damage during Work. Access across any buried public utility installation or structure shall be made only in such locations and by means approved by the utility owner. The CONTRACTOR shall so arrange operations as to avoid any damage to these facilities. All required protective devices and construction shall be provided by the CONTRACTOR. All existing public utilities damaged by the CONTRACTOR which are shown on the Drawings or have been located in the field by the utility owner shall be repaired by the CONTRACTOR.

C. Public utility installations or structures owned or controlled by the OWNER or other governmental body, which are shown on the Drawings to be removed, relocated, replaced or rebuilt by the CONTRACTOR shall be included in the prices bid for the various contract items. No separate payments shall be made therefore.

D. Where public utility installations or structures owned or controlled by the OWNER or other governmental body are encountered during the course of the Work, and are not indicated on the Drawings or in the Specifications, and when in the opinion of the ENGINEER, 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 ENGINEER, 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 the General and Supplementary Conditions.

E. CONTRACTOR shall give written notice to OWNER and governmental utility departments and other owners of public utilities of the location of the proposed construction operations, at least seventy-two (72) hours in advance of breaking ground in any area or on any unit of the Work.

F. 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 utility owner.

3.03 FIELD OBSERVATIONS AND TESTING

A. Field observations will be performed by ENGINEER and all field testing of materials will be performed by an independent testing laboratory. The cost of passing tests will be paid by OWNER. Failing tests shall be paid by the CONTRACTOR.

B. For tests specified to be made by the CONTRACTOR (for equipment/material prior to delivery to the project site), 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 Contact Documents. Six (6) copies of the reports shall be submitted and authoritative certification thereof must be furnished to the ENGINEER as a prerequisite for the acceptance of any material or equipment.

C. If, in the making of any test of any material, it is ascertained by the ENGINEER that the material does not comply with the Contract, the CONTRACTOR will be notified thereof and will be directed to refrain from delivering said material, or to remove it promptly from the site or from the Work and replace it with acceptable material, without additional cost to the OWNER.

D. The CONTRACTOR shall be fully responsible for the proper operation of material during tests and construction periods and shall neither have nor make any claim for damage that may occur to material prior to the time when the OWNER formally takes over the operation thereof.

E. CONTRACTOR is responsible for scheduling field testing.

3.04 SALVAGE MATERIAL

A. All salvageable material and equipment removed from the existing construction for which specific use, relocation or other disposal is not specifically noted on the Drawings or otherwise specified, shall remain the property of the OWNER and shall be turned over to him. All material and equipment not in salvageable condition as determined by the ENGINEER, shall be disposed of by the CONTRACTOR in a legal manner at the Contractor's expense. The actual storage site for salvageable material will be designated by the OWNER.

3.05 STARTING OF SYSTEMS

A. Electrical equipment shall not be energized, or placed in service, nor shall mechanical equipment be operated by the CONTRACTOR until approved by the OWNER and ENGINEER. Such approval shall be granted only after all interested parties have been duly notified, have given approval for placing the equipment in service, and all interested parties are present or waived their right to be present. The CONTRACTOR shall notify the OWNER and ENGINEER as far in advance as possible of the dates that various items and equipment will be completed and ready for start-up.

3.06 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 ENGINEER, such material, debris, or rubbish constitutes a nuisance or is objectionable.

B. At the conclusion of the Work, all tools, temporary structures and materials belonging to the CONTRACTOR shall be promptly taken away and CONTRACTOR shall remove and promptly dispose of all rubbish or any other foreign materials. The CONTRACTOR shall thoroughly clean all material installed and shall deliver such materials undamaged in a clean and new condition.

END OF SECTION

SECTION 01456

FIELD TESTING OF MATERIALS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Field testing of compaction of backfill, embankment, pavement subgrade, and pavement base.

B. Sampling and testing concrete strength and slump.

C. Sampling and analysis of asphalt for paving.

1.02 SUBMITTALS

A. Two certified copies of the laboratory report to ENGINEER.

B. Reports shall include date issued, project title and number, name of inspector, date and time of sampling/inspection, standard designation of the test method and work performed, ambient conditions at the time of sampling, appropriate retest recommendation, identification of product and specifications section, location in the project, type of inspection or test, date of tests, and conformance with Contract Documents.

1.03 QUALIFICATIONS

A. Test laboratory accredited by the Construction Materials Engineering Council, Inc.

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION

3.01 COORDINATION

A. Cooperate with laboratory personnel, and provide access to the work and to manufacturer's facilities.

B. Provide incidental labor and facilities to provide access to work to be tested to obtain and handle samples at the site or at source of products to be tested, to facilitate tests and inspections, storage and cutting of test samples.

C. Notify laboratory 24 hours prior to expected time for operations requiring inspection and testing services.

3.02 TESTING FREQUENCY

A. Wastewater Systems
   1. Manholes – check compaction of backfill at 2 foot vertical intervals beginning 2 feet above the bottom of the manhole.
   2. Gravity Main – check compaction of backfill at 200 foot intervals beginning 1 foot above the top of the pipe and then every 200 feet thereafter.
   3. Force Main – check compaction of backfill 1 foot above the top of the pipe at 200 foot intervals horizontally.

B. Water Systems
   1. Water Mains – check compaction of backfill 1 foot above the top of the pipe at 200 foot intervals horizontally.

C. Drainage Systems
   1. Structures – check compaction of backfill at 2 foot vertical intervals beginning 2 feet above the bottom of the structure.
   2. Pipe – check compaction of backfill beginning at the springline and then at 2 foot vertical intervals and 200 foot horizontal intervals.

D. Roadways
   1. Subgrade – check compaction at 200 foot intervals.
   2. Stabilized Subgrade – check compaction at 200 foot intervals.
   3. Curb and Gutter – check compaction at 300 foot intervals but stagger from one side of the road to the other. Check concrete slump and obtain a set of test cylinders every 800-1000 feet.
   4. Base Rock – analyze material when it is delivered to the site for compliance with the specifications. Check compaction at 300 foot intervals but alternate left side to right side.
   5. Asphalt – verify asphalt temperature.

END OF SECTION

SECTION 01573

STORMWATER POLLUTION PREVENTION PLAN

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Precautions to be taken during construction to prevent the run-off of polluting substances such as silt, clay, fuels, oils, bitumens, or other polluting materials harmful to humans, fish, or other life.

B. Inspections and maintenance of the controls to prevent the run-off of polluting substances.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 EROSION AND SEDIMENT CONTROL MEASURES

A. Excavation of water management facilities should occur immediately after clearing and grubbing to serve as a sediment trap or catchment for stormwater runoff from exposed soils.

B. Construct perimeter berm or grade site to prevent off-site discharge of stormwater runoff.

C. Place silt fences or hay bales to contain erosion in areas prone to stormwater runoff erosive velocities.

D. Protect each inlet that may receive runoff from the construction site with silt fence/filter fabric staked in place.

E. Install turbidity screens within the receiving body before commencement of bank improvements and outfall installations.

F. Take all reasonable precautions to control dust and unconfined particulate matter. The application of water is an acceptable dust suppressant on roadways, stockpiles, and any other areas within the project boundaries. Dust suppressant water shall be applied in such a manner so as not to produce excess runoff and erosion.

G. Turbidity in receiving water shall not be increased more than 29 nephelometric turbidity units (NTU) above background.

