

**SECTION 01010**  
**SUMMARY OF WORK**

**PART 1 - GENERAL**

**1.01 DESCRIPTION OF WORK**

- A. Work under this Contract is described as:

**TOWN OF WINDERMERE**  
**ORANGE COUNTY, FLORIDA**

**BID #2019-04**

**THE WILLOWS MILLING AND RESURFACING/SIDEWALK IMPROVEMENTS**

**This bid includes a pavement/sidewalk improvement project as follows:**

**The project involves milling and resurfacing improvements and sidewalk improvements within the Willows planned development. Other works includes replacement of concrete curb and gutter, reconstruction of sidewalk ramps to meet ADA standards, provision of pavement markings for pedestrian crossings and tree removals.**

The Specification Divisions and Drawings are an integrated part of the Contract Documents and as such will not stand alone if used independently as individual Sections, Divisions or Drawings sheets.

The Specifications and Drawings establish minimum standards of quality for this project. They do not purport to cover all details entering into the design and construction of materials or equipment.

The CONTRACTOR is advised that the equipment arrangements as shown on the drawings may vary with different manufacturers and the CONTRACTOR is responsible at no cost to the OWNER for making the changes necessary to accommodate the specific equipment installed.

Omission of a specific item or component part of a system obviously necessary for the proper functioning of the system shall not relieve the CONTRACTOR of the responsibility of furnishing the item as part of the work at no additional cost to the OWNER.

- B. Contracts

Construct work under a single, unit price contract.

**1.02 QUALITY ASSURANCE**

- A. Laws and Regulations

The CONTRACTOR shall give all notices and comply with all laws, ordinances, rules and regulations applicable to the work. If the CONTRACTOR observes that the Specifications or Drawings are at variance therewith, the CONTRACTOR shall give the ENGINEER prompt written notice thereof, and any necessary changes shall be adjusted by an

appropriate modification. If the CONTRACTOR performs any work knowing or having reason to know that it is contrary to such laws, ordinances, rules and regulations, and without such notice to ENGINEER, the CONTRACTOR shall bear all costs arising therefrom; however, it shall not be the CONTRACTOR's primary responsibility to make certain that the Specifications and Drawings are in accordance with such laws, ordinances, rules and regulations.

### 1.03 JOB CONDITIONS

#### A. Taxes

The CONTRACTOR shall pay all sales, consumer, use and other similar taxes required to be paid by him in accordance with the law of the place of the project.

#### B. Labor, Materials and Equipment

The CONTRACTOR shall provide competent, suitably qualified personnel to survey and lay out the work and perform construction as required by the Contract Documents. The CONTRACTOR shall at all times maintain good discipline and order at the site. Except in connection with the safety or protection of persons or the work or property at the site or adjacent thereto, and except as otherwise indicated in the Supplementary Conditions, all work at the site shall be performed during regular working hours, and the CONTRACTOR will not permit overtime work or the performance of work on Saturday, Sunday or any legal holiday without the OWNER's written consent given after prior written notice to the ENGINEER.

Unless otherwise shown, the CONTRACTOR shall furnish all materials, equipment, labor transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water and sanitary facilities and all other facilities and incidentals necessary for the execution, testing, initial operation and completion of the work.

The CONTRACTOR shall be responsible for all materials furnished by him and shall replace at his own expense all such material found to be defective in manufacture or damaged in handling. This shall include the furnishing of all material and labor required for the replacement of installed material discovered defective prior to the final acceptance of the work.

#### C. Contractor Use of Premises

The CONTRACTOR shall confine construction equipment, the storage of materials and equipment and the operations of workmen to areas permitted by law, ordinances, permits or the requirements of the Contract Documents, and shall not unreasonably encumber the premises with construction equipment or other materials or equipment.

The CONTRACTOR shall not enter upon private property for any purpose without first securing the permission of the property owner in writing and furnishing the ENGINEER with a copy of said permission. This requirement will be strictly enforced, particularly with regard to such vacant properties as may be utilized for material storage.

The CONTRACTOR shall conduct his work in such a manner as to avoid damage to adjacent private or public property. Any damage to existing structures or work of any kind, including permanent reference markers or property corner markers, or the interruption of utility service, shall be repaired or restored promptly at no additional expense to the OWNER.