H. Take precautions in the use of construction equipment to prevent operations which promote erosion.

3.02 OTHER CONTROLS AND MATERIAL MANAGEMENT PRACTICES

A. Fertilizers – Apply fertilizers only in the minimum amount recommended by the manufacturer. If stored onsite, provide covered storage. Transfer the contents of any partially used bags of fertilizer to a sealable container to avoid spills.

B. Hazardous Waste – Dispose of in a manner specified by local or State regulations.

C. Noise – Minimize noise caused by the operation of equipment. Abide by all local regulations covering noise control.

D. Odors – Do not cause objectionable odors to be generated.

E. Offsite Vehicle Tracking - Provide a rock construction entrance to reduce vehicle tracking of sediments. Dump trucks hauling material from the construction site shall be covered with a tarpaulin.

F. Open Burning - No open fires or burning of materials other than vegetative land clearing debris. Obtain prior approval to burn from the local authority and applicable Fire Marshall.

G. Paints - All containers shall be tightly sealed and stored when not required for use. Excess paint shall not be discharged to the storm sewer system, but will be properly disposed of according to the paint manufacturer's instructions and State or local regulations.

H. Pesticides and Herbicides - Any pesticide and herbicide usage will be by State licensed applicators.

I. Petroleum Products - Monitor onsite vehicles and tanks for leaks. They shall receive regular preventive maintenance to reduce the chance of leakage. Store petroleum products in tightly sealed containers, which are clearly labeled. Use asphalt substances according to the manufacturer's recommendations. Provide secondary containment for all above ground fuel tanks.

J. Sanitary Waste - Collect all sanitary waste from the portable units at least twice per week.

K. Waste Materials - Collect and store all waste materials in a securely covered metal dumpster provided by a licensed solid waste management company. Deposit all trash and construction debris from the site in the dumpster. The dumpster is to be emptied as needed so there is no overflow. Haul trash to a State approved landfill facility.

3.03 MAINTENANCE / INSPECTION PROCEDURES

A. Inspect all control measures at least once per week and following any storm event of 0.5 inches or greater.

B. Maintain all measures in good working order. If a repair is necessary, it must be initiated within 24 hours of the onsite inspection report.

C. Remove built up sediment from silt fence when it has reached one-third the height of the fence.

D. Inspect silt fence for depth of sediment, tears, to see if the fabric is securely attached to the fence posts, and to see that the fence posts are firmly in the ground.

E. Prepare a maintenance inspection report after each inspection. A copy of the report form to be completed by the inspector is found at the end of this Section.

F. The CONTRACTOR shall designate a qualified person to be responsible for inspections, maintenance and repair activities, and completing the inspection and maintenance reports.

G. Non-stormwater discharges are permissible provided that discharge does not cause erosion or create turbidity within the receiving body and are in compliance with regulatory requirements. These discharges may include water line flushing, fire fighting activities, fire hydrant flushing, dust control, irrigation drainage, air conditioning condensation, and water used to spray off loose solids from vehicles.

END OF SECTION

STORMWATER POLLUTION PLAN INSPECTION REPORT FORM

Project Name _____

FDEP NPDES Stormwater Identification Number: FLR10_____

Location	Rain Data	Type of control (see below)	Date installed/ modified	Current Condition (see below)	Corrective Action /Other Remarks

Condition Code:

G = Good M = Marginal, needs maintenance or replacement soon O = Other

C= Needs to be cleaned P = Poor, needs immediate maintenance or replacement

Control Type Codes:

1	Silt Fence	12	Vegetative preservation area	23	Permanent seed / sod
2	Earth dikes	13	Retention Pond	24	Mulch
3	Structural diversion	14	Construction entrance stabilization	25	Hay Bales
4	Swale	15	Perimeter ditch	26	Geotextile
5	Sediment Trap	16	Curb and gutter	27	Rip-rap
6	Check dam	17	Paved road surface	28	Tree protection
7	Subsurface drain	18	Rock outlet protection	29	Detention pond
8	Pipe slope drain	19	Reinforced soil retaining system	30	Waste disposal / housekeeping
9	Level spreaders	20	Gabion	31	Sand Bag
10	Storm drain inlet protection	21	Sediment Basin	32	Dam
11	Vegetative buffer strip	22	Temporary seed / sod	33	Other

Inspector Information:

_____ _____ _____

Name Qualification Date

The above signature certifies that this facility is in compliance with the Stormwater Pollution Prevention Plan and the State of Florida Generic Permit for Stormwater Discharge from Large and Small Construction Activities if there are not any incidents of non-compliance identified above.

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who managed the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

_____ _____

Name (Responsible Authority) Date

SECTION 01700

PROJECT CLOSE OUT

PART 1 GENERAL

1.01 DESCRIPTION

A. The items listed in this Section shall not be considered as a complete listing and shall in no way limit requirements that may be stated in other parts of the Contract Documents, but rather should be considered as an aid in preparing for final inspection and project close out.

1.02 BASIC REQUIREMENTS PRIOR TO SUBSTANTIAL COMPLETION

A. Punch List: The following items shall be completed prior to request for final inspection.

1. All general construction completed and the project components shall be clean.

2. All mechanical and electrical work substantially complete, fixtures in place, connected, cleaned and ready for use.

3. All electrical circuits shall be scheduled in panels, and all panels and disconnect switches properly labeled.

4. All painting shall be completed, all signs installed.

5. All surfaces, glass and metal work shall be cleaned.

6. All finish hardware and furniture shall be installed.

7. Project site shall be cleared of the Contractor's equipment and/or building supplies. All temporary structures and construction shall be removed.

8. All landscaping and sod planted and in place.

9. All signs and striping mounted, replaced and installed.

B. Record Drawings: The project record drawings shall be submitted by the Contractor for all structural work, paving, drainage, water, wastewater and any other construction done under this contract.

1.03 BASIC REQUIREMENTS PRIOR TO FINAL COMPLETION

A. All of the above items for Substantial Completion shall be complete; in addition, the punch list items noted at the time of substantial completion shall have been corrected and the work completed.

B. Warranties: Furnish all manufacturers' warranties and maintenance manuals for all equipment. For corrective work during the warranty period, submit a complete list of contact persons and phone numbers for General Contractor and all Subcontractors.

C. Guarantees and Bonds: Furnish the following written guarantees and bonds, in duplicate, signed by an authorized representative of manufacturer, supplier and/or subcontractor in accordance with the General Conditions, Supplementary General Conditions and the technical sections of the specifications.

D. Keys and Special Wrenches: All keys and special wrenches shall be tagged with the room number or with designed use and turned over to the Owner.

E. Maintenance Materials: Deliver to the Owner, prior to final completion of the work, maintenance materials (extra stock) as required in the technical sections of the specifications.

F. Manuals and Instructions:

1. Deliver to the Owner, prior to final completion of the work, three bound copies of maintenance and instruction manuals customarily supplied by manufacturers for items incorporated in this work and as set forth in the General Requirements for Mechanical and Electrical work.

2. Contractor and subcontractors shall provide hands on demonstrations and verbal instructions for the proper operation and maintenance of appliances, machines and equipment to the Owner or their designated representative.

3. Arrange, with the Owner, an appointment for specific time to give demonstrations and instructions.

G. Listing of Equipment: A tabular listing shall be presented to the Engineer prior to Final Completion of the project and prior to final payment, which shall include all plumbing, mechanical, electrical and special equipment by name, manufacturer, model number and serial number of each item provided.