The CONTRACTOR shall preserve and protect all existing vegetation such as trees, shrubs and grass on or adjacent to the site which do not reasonably interfere with the construction, as determined by the ENGINEER. The CONTRACTOR will be responsible for all unauthorized cutting or damaging of trees and shrubs, including damage due to careless operation of equipment, stockpiling of materials or tracking of grass by equipment. The CONTRACTOR will be liable for, or will be required to replace or restore at no additional expense to the OWNER, all vegetation not protected or preserved as required herein that may be destroyed or damaged.

The CONTRACTOR will not be required to move or remove any utilities except as specifically required by the Drawings and Specifications.

During the progress of the work, the CONTRACTOR shall keep the premises free from accumulations of waste materials, rubbish and other debris resulting from work. At the completion of the work, the CONTRACTOR shall remove all waste materials, rubbish and debris from and about the premises as well as all tools, appliances, construction equipment and machinery, and surplus materials, and shall leave the site clean and ready for occupancy by the OWNER. The CONTRACTOR shall restore to their original condition those portions of the site not designated for alteration by the Contract Documents.

The CONTRACTOR shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall the CONTRACTOR subject any part of the work or adjacent property to stresses or pressures that will endanger it.

D. Notification of Construction

The CONTRACTOR shall notify, in writing, all residents and businesses adjacent to the project work area of pending construction no later than 48 hours prior to commencement of actual construction. Copies of the written Notice shall be provided to the ENGINEER for approval of wording prior to public distribution.

E. Notification of Street Closure

The CONTRACTOR is required to obtain permission from the Town prior to initiating street closures.

In the event a street closure is required, the CONTRACTOR shall notify, in writing, all emergency services and agencies, residents and businesses directly affected by any partial or full street closure caused by the construction no later than 48 hours prior to actual closure.

If the closure will last longer than 5 days, the CONTRACTOR shall also notify the general public of such closures by placing an advertisement in the "Area" section of the local newspaper no later than 48 hours prior to the closure. The advertisement shall include information describing the extent of the closure (i.e. between which streets; detour routes, etc.), the date the closure will begin, and estimated date the road will be reopened. Provide a copy of the proposed notification, for approval by the ENGINEER, before placing the advertisement.

The CONTRACTOR shall maintain full compliance with the traffic regulations found in Paragraph 1.06, Section 01500 of this Contract.

## PART 2 - PRODUCTS

(Not Applicable)

## PART 3 - EXECUTION

### A. Sequence of Operation

The Contractor shall submit a written sequence of operation to the Town of Windermere prior to beginning construction. This sequence of operation shall address the need for adequate restoration of disturbed areas prior to proceeding on to other areas of work and will require approval by the Town before initiation of construction. The Contractor will be required to submit his phasing plan that will include but is not limited to the following:

- Staging (as required per phase)
- Roadway Improvements (as needed)
- Sidewalk Improvements (as needed)
- Drainage Improvements (not applicable)
- Utility Relocations (not applicable)
- Utility Installations (not applicable)
- Restorations
- Punch List/Acceptance

**END OF SECTION**



## SECTION 01025

### MEASUREMENT AND PAYMENT

#### PART 1 - GENERAL

##### 1.01 GENERAL PROVISIONS

- A. General: All schedules and Schedules of Values are given for the convenience of the Engineer, Owner and the Contractor and are not guaranteed to be complete. The Contractor shall assume all responsibility for the making of estimates of the size, kind, and quantity of materials and equipment to be included in Work performed under this Contract.
- B. Unit Price Contracts: The quantities of work to be performed and materials to be furnished under a Unit Price Contract, as given in the Bid Form or Schedule, are to be considered as approximate only and are to be used solely for the comparison of Bids received and determining an initial Contract Price. The Owner/Engineer do not expressly or by implication represent that the actual quantities involved will correspond exactly therewith; nor shall the Contractor plead misunderstanding or deception because of such estimate or quantities or of the character, location or other conditions pertaining to the Work. Payment to the Contractor will be made only for the actual quantities of work performed or material furnished in accordance with the Drawings and other Contract Documents, and it is understood that the quantities may be increased or diminished as provided in the General Conditions without in any way invalidating any of the unit prices bid.
- C. Lump Sum Work: The quantities of work to be performed and materials to be furnished, including all labor, equipment and incidentals required to complete any lump sum work items are shown and/or specified for such lump sum work items in the Contract Drawings and specifications. Payment to the Contractor will be made and shall fully compensate the Contractor for the construction of the Work, completed and ready for continuous operation and use, in the manner contemplated by the Contract Documents.