H. Affidavits: Provide affidavits prior to final payment as follows:

1. Affidavit that all work has been properly paid for and all obligations for payment to material suppliers, subcontractors, etc. have been satisfied (A.I.A. Form G-706).

2. Consent of Surety (A.I.A. Form G-707).

3. Release and Waivers of Liens (A.I.A. Form G-706A).

END OF SECTION

SECTION 01788

PROJECT RECORD DOCUMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Obtaining and recording Record information to indicate changes in project conditions, locations, dimensions, elevations, materials, sizes, configurations, and any other deviations from the original Contract Documents.

B. Submittal of Record information.

1.02 MAINTENANCE

A. ENGINEER will provide CONTRACTOR with an electronic set of the construction drawings in Autocad (Release 2000 or later) and PDF for marking Record information on.

B. All elevations and site dimensions are to be verified by a professional surveyor and mapper licensed in the State of Florida and recorded on the Record drawings.

C. Label each drawing in the lower right corner "RECORD DRAWING" in neat large printed letters.

D. On each drawing where a professional surveyor and mapper obtains the information, indicate surveyor's name and license number, company name and address, and the phone number.

E. Design data shall be lined-out. Record data shall be added next to each lined-out design dimension or elevation.

F. Maintain documents in a clean, dry, legible condition, and in good order. Do not use Record documents for construction purposes.

G. Make documents available at all times for review by the ENGINEER.

H. Record information concurrently with construction progress.

I. Do not conceal any Work until required information is recorded.

1.03 REQUIRED RECORD DRAWING INFORMATION

A. Drainage
   1. Rim/grate elevations on inlets and manholes.
   2. Flowline elevations of pipes.
   3. Linear distance along pipes from structure to structure.

4. Recalculated pipe slopes based on flowline elevations and distance between structures.
5. Horizontal location of inlets, manholes and structures based on stationing/coordinate/dimensioning on Drawings.
6. Top of pipe/bottom of pipe elevations as applicable at all pipe crossings.

B. Grading
1. Verify all elevations on Drawings.

C. Roadways
1. Alignment ties for road centerlines at all intersections and horizontal curves (point of curvature and point of tangency).
2. Horizontal and vertical geometry.

D. Sanitary Sewer
1. Rim elevation on manholes.
2. Invert elevation for all pipes in manholes.
3. Linear distance along pipe from manhole to manhole.
4. Recalculated pipe slope based on invert elevations and linear distance between manholes.
5. Horizontal location of manholes based on stationing/coordinates on Drawings.
6. Stationing of each service wye from sewer nearest manhole and offset distance and stationing of cleanout from sewer main.
7. Lift station wet well bottom and top elevations, and influent pipe invert elevation. Lift station piping, electrical, and pumping elements.
8. Finished grade and top of pipe elevations at 100 feet on center along force mains.
9. Horizontal ties to all force main bends, plugs, tees and valves.
10. Horizontal tie of force main at 100 feet on center
11. Invert and finished grade elevations at cleanouts.
12. Pipe clearances where services cross watermains and storm drainage.

E. Stormwater Management
1. Top of bank and bottom elevations of retention/detention areas.
2. Cross section lake side slopes from top of bank to bottom of toe at 200 feet on center.

F. Watermain
1. Breakaway flange elevation on fire hydrants.
2. Horizontal ties to all bends, tees, plugs, valves, and hydrants.
3. Finished grade and top of pipe elevations at 100 feet on center as well as any major changes in direction and/or elevation.
4. Horizontal location of watermain at 100 feet on center.
5. Top of pipe or bottom of pipe elevations, as applicable, at all pipe crossings.
6. Horizontal location of the ends of all service lines.

1.04 SUBMITTALS

A. Submit two (2) sets of prints of progress Record drawings with each pay application.

B. No pavement placement until Record drawing information for facilities under pavement is complete, the drawings have been reviewed by the ENGINEER, and facilities under pavement are determined to be acceptable.

C. Record drawings for the sanitary sewer system are to be reviewed and approved by the ENGINEER prior to pressure testing of force mains, lamping of gravity sewer and start-up of lift stations.

D. Submit four (4) sets of final Record drawings on paper (drawing size shall match construction drawings) and a CD containing final electronic Record drawings in Autocad (Release 2000 or later) and PDF (formatted to match paper drawing size). Record drawings prepared by surveyor are to be signed and sealed.

PART 2 PRODUCTS (not used)

PART 3 EXECUTION (not used)

END OF SECTION

SECTION 02050

DEMOLITION

PART 1 - GENERAL

1.01 DESCRIPTION

Work Included

Demolition includes the complete wrecking of structures and the removal and disposal of demolished materials, as shown on the drawings and/or specified.

1.02 JOB CONDITIONS

A. Condition of Structures

The owner assumes no responsibility for the actual condition of structures to be demolished. Demolition drawings are provided for general information. The contractor shall field verify the conditions to be encountered in the work to be performed.

B. Salvage

Items of salvable value to the Owner shall be removed from the structure as the work progresses. Salvaged items must be transported to the locations as directed by the Owner.

C. Explosives

The use of explosives will not be permitted.

D. Traffic

Conduct demolition operations and the removal of debris to ensure minimum interference with roads, streets, walks, and other adjacent occupied or used facilities.

E. Protection

Ensure the safe passage of persons around the area of demolition. Conduct operations to prevent injury to adjacent buildings, structures, other facilities, and persons.

F. Damages

Promptly repair damages caused to adjacent facilities by demolition operations at no cost to the Owner.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.01 DEMOLITION

A. Pollution Controls

1. Use water sprinkling, temporary enclosures, and other suitable methods to limit the amount of dust and dirt rising and scattering the air to the lowest practical level.

2. Comply with governing regulations pertaining to environmental protection.

3. Clean adjacent structures and improvements of dust, dirt, and debris caused by demolition operations, as directed by the Architect/Engineer. Return adjacent areas to condition existing prior to the start of the work.

4. Demolish concrete and masonry in small sections.

3.02 DISPOSAL OF DEMOLISHED MATERIALS

A. General

1. Remove from the site debris, rubbish, and other materials resulting from demolition operations.

2. Burning will not be permitted on the site.

3. Concrete from sidewalks, curbs, bulkhead caps etc. suitable for recycling will be transported to a licensed recycling business. The Contractor is to make a good faith effort to recycle all disposed and discarded items.

B. Removal

Transport materials removed from demolished structures and dispose of them offsite.

END OF SECTION

SECTION 02232

CLEARING AND GRUBBING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Removal and disposal 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.

1.02 REGULATORY REQUIREMENTS

A. Conform to all applicable federal, state, and local codes pertaining to the disposal of materials and debris.

B. Coordinate clearing work with utility companies.

PART 2 PRODUCTS (not used)

PART 3 EXECUTION

3.01 PREPARATION

A. Verify that existing plant life and features designated to remain are tagged or identified.

3.02 PROTECTION

A. Protect from damage all utilities that are to remain.

B. Protect trees, plant growth, understory growth, and features designated to remain as final landscaping.

C. Protect existing benchmarks, monuments, and other reference points. If disturbed or destroyed, they shall be replaced in their original condition and location by a professional surveyor and mapper licensed in the State of Florida.

D. Traffic: Conduct site clearing operations to ensure minimum interference with roads, streets, walks and other adjacent occupied or used facilities. Do not close or obstruct streets, walks, or other occupied or used facilities without permission from authorities having jurisdiction.