##### 1.02 SCHEDULE OF VALUES

- A. Unit Price Work: For Unit Price Contracts, the Bid Schedule shall be used as the basis for the Schedule of Values. The Contractor shall resubmit the Bid Schedule in the format described herein, and if requested by the Owner/Engineer, shall sub-divide the bid items in the Bid Schedule into sub-items to provide a more detailed basis of payment. Lump sum bid items included within the Bid Schedule shall be separated into major work/activity items and sub-items in a format as required for Lump Sum Contracts.
  - 1. Removal and Replacement of Unsuitable Material: For areas designated on the Drawings, or in Geotechnical Investigations for this project (Section 00200), remove unsuitable material and replace with compacted suitable material in performance of the Work. Measurement shall be made based on actual "in-place" quantities of unsuitable materials for volumes over 1,000 CY or "in-truck" quantities of unsuitable materials for volumes less than 1,000 CY without consideration of a swell factor. Unit Prices for this category are segmented into various excavation depths (i.e., 0 to 6 feet, 6 feet to 8 feet, 8 feet to 10 feet, ... etc.) to allocate cost in proportion to increased construction difficulty. The stage depth of excavation will be measured from the existing ground or pavement surface.

2. Pavement Restoration: Measurement and payment for pavement restoration shall include the temporary patch, subsequent milling and asphaltic overlay for a maximum 10 ft. pay width for single pipe installations (or maximum pay limits indicated on the Drawings). Asphaltic overlay beyond these pay limits for the utility installation shall be measured and paid under the corresponding bid item for Asphaltic Overlay.
- B. Alternate Bid Items: When Additive Alternates have been accepted by the Owner and are included in the Contract Amount indicated in the Notice of Award and the Agreement, each Additive Alternate shall be individually scheduled with the corresponding Unit Price information or Lump Sum Price and sub-item breakdown.

### 1.03 APPLICATIONS FOR PAYMENT

- A. Applications for Payment shall be submitted by the Engineer in accordance with the schedule established by the General Conditions and Agreement between the Owner and the Contractor.
1. The Contractor shall certify *by affidavit*, for each current pay request, that all previous payments received from the Owner, under his Contract, have been applied by the Contractor to discharge in full all obligations of the Contractor in connection with Work covered by prior applications for payment, and all materials and equipment incorporated into the Work are free and clear of all liens, claims, security interest and encumbrances. Contractor shall attach to each application for payment like affidavits by all Subcontractors and Suppliers. Contractor shall also attach a "Consent of Surety" to each application for payment. Additionally, a "*Waiver and Release of Lien Upon Progress Payment*" from each subcontractor and supplier shall be attached to each application for payment.
  2. Submit three (3) copies of each application to the Engineer. Each copy shall include original signatures. The Engineer shall review the application and verify quantities of installed work and stored materials. When the Engineer finds the application properly completed and correct, he will transmit recommendation of payment to Owner, with copy to Contractor.
- B. The Engineer's recommendation of any payment requested constitutes a representation to the Owner that the Quality of Work is generally in accordance with the Contract Documents subject to the results of any subsequent inspections or tests required by the Contract Documents. Should subsequent inspections or tests indicate that portions of the Work is not installed in accordance with the Contract Documents, the Engineer may nullify any such payment previously recommended to such extent as may be necessary in the Engineer's opinion to protect the Owner from loss because of Defective Work. In this regard, partial payment requests for the installation of materials and equipment shall be supported by acceptable field tests as required by each respective specification section. The supporting test or inspection results shall be submitted with the next scheduled partial payment request.
1. If the test or inspection results indicate Defective Work, the respective partial payment request shall be adjusted to nullify payment for the installation of the defective portion or segment of the Work.
  2. If supporting test or inspection results are not provided for the payment of installed materials or equipment in the subsequent partial payment request, then additional retainage shall be recommended by the Engineer for the Owner's

consideration. The additional retainage shall be equivalent to the value of the tests required to be performed by the Contractor but not provided, or an amount, in the opinion of the Engineer, that maybe necessary to protect the Owner from loss.

- C. The Application for Final Payment shall be prepared in accordance with Article 1.14 of the Section 01001 - General Requirements - Contract Closeout.

#### 1.04 MEASUREMENT AND PAYMENT

##### A. Methods of Payment

1. Unit Price Contracts: Payment will be made for actual quantities of work properly installed as approved by the **Owner/Engineer**.
2. Lump Sum Work: Payment will be made for each individual item on a percentage of completion basis as estimated by the Contractor and approved by the **Owner/Engineer**.