3.03 CLEARING

A. Remove and dispose of all trees, stumps, shrubs, grass, roots, and other such protruding objects, and buildings, structures, appurtenances, existing pavement, and other facilities necessary to prepare the area for the proposed construction.

3.04 GRUBBING

A. Remove roots and other debris in the Work areas to a depth of at least 12 inches below the ground surface.

B. 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.

C. Completely remove and dispose of all stumps.

3.05 REMOVAL

A. Abandonment or removal of certain underground pipe of conduits may be shown on mechanical or electrical drawings, and is included under work of those sections. Removal of abandoned underground piping or conduit interfering with construction is included under this Section.

B. Remove and dispose of existing structures or portions of existing structures specified on the Drawings, or those found within the limits of the area to be cleared and grubbed.

C. Remove the structures in such a way as to leave no obstructions to any proposed new structures.

D. Remove and dispose of existing asphalt pavement, Portland cement concrete pavement, sidewalk, curb, and curb and gutter where specified on the Drawings.

3.06 DISPOSAL OF MATERIALS

A. Dispose of timber, stumps, brush, roots, rubbish, and other objectionable material resulting from clearing and grubbing in a legal manner offsite.

B. Ensure that all hazardous materials and waste are handled and disposed of in accordance with all Local, State and Federal requirements. Submit the name, address and qualifications of the transporter, treatment facility, proposed treatment and disposal methods for ENGINEER's approval prior to transport.

END OF SECTION

SECTION 02316

EXCAVATION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Excavation for underground pipelines.

1.02 REGULATORY REQUIREMENTS

A. CONTRACTOR shall obtain a "Dewatering General Water Use Permit" from the South Florida Water Management District prior to commencing dewatering unless the Work qualifies for a 'No-Notice' authorization as described in Rule 40E-20.302(3) of the Florida Administrative Code.

PART 2 PRODUCTS (Not Used)

PART 3 EXECUTION

3.01 EXAMINATION

A. CONTRACTOR shall locate existing underground utilities in the area of the Work as construction proceeds. If utilities are to remain in place, provide adequate means of protection.

B. Should uncharted or incorrectly charted piping or other utilities be encountered during excavation, notify the ENGINEER immediately. Cooperate with responsible utility companies in keeping respective services and facilities in operation.

C. Do not interrupt existing utilities serving facilities occupied and used by OWNER or others, except when permitted in writing by the respective utility owner.

D. CONTRACTOR shall sustain in their places and protect from direct or indirect injury all pipes, poles, utilities, walls, buildings, and other structures or property in the vicinity of Work, whether above or below the ground, or that may appear in the trench. CONTRACTOR shall take all risks attendant to the presence or proximity of pipes, poles, walls, buildings, and other structures and property, of every kind and description, in or over his trenches, excavations or in the vicinity of his Work whether above or below the ground and shall be responsible for all damage and assume all expense for direct or indirect injury, caused by his Work, to any of them, or to any person or property by reason of injury to them, whether such structures are or are not shown on the Drawings.

3.02 PREPARATION

A. Protect structures, utilities, sidewalks, pavements, benchmarks, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by excavating operations.

B. Provide erosion control measures to prevent erosion or displacement of soils and discharge of soil bearing water runoff or airborne dust to adjacent properties and walkways.

C. When excavations exceed 5 feet in depth, CONTRACTOR shall meet the Occupational Safety and Health Administration's excavation safety standards 29 C.F.R.s. 1926.650, Subpart P.

D. Where relocation of existing utilities is noted on Drawings, the CONTRACTOR is to notify appropriate utility companies at the earliest possible date of intent to relocate any of their facilities. It is the CONTRACTOR's responsibility to maintain utility service to users during relocation procedures and to replace the facility to the utility companies' specifications.

3.03 DEWATERING

A. At all times during construction, provide and maintain proper equipment and facilities to remove all water entering excavations, and keep such excavations dry so as to obtain a satisfactory undisturbed subgrade foundation condition 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.

B. Conduct dewatering in such a manner as to preserve the undisturbed bearing capacity of the subgrade soils at proposed bottom of excavation. Construct well or sump installations with proper sand filters to prevent drawing of finer grained soil from the surrounding area.

C. Take all additional precautions to prevent uplift of any structure during construction.

D. Dispose of water so that flow or seepage back into the excavated area will be prevented. No water from dewatering activities will be allowed to be discharged directly offsite. In addition, the dewatering activity must not impact any onsite or offsite wetlands.

E. Prevent flotation by maintaining a positive and continuous operation of the dewatering system. If for any reason the dewatering system is found to be inadequate, make additions, changes and replacements, as necessary, to provide a satisfactory system. All damage resulting from failure to properly dewater excavations shall be repaired to the satisfaction of the ENGINEER. Remove the dewatering equipment after the system is no longer required.

F. Take all necessary precautions to preclude accidental discharge of fuel oil, etc. in order to prevent adverse effects on groundwater quality.

3.04 EXCAVATION

A. Excavation shall be carried to suitable lines and grades indicated on the Drawings. All irregularities in the bottom of excavations shall be filled to the required level with suitable select backfill and firmly compacted before pipe is laid or foundation and slab are constructed.

B. Trenches shall be excavated to the lines and grades as indicated on the Drawings. Trenches shall provide continuous and uniform support and bearing for piping and structures.

C. Rock and other unsuitable material, when encountered, shall be removed to minimum depth of six inches below the pipe or structure and the same depth below the pipe bell.

D. Material below subgrade deemed unsuitable shall be removed and replaced with clean granular material.

E. Excavation in the vicinity of adjacent facilities shall be performed by means that will not damage the facilities. Any damage to existing facilities caused by the CONTRACTOR's operations shall be repaired to the satisfaction of the facility's owner at no additional cost to OWNER.

F. Trench bottom shall be shaped to conform to pipe bells or other shape irregularities of special appurtenances.

G. Where a trench crosses existing paved areas or roadways which have not been scheduled to be repaved on the Drawings, the paved area shall be saw cut. Ripping of pavement for trenches with excavation equipment will not be allowed.

H. Satisfactory excavated materials shall be stockpiled until required for backfill. Stockpiles shall be placed, graded and shaped for proper drainage.

I. Soil materials shall be located and retained away from edges of excavations.

J. Excess and/or unsatisfactory materials shall be disposed of offsite.

END OF SECTION

SECTION 02323

BACKFILL AND COMPACTION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Backfill and compaction for underground pipes and structures.

1.02 REFERENCES

A. ASTM D1557-02 – Laboratory Compaction Characteristics of Soil Using Modified Effort.

B. ASTM D2487-00 – Classification of Soils for Engineering Purposes.

C. ASTM D2922-05 – Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods.

PART 2 PRODUCTS

2.01 SOIL MATERIALS

A. General: Provide borrow soil materials when sufficient satisfactory soil materials are not available from excavations.

B. Satisfactory Soils: ASTM D2487 soil classification groups GW, GP, GM, SW, SP, and SM, or a combination of these groups, free of rock or gravel larger than 3 inches in any dimension, debris, waste, vegetation, and other deleterious matter.

C. Unsatisfactory Soils: ASTM D2487 soil classification groups GC, SC, ML, MH, CL, CH, OL, OH and PT, or a combination of these groups.
   1. Unsatisfactory soils also include satisfactory soils not maintained within 2 percent of optimum moisture content at time of compaction.

D. Backfill and Fill: Satisfactory soil materials.

PART 3 EXECUTION

3.01 PLACEMENT

A. Material placed under and around structures shall be deposited within the lines and to the grades shown on the Drawings, making due allowance for settlement of the material. Material shall be placed on properly prepared surfaces which have been reviewed by the Engineer. If sufficient common fill material is not available from excavation on site, the Contractor shall provide borrow as may be required.

B. If the compacted surface of any layer of material is determined to be too smooth to bond properly with the succeeding layer, it shall be loosened by harrowing or by another approved method before the succeeding layer is placed.

C. All backfill materials shall be placed and compacted "in-the-dry". Contractor shall dewater excavated areas as required to perform the Work.

3.02 COMPACTION

A. Backfill shall be placed in layers not to exceed twelve inches in depth as measured before compaction. Each layer shall be compacted to at least the minimum percentage of a modified proctor (ASTM D1557) specified in the Compaction Scheduled in paragraph 3.03.

B. Areas adjacent to structures and other confined areas inaccessible to a vibratory roller shall be compacted with a manually operated vibratory compactor.

C. It is the intention that the fill materials with respect to moisture be used in the condition they are excavated insofar as this is practicable. Material which is too wet shall be spread on the fill area and permitted to dry, assisted by harrowing if necessary, until the moisture content is reduced to allowable limits.

D. If added moisture is required, water shall be applied by sprinkler tanks or other sprinkler systems which will insure uniform distribution of the water over the area to be treated and give complete and accurate control of the amount of water to be used. If too much water is added the area shall be permitted to dry before compaction is continued.

E. Supply all hose, piping, valves, sprinklers, pumps, sprinkler tanks, hauling equipment, and all other materials and equipment necessary to place the water on the fill.

3.03 COMPACTION SCHEDULE

Location	Minimum Compaction
Under paved areas	98%
Structures	98%
Under landscaped areas	95%

3.04 DISPOSAL OF UNSUITABLE AND SURPLUS MATERIAL

A. Unsuitable and surplus excavated materials become the property of the Contractor and are to be removed and disposed of off site.

B. Suitable excavated material may be used for fill or backfill if it meets these specifications.

3.05 TESTING

A. Allow testing laboratory to inspect and test subgrades and each fill or backfill layer. Proceed with subsequent earthwork only after test results from previously completed Work complies with requirements.

B. Testing agency will test compaction of soils in place according to ASTM D2922.

C. When testing agency reports that subgrades, fills or backfills have not achieved degree of compaction specified, scarify and moisten or aerate, or remove and replace soil to depth required; recompact and retest until specified compaction is obtained.

3.06 PROTECTION

A. Protect newly graded areas from traffic and erosion. Keep free of trash and debris.

B. Repair and re-establish grades to specified tolerances where completed or partially completed surfaces become eroded, rutted, settled, or where they lose compaction due to subsequent construction operations or weather conditions.

END OF SECTION

SECTION 02630

STORM DRAINAGE

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Storm drainage piping, structures, and accessories.

1.02 RELATED SECTIONS

A. AASHTO M-196-92 – Corrugated Aluminum Pipe for Sewers and Drains.

B. AASHTO M 294-06- Corrugated Polyethylene Pipe.

C. ASTM C76-07 – Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe.

D. ASTM C443-05 – Joints for Concrete Pipe and Manholes, Using Rubber Gaskets.

E. ASTM C444-03 – Perforated Concrete Pipe.

F. ASTM C478-07 – Precast Reinforced Concrete Manhole Sections.

G. ASTM C507-07 – Reinforced Concrete Elliptical Culvert, Storm Drain, and Sewer Pipe.

H. ASTM F477-07 – Elastomeric Seals (Gaskets) for Joining Plastic Pipe.

1.03 SUBMITTALS

A. Shop drawings for pre-cast concrete structures.

B. Supplier's certification for aluminum and concrete pipe.

1.04 QUALITY ASSURANCE

A. Corrugated polyethylene pipe shall be clearly marked with the manufacturer's name or trademark, nominal size, specification designation, plant designation code, and date of manufacture.

1.05 DELIVERY, STORAGE AND HANDLING

A. Handle precast concrete structures according to the manufacturer's written rigging instructions.

B. Verify damage has not occurred in delivery of materials.

C. Store flexible gasket materials not cemented to the pipe, including joint lubricating compounds, in a cool dry place.

PART 2 PRODUCTS

2.01 CONCRETE PIPE

A. Round pipe – ASTM C76, Class III, wall type B.

B. Elliptical Pipe – ASTM C507, Class III.

C. Perforated Round Pipe – ASTM C444, Class III, Wall B, Type 1 circular perforations.

2.02 CORRUGATED ALUMINUM PIPE

A. AASHTO M196. Minimum of two annular corrugations formed into each end of the pipe to accommodate a coupling band. Minimum thickness of the metal shall be as specified below:

Nominal Diameter or Equivalent (inches)	Sheet Gauge No.	Mean Thickness of Metal (inches)
15	16	0.060
18	16	0.060
24	16	0.060
30	14	0.075
36	14	0.075
42	12	0.105
48	12	0.105
54	12	0.105
60	10	0.135
66	10	0.135
72	8	0.164

2.03 CORRUGATED POLYETHYLENE PIPE

A. AASHTO M294, Type S smooth wall interior. Corrugations may only be annular. Bell and spigot joints with a gasket meeting ASTM F477. When perforated pipe is specified on the Drawings, the perforations shall conform to the requirements of Class 1.

2.04 CONCRETE STRUCTURES

B. ASTM C478.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that excavation base is ready to receive work and excavations, dimensions, and elevations are as indicated on the Drawings.

3.02 PREPARATION

A. Hand trim excavations to required elevations. Correct over excavation with fill material, lean concrete or other approved material.

B. Remove large stones or other hard matter which could damage pipe or impede consistent backfilling and compaction.

C. Excavation of trenches, preparation of trench bottoms, backfilling, and other earthwork in connection with installation of storm sewers shall be in accordance with other applicable sections of these specifications.

D. Inspect piping before installation to detect apparent defects. Mark defective materials with white paint and promptly remove from site.

3.03 INSTALLATION – PIPE

A. Pipe shall be protected during storage and handling against impact shocks and free fall. Pipe shall be kept clean at all times.

B. Lay pipe to slope gradients noted on the Drawings with a maximum variation from true slope of 1/8 inch in 10 feet.

C. All pipe shall be carefully installed starting at the lowest end, with hubs upgrade and tongue end fully entered into the hub.

D. Any pipe that is not in true alignment or which shows any settlement after installation shall be taken up and re-installed at no additional cost to OWNER.

E. Place plugs in ends of uncompleted pipe at end of day or whenever work stops.

F. Rubber gaskets for concrete pipe joints shall meet the requirements of the 2007 edition of FDOT Standard Specifications for Road and Bridge Construction, Section 942. The gasket and the surface of the pipe joint, including the gasket recess, shall be clean and free from grit, dirt, and other foreign matter at the time the joints are made.

G. Pipe shall be set firmly, according to the lines and grade; and preparatory to making joints, all surfaces of the portion of the pipe to be jointed shall be thoroughly cleaned. The pipe shall be laid with the groove upstream. A shallow excavation shall be made underneath the pipe at the joint.