##### B. Methods of Measurement

1. Units of measurement shall be defined in general terms as follows:

a. Linear Feet (LF)	e. Each (EA)
b. Square Feet (SF)	f. Tons (TN)
c. Square Yards (SY)	g. Lump Sum (LS)
d. Cubic Yards (CY)	h. Assembly (AS)
2. Unit Price Contracts
  - a. Linear Feet (LF) shall be measured along the horizontal length of the centerline of the installed material, unless otherwise specified.
  - b. Square Feet (SF), Square Yards (SY), Cubic Yards (CY), Each (EA) and Ton (TN) shall be measured as the amount of the unit of measure installed within the limits specified and shown in the Specifications and Drawings. Slope angles and elevations shall be measured using land surveying equipment. Contractor shall provide supporting documentation (i.e. drawings, truck tickets, invoices, etc.) to verify actual installed quantities.
  - c. No measurement is required for Lump Sum (LS) items.
3. Lump Sum Contracts: The Measurement of Work for lump sum work shall be based on the information provided in the Contract Documents and compiled through the Contractor's own field verifications, investigations and testing prior to Bidding.

#### 1.05 COSTS INCLUDED IN PAYMENT ITEMS

- A. No separate payment will be made for the following items and the cost of such work shall be included in the applicable pay items of work.
- Clearing and grubbing (including disposal of material).

- Trench excavation, including necessary pavement removal and removal of vegetative surfaces.
- Maintenance of Traffic
- Dewatering and disposal of surplus water.
- Structural fill, backfill, and grading.
- Replacement of unpaved roadways, grass and shrubbery plots.
- Cleanup.
- Foundation and borrow materials, except as hereinafter specified.
- Testing and placing system in operation.
- Any material and equipment required to be installed and utilized for tests.
- Pipe, structures, pavement replacement, restoration and/or appurtenances included within the limits of lump sum work, unless otherwise shown.
- Appurtenant work as required for a complete and operable system.
- Surface restoration including removal and replacement of trees (under 4-inch diameter), shrubs, and sod disturbed by construction activities.
- Relocation and/or replacement of irrigation systems disturbed by construction.
- Furnishing adequate sanitary facilities for workers.
- Adjustment of valve boxes.
- Supporting of existing utilities during construction

B. Cleanup

CONTRACTOR's attention is called to the fact that cleanup is considered a part of the work of construction. No payment will be made until cleanup is essentially complete.

At the end of each week of construction, the CONTRACTOR shall perform cleaning of the work site, to the satisfaction of the Owner, before proceeding to the next week's scheduled work.

C. Work Outside Authorized Limits

No payment will be made for work constructed outside the authorized limits of work.

1.06 APPLICATIONS FOR PAYMENT

Applications for payment shall be prepared by the CONTRACTOR and submitted to the ENGINEER in accordance with the schedule established by the Conditions of the Contract and the Agreement. The applications for payment shall be submitted in the number and form established by the ENGINEER at the Preconstruction Conference. The form shall be completely filled out and executed by an authorized representative of the CONTRACTOR. Supporting data such as schedules of stored materials shall be attached to each copy of the application.

1.07 CHANGE ORDER PROCEDURE

- A. As defined in the General Conditions, a Change Order is a written order to the CONTRACTOR signed by the OWNER authorizing an addition, deletion or revision in the Work, or an adjustment in the Contract Price or the Contract Time which is issued after the execution of the Agreement.

B. The following procedure shall be used in processing Change Orders:

1. For Additions to the Work

The OWNER shall issue a written order to the CONTRACTOR directing him to accomplish the additional work. The CONTRACTOR shall review the order and if he feels that the additional work entitles him to additional payment or additional time, he may submit a claim as prescribed in the Conditions of the Contract.

2. For Deletions From the Work

The OWNER shall issue a written order to the CONTRACTOR directing him to make the change. If the OWNER feels that the Contract price should be reduced as a result of the change, the OWNER shall make a claim for the reduction as provided in the Conditions of the Contract.

Cost of the changes in the work shall be determined in accordance with the requirements spelled out in the Conditions of the Contract. Modifications to incorporate the changes in cost will be made as the amount of any change is determined.

PART 2 - PRODUCTS

(Not Applicable)

PART 3 - EXECUTION

3.01 BID ITEMS – BASE BID

A. Bid Item No. 1. - Mobilization/Demobilization (5% of items below)

*Definition.* Mobilization shall be the 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, sanitary and other facilities, as required by the Contract Documents and applicable laws and regulations. The cost of bonds, required insurance, permits and any other preconstruction expense necessary for the start of work, excluding the cost of construction materials, shall also be included in this item. Demobilization shall be the work of removing temporary facilities from the site.