H. Immediately prior to installation of concrete pipe, the entire interior of the groove of the pipe already installed, and the rubber gasket of the pipe to be installed shall be coated with an approved vegetable soap lubricant. The groove and spigot ends shall be cleaned prior to application of the lubricant. The pipe shall then be aligned with the previously installed pipe and the joint pulled together. The joint shall be pulled by the use of interior or exterior pull jacks or winches, anchored by suitable means. The choice of method and type of equipment will depend on trench conditions, type and size of pipe, and its ability to properly seat the gasket. If, while making the joint, the gasket becomes loose and can be seen through the exterior joint recess when the joint is pulled up to within one inch (1") of closure, the pipe shall be removed and the joint remade

I. Repair concrete pipe lift holes by use of a hand-placed stiff, non-shrink, 1 to 1 mortar of cement and fine sand, after washing out the hole with water. Completely fill the void created by the lift hole with mortar. Cover the repaired area with a 24 inch by 24 inch piece of filter fabric secured to the pipe. Use a Class D filter fabric meeting the requirements shown in Index 199 of the Florida Department of Transportation's Roadway and Traffic Design Standards. Secure the filter fabric to the pipe using a method that holds the fabric in place until the backfill is placed and compacted. Use a grout mixture, mastic, or strapping device to secure the fabric to the pipe.

J. When shown on the Drawings, seal the ends of the pipe with a masonry plug a minimum of 8 inches in thickness.

K. Install filter fabric jacket around the first joint of all pipe entering or leaving a drainage structure and at all concrete pipe joints. Use a filter fabric jacket consisting of a piece of woven or non-woven filter fabric which provides an apparent opening size of a No. 70 to No. 100 sieve, 24 inches in width and a length sufficient to provide a minimum overlap of 24 inches. Secure the filter fabric jacket against the outside of the concrete pipe by steel or plastic strapping.

3.04 INSTALLATION – STRUCTURES

A. Form bottom of excavation clean and smooth to correct elevation.

B. Establish elevations and pipe inverts for inlets and outlets as indicated.

C. Mount lid and frame level in grout, secured to top cone and set to the specified elevation.

D. Where unsuitable material for foundations is encountered, the CONTRACTOR shall excavate the unsuitable material and backfill with suitable material prior to constructing or setting inlets, manholes, and junction boxes.

END OF SECTION

SECTION 02722

AGGREGATE BASE COURSES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Preparation of the subgrade.

B. Aggregate base course for asphaltic concrete pavement.

1.02 REFERENCES

A. AASHTO T180

B. Florida Department of Transportation Standard Specifications for Road and Bridge Construction, 2010. Hereinafter referred to as the FDOT Specifications.

1.03 FIELD SAMPLES

A. Deliver a representative load of the rock material to the site for a testing laboratory to sample. Allow sufficient time for test laboratory to analyze before commencing placement on the road. Testing laboratory will determine lab density per AASHTO T180 and the limerock bearing ratio.

B. Representative load of rock is to remain in stockpile form throughout rock delivery so that ENGINEER can monitor quality of rock material being delivered.

PART 2 PRODUCTS

2.01 MATERIALS

A. Rock Base: Minimum limerock bearing ratio of 100. At least 97 percent of the material shall pass a 3-1/2 inch sieve and the material shall be graded uniformly down to dust. All crushing or breaking-up which might be necessary in order to meet such size requirement shall be done before the material is placed on the road. Material shall not contain cherty or other extremely hard pieces, or lumps, balls or pockets of sand or clay size material in sufficient quantity as to be detrimental to the proper bonding, finishing, or strength of the rock base.

B. Stabilizing: Meet the requirements of Section 914 of the FDOT Specifications.

PART 3 EXECUTION

3.01 PREPARATION

A. Stabilize designated portions of the roadbed to provide a firm and unyielding subgrade having the required bearing value specified on the Drawings. Perform work in accordance with Section 160 of the FDOT Specifications.

B. Compact subgrade to at least 98 percent of the maximum density determined by ASTM D1557 (AASHTO T180).

3.02 EXAMINATION

A. Verify subgrade is ready to receive base material.

3.03 PLACEMENT

A. Spread the rock uniformly. Remove all segregated areas of fine or coarse rock and replace them with properly graded rock.

B. After spreading of the base is completed, the entire surface shall be scarified and shaped so as to produce the exact grade and cross section after compaction. For double course base, this scarifying shall extend to a depth sufficient to penetrate slightly the surface of the first course.

C. When the specified thickness of the rock base is greater than 6 inches, construct the base in multiple courses of equal thickness. Individual courses shall not be less than 3 inches.

D. When the material does not have the proper moisture content to insure the required density, wetting or drying will be required. If the material is deficient in moisture, water will be added and uniformly mixed in by disking the base course to its full depth. If the material contains an excess of moisture, it shall be allowed to dry before being compacted. Wetting or drying operations shall involve manipulation of the entire width and depth of the base as a unit. As soon as proper conditions of moisture are attained, the material shall be compacted to an average density not less than ninety-eight (98) percent of the maximum density determined by AASHTO T-180.

E. Unless otherwise directed by the ENGINEER, the surface shall be "hard-planed" with a blade grader immediately prior to the application of the prime coat to remove the thin glaze or cemented surface and to allow free penetration of the prime material. The materials planed from the base shall be removed from the base area.

3.04 FIELD QUALITY CONTROL

A. If, at any time, the subgrade material becomes mixed with the base course material, dig out and remove the mixture, and reshape and compact the subgrade. Then replace the materials removed with clean base material, and shape and compact. Perform this Work at no additional expense to the OWNER.

B. In the presence of the ENGINEER, check the finished surface of the base course with a template cut to the required crown and with a 15-foot straightedge laid parallel to the centerline of the road. Correct all irregularities greater than ¼ inch to the satisfaction of the ENGINEER by scarifying and removing or adding rock as required, and recompact the entire area.

3.05 CORRECTION OF DEFECTS

A. If at any time the subgrade material should become mixed with the base course material, the CONTRACTOR shall, without additional compensation, dig out and remove the mixture, reshape and compact the subgrade and replace the materials removed with clean base material, which shall be shaped and compacted as specified above.

B. If cracks or checks appear in the base, either before or after priming, which in the opinion of the ENGINEER would impair the structural efficiency of the base course, the CONTRACTOR shall remove such cracks or checks by rescarifying, reshaping, adding base material where necessary and recompacting.

END OF SECTION

SECTION 02743

ASPHALT PAVING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Materials and placement of superpave asphalt concrete.

1.02 REFERENCES

A. Florida Department of Transportation Standard Specifications for Road and Bridge Construction, 2018. Hereinafter referred to as the FDOT Specifications.

1.03 SUBMITTALS

A. Asphalt mix design for each asphalt type specified on the Drawings. Mix design shall include the information specified in paragraph 334-3 of the FDOT Specifications.

PART 2 PRODUCTS

2.01 MATERIALS

A. Primer: Provide cutback asphalt, RC-70 or RC-250 complying with FDOT Specification 916-3.

B. Tack Coat: RA-500 meeting the requirements of FDOT Specification 916-2.

C. Superpave Asphalt Concrete: Meets the requirements of Section 334 of the FDOT Specifications.

D. Leveling Course: Meet the requirements of Section 330-8 of the FDOT Specifications.

PART 3 EXECUTION

3.01 EXAMINATION

A. Spread the asphalt mixture only when the surface upon which it is to be laid has been previously prepared, is intact, firm, and properly cured, and is dry.

B. Verify gradients and elevations of base are correct.

C. Do not begin paving installation without ENGINEER acceptance of the substrate.

D. Spread the asphalt mixture only when the air temperature in the shade and away from the artificial heat is at least 40°F for layers greater than 1-inch in thickness and at least 45°F for layers 1-inch or less in thickness.

3.02 PREPARATION

A. Clean the surface of the base or pavement to be covered of all loose and deleterious material by the use of power brooms or blowers, supplemented by hand brooming where necessary.

B. Where an asphalt mix is to be placed on an existing pavement or old base which is irregular, fill all depressions in the existing surface more than 1 inch deep by spot patching with a leveling course mixture, and then compact them thoroughly. Fill cracks larger than ¼ inch in width with a slurry mixture of sand and emulsion.

C. PRIMER

1. Apply primer over substrate at a uniform rate of not less than 0.15 gallon/square yard for shellrock bases and not less than 0.10 gallon/square yard for limerock bases.

2. Apply to contact surfaces of curbs, gutters, and other cement surfaces.

3. Use clean sand to blot excess primer.

D. TACK COAT

1. Apply tack coat on existing pavements that are to be overlaid.

2. Apply tack coat in accordance with manufacturer's published instructions and FDOT Specifications, Section 300-8.

3. Coat surfaces of manholes, catch basins, and steel frames with oil to prevent bond with asphalt paving. Do not tack coat these surfaces.

4. Apply tack coat at the rate of application between 0.02 to 0.08 gallons per square yard.

3.03 PLACEMENT

A. Maintain the temperature of the mix at the time of spreading within ±25°F of the established mix temperature. ENGINEER will take mix temperatures at an average frequency of one per five trucks. If the temperature fails to fall within the specified tolerance range, take corrective action.

B. Immediately cease transportation of asphalt mixtures from the plant when rain begins at the roadway. Do not place asphalt mixtures while rain is falling, or when there is water on the surface to be covered.

C. Before starting any rolling, check the surface; correct any irregularities; remove all drippings, fat sandy accumulations from the screed, and fat spots from any source and

replace them with satisfactory material. When correcting a depression while the mixture is hot, scarify the surface and add fresh mixture.

D. Compact mixture in accordance with paragraph 330-10 of the FDOT Specifications.

E. Obtain a smooth surface on all pavement courses placed and then straightedge all intermediate and final courses with a 15-foot rolling straightedge. Furnish a 15-foot straightedge and make it available at the job site at all times during the paving operation for checking joints and surface irregularities.

F. Produce a finished surface of uniform texture and compaction with no pulled, torn, or loosened portions and free of segregation, and streaks, sand spots, or ripples.

G. Upon completion of final surface course ENGINEER will test finished surface with a 15-foot rolling straightedge. Correct all deficiencies in excess of 3/16-inch in accordance with paragraph 330-12 of the FDOT Specifications.

H. ENGINEER will determine pavement thickness from the depth of core borings. The maximum allowable deficiency in thickness for pavement of a specified thickness of 2½ inches or more is ½ inch. For pavement of a specified thickness of less than 2½ inches is ¼ inch.

3.04 PROTECTION

A. Immediately after placement, protect pavement from mechanical injury for as long as required until accepted by ENGINEER.

END OF SECTION

SECTION 02765

PAVEMENT MARKINGS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Thermoplastic pavement markings.

B. Reflective paint pavement markings.

C. Reflective pavement markers.

1.02 REFERENCES

A. Florida Department of Transportation Standard Specifications for Road and Bridge Construction, 2007 revision. Hereinafter referred to as the FDOT Specifications.

1.03 QUALITY ASSURANCE

A. Perform work in accordance with the Contract Documents in a neat and accurate manner.

B. Equipment shall be of a type and design which will readily obtain the required uniformity of application of the pavement markings both as to thickness of coating and as to alignment.

PART 2 PRODUCTS

2.01 THERMOPLASTIC PAVEMENT MARKINGS

A. Conform with the requirements of Section 971-5 of the FDOT Specifications.

B. Set to bear traffic in not more than 2 minutes.

2.02 REFLECTIVE PAINT PAVEMENT MARKINGS

A. Conform to Section 971-4 of the FDOT Specifications.

B. Set to bear traffic in not more than 2 minutes.

2.03 REFLECTIVE PAVEMENT MARKERS

A. Conform to the requirements of Section 970 of the FDOT Specifications. Class B.

PART 3 EXECUTION

3.01 PREPARATION

A. Do not apply markings within 5 days of pavement placement with the exception of Friction Course which is 30 days.

B. Prior to applying pavement markings, remove any material that would adversely affect the bond.

C. Do not apply when winds are sufficient to cause spray dust.

D. Prior to application of thermoplastic material to Portland cement concrete surfaces, apply a two-part epoxy primer sealer recommended by the manufacturer.

E. Establish tack points at appropriate intervals for use in aligning markings.

F. Apply only during daylight hours and, as far as practical, shall be terminated in time to permit sufficient drying by sunset.

G. The surface which is to be painted shall be cleaned, by compressed air or other effective means, immediately before the start of painting and shall be clean and dry when the paint is applied. Any vegetation or loose soil shall be removed from the pavement before striping begins.

H. Thoroughly mix paint before pouring into the painting machine. No thinning of the paint in the machine will be allowed at any time. Before the start of each day's work the paint container, the connections, and the spray nozzles on the machine shall be thoroughly cleaned with paint thinner or other suitable cleaner.

3.02 APPLICATION – THERMOPLASTIC

A. Apply thermoplastic to the pavement by extrusion.

B. Edges of markings are to be well defined.

C. Thickness to be at least 90 mils.

D. Apply reflective glass spheres immediately behind the striping mechanism.

3.03 APPLICATION – REFLECTIVE PAINT

A. Apply paint to the pavement by spray.

B. Edges of markings are to be well defined.

C. Apply paint to attain a minimum wet film thickness of 15 mils.

D. Apply spheres immediately and uniformly following the paint application.

3.04 APPLICATION – REFLECTIVE PAVEMENT MARKERS

A. Set reflective pavement markers 1 inch to the left or right of the line.

B. Apply the adhesive to the bonding surface (not the marker) so that 100 percent of the bonding area of the marker will be covered.

C. Apply sufficient adhesive to ensure that the marker is pressed down into the adhesive and adhesive will be forced around the perimeter of the marker.

D. Immediately remove excess adhesive from the bonding surface and the external surface of the marker.

3.05 PROTECTION

A. Do not allow traffic onto newly painted traffic stripes and markings until they are sufficiently dry to permit vehicles to cross them without damage.

B. Warning signs shall be set up before the beginning of each operation and extra signs shall be kept well ahead of the application equipment. The equipment shall be so operated that traffic may pass safely. Warning signs are to be placed only where operations are in progress and are to be relocated as often as is necessary.

C. Erect adequate warning signs, and take necessary precautions for the protection of the wet pavement markings and the safety of the public. Cones, rubber "Z" guards, or similar protective devices, shall be placed along the newly-painted stripe to prevent traffic from crossing the wet paint. Any such devices used shall be of a type that will not cause damage to vehicular traffic in the event that these objects are accidentally passed over.

D. Any portions of the pavement markings damaged by passing traffic or from any other cause shall be reworked at no additional cost to the OWNER.

E. If more than 2 percent of the reflective pavement markers fail in adhesion or alignment within the 45 days under traffic, replace all failed markers at no additional cost to the OWNER.

3.06 CORRECTIVE MEASURES

A. Pavement markings which fail to meet the guidelines, including the permissible tolerances and the appearance requirements, are marred or damaged by traffic or from any other cause shall be corrected at no additional cost to OWNER. Drips and spattered paint shall be removed. Whenever it is necessary to remove paint it shall be done by means which will not damage the underlying surface of the pavement. When necessary to correct a deviation which exceeds the permissible tolerance in alignment, that portion of the strip affected shall be removed and repainted in accordance with these guidelines.

B. Misalignment, defective surfaces, and the like, shall be corrected by sandblasting or by any other type of mechanical device which will effectively remove the paint without damage to the pavement surface.

3.07 DIMENSION AND ALIGNMENT TOLERANCE

A. No marking shall be less than the indicated width. No marking shall exceed the indicated width by more than ½ inch.

B. Corrections of variation in the width of, and the alignment of strips shall not be made abruptly but the stripes should be returned to the design width at the rate of at least 10 feet for each ½ inch of correction.

C. Where a stripe deviates from the correct alignment, as indicated by the string line, by more than one inch in any 20 foot length, it shall be obliterated and the stripe corrected.

END OF SECTION

SECTION 02770

CURBS, DRIVEWAYS AND SIDEWALKS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Portland cement concrete curbs, driveways, and sidewalks.

1.02 REFERENCES

A. ASTM C309-03 – Liquid Membrane-Forming Compounds for Curing Concrete.

B. ASTM D1557-02 – Laboratory Compaction Characteristics of Soil Using Modified Effort.

C. ASTM D1751-04 – Preformed Expansion Joint Filler for Concrete Paving and Structural Construction.

1.03 SUBMITTALS

A. Concrete mix design.

PART 2 PRODUCTS

2.01 CONCRETE

A. 28 day minimum compressive strength of 2500 PSI. Type II Portland Cement. Minimum cement content of 400 lb/cy of concrete. Maximum water cement ratio of 0.66 lb/lb. Slump range of 0-6 inches.

2.02 PRE-MOLDED JOINT FILLER

A. Asphalt impregnated fiberboard conforming to ASTM D1751.

2.03 MEMBRANE CURING COMPOUND

A. ASTM C309, Type 2, Class A

PART 3 EXECUTION

3.01 PREPARATION

A. Compact subgrade to at least 98 percent of the maximum density determined by ASTM D1557 (AASHTO T180).

B. Dampen subgrade.

3.02 PLACEMENT

A. Place the concrete in the forms, and tamp and spade it to prevent honeycombing, and until the top of the concrete can be floated smooth and the edges rounded to the radius shown on the Drawings.

3.03 JOINTS

A. Saw contraction joints as soon as the concrete has hardened to the degree that excessive raveling will not occur and before uncontrolled shrinkage cracking begins.

B. Construct contraction joints for curb at intervals of 10 feet except where closure requires a lesser interval, but do not allow any section to be less than 4 feet in length. Construct contraction joints for sidewalks and driveways at intervals specified on the Drawings.

C. Construct expansion joints in curb at all inlets, at all radius points, and at other locations as specified on the Drawings. Ensure that the joint is ½ inch in width. Construct expansion joints for sidewalks and driveways at intervals and locations specified on the Drawings.

3.04 FINISHING

A. Fill minor defects with mortar composed of one part Portland cement and two parts fine aggregate.

B. Finish exposed surfaces while the concrete is still green.

C. Curb is to have a brush finish.

D. Sidewalk and driveways are to have a broom finish. Strike-off concrete perpendicular to forms.

E. Finish the edge of driveways and sidewalks with an edging tool having a radius of ½ inch.

3.05 CURING

A. Continuously cure concrete for a period of at least 72 hours. Commence curing after completely finishing and as soon as the concrete has hardened sufficiently to permit application of the curing material without marring the surface.

B. Cure concrete using one of the following methods:

1. Wet Burlap: Cover entire exposed surface with wet burlap and keep it thoroughly wet throughout the curing period.
2. Membrane Curing Compound: Apply curing compound over the entire concrete surface in a single coat continuous film at a uniform coverage rate of at least 200 square feet per gallon.
3. Polyethylene Sheeting: Place polyethylene sheeting over the entire exposed surface of the concrete. Hold the sheeting securely in place and in continuous contact with the concrete at all times.

END OF SECTION

SECTION 02924

SODDING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Furnishing, placing, and maintaining grass sod.

PART 2 PRODUCTS

2.01 SOD

A. Argentine bahia grass unless noted otherwise on the Drawings. Sod need to match existing.

B. Taken up in commercial-size rectangles, preferably 12 by 24 inch or larger. Minimum thickness of 2 inches.

C. Sufficiently thick to secure a dense stand of live grass. Live, fresh, and uninjured, at the time of planting. Have a soil mat of sufficient thickness adhering firmly to the roots to withstand all necessary handling. Free of noxious weeds and seeds. Keep shaded and moist from the time it is dug until it is planted. Plant as soon as possible after being dug. No sod that has been cut for more than 72 hours shall be used.

2.02 STAPLES

A. Black iron wire not smaller than 14 gauge, and bent from a length of wire at least 25 inches long into a "U" with 1-inch width at the crown.

2.03 WATER

A. Free of excess and harmful chemicals, acids, alkalies, or any substance that is harmful to plant growth.

PART 3 EXECUTION

3.01 PREPARATION OF GROUND

A. Scarify or loosen areas requiring sod to a depth of 6 inches.

B. Remove all loose rock, woody material, and other obstructions that will interfere with sodding.

C. Eliminate uneven areas and low spots. Maintain lines, levels, profiles, and contours. Make changes in grade gradual.

D. Limit preparation to those areas that can be sodded within 72 hours after preparation.

E. ENGINEER to review finished grading prior to placement of sod.

F. Prior to sodding, thoroughly water areas and allow water to percolate into soil. Allow surface moisture to dry before sodding to prevent a muddy soil condition.

3.02 PLACING SOD

A. Place sod immediately after ground preparation.

B. Do not sod when weather and soil conditions are unsuitable for proper results.

C. Do not place sod on eroded or washed out sites.

D. Place sod on prepared surface, with edges in close contact. Do not stretch or overlap sod pieces.

E. Lay sod strips in a staggered pattern with snug, even joints. All joints shall be butted tight to prevent voids.

F. Place sod to the edge of all paving and shrub areas and 1 inch below adjoining pavement.

G. Place sod parallel with the roadway.

H. Roll or tamp sod to insure solid contact of root mat and soil surface.

I. Where sodding in drainage ditches, the soil shall be evenly graded to a line 2 inches below the elevation shown on the Drawings. Stagger the setting of the sod pieces to avoid a continuous seam along the line of flow. Ensure that the offsets of individual strips do not exceed 6 inches. Tamp the outer pieces of sod to produce a feather edge effect.

J. When slopes are greater than 3:1, securely anchor sod to the soil by pinning with staples. Pin every 3 feet along each strip of sod.

3.03 WATERING

A. Thoroughly water sod immediately after placing. Provide a minimum of ½ inch of water.

B. The rate of application for irrigation water shall not exceed ¾ inch per hour and the distribution pattern will not be such as to create an erosive condition at the site.

C. Keep sod in a moist condition until Substantial Completion.

3.04 MAINTENANCE

A. Maintain sodded areas in a condition satisfactory to the ENGINEER until Substantial Completion. This includes, but is not limited to, watering, weeding, mowing, and repair of washed or eroded areas.

END OF SECTION