*Payment.* Partial payments for this item will be made in accordance with the following schedule:

<u>Percent of Original Contract Amount Earned</u>	<u>Allowable Percent of the Lump Sum Price for the Item</u>
Contract Approval	25
10	50
25	75
50	100

These payments will be subject to the standard retainage provided in the agreement. Payment of the retainage will be made after successful completion of the work and demobilization.

If the total area to be cleared is equal to or exceeds one (1) acre, then the Contractor will be responsible for preparing a Storm Water Pollution Prevention Plan (SWPPP) in accordance with the U.S. EPA's NPDES regulations for *Stormwater Discharge from Construction Activities* under this pay item. This SWPPP document is not required to be submitted to Florida Department of Environmental Protection (FDEP), but will be required to be retained on the project site. The Contractor will also be responsible for submitting an executed Notice of Intent (NOI) form to the FDEP, along with an application fee of \$150, forty-eight (48) hours prior to beginning construction. Upon substantial completion of the project, the Contractor will be responsible for submitting a Notice of Termination (NOT) to the FDEP, signifying termination of permit coverage for stormwater discharge from construction activities.

B. Bid Item No. 2. - Survey, Construction Layout and Certified As-Built

Payment for this item shall be made at the Contract lump sum (LS) price and shall be full compensation for all surveying and layout necessary for the establishment of construction references for this project. This includes the establishment, as necessary, of any temporary and/or permanent horizontal and vertical control. Should any existing permanent control be disturbed during the construction of this project, then the replacement of the permanent control is to be established by a licensed surveyor in the State of Florida. This pay item also includes conducting and preparing certified As-Builts upon completion of the project construction.

C. Bid Item No. 3. - Maintenance of Traffic

Payment for this item shall be made at the Contract lump sum (LS) price and shall be full compensation for all labor, materials and equipment necessary to provide the Maintenance of Traffic (MOT) required as part of the permit and to provide all other maintenance of traffic required as shown in the Contract Documents, Plans and as required by the Town of Windermere. All Maintenance of Traffic work shall conform to the requirements of Section 102 of the Florida Department of Transportation *Standard Specifications for Road and Bridge Construction* (2010). The Contractor will not be permitted to isolate residences or places of business. Access shall be provided to all residences and places of business whenever construction interferes with the existing means of access. The Contractor shall furnish, erect and maintain all necessary traffic control devices, including flagmen, in accordance with the Manual of Uniform Traffic Control Devices (MUTCD) for Streets and Highways, published by the U.S. Department of Transportation, Federal Highway Administration. The Contractor shall provide and maintain in a safe condition temporary approaches, crossings, and intersections with trails, roads, streets, business parking lots, residences and garages. The Contractor shall take all necessary precautions for the protection of work and the safety of the public. Maintenance of Traffic shall conform to the Florida Department of Transportation *Design Standards for Design, Construction, Maintenance and Utility Operations on State Highway Systems*, latest edition, Index No. 600 through 660.

D. Bid Item No. 4. - Prevention, Control and Abatement of Erosion and Water Pollution

Payment for Prevention, Control and Abatement of Erosion and Water Pollution shall be made at the Contract lump sum (LS) price and shall conform to the requirements of Section of the FDEP *Stormwater Erosion and Sedimentation Control* (Inspector's Manual). The Contractor shall present his/her schedules for constructing the project at the pre-construction conference and shall include a complete outline for the proposed construction of all pollution control and erosion abatement items required in the project as detailed in the

FDEP *Stormwater Erosion and Sedimentation Control* (Inspector's Manual). The Contractor shall be responsible for implementing the schedule after the Engineer's acceptance.

E. Bid Item No. 5. - Removal and Disposal of Concrete Pavement

Measurement: The quantity for payment shall include all labor, materials, and equipment to clear the rights-of-way and easements for construction operations.

Payment: Payment of the applicable square yardage price shall be full compensation for furnishing all labor, materials, and equipment necessary to remove and dispose of all concrete as shown on the construction plans.

F. Bid Item No. 6. - Arborist Work (Complete)

Measurement: The quantity for payment shall include all labor, materials, and equipment to assign, instruct and direct tree trimming, review impacts to trees within the Town right-of-way, advise the Town on tree removals, etc.

Payment: Payment of the applicable lump sum (LS) price shall be full compensation for furnishing all labor, materials, and equipment necessary to conduct Arborist Work (complete).

G. Bid Item No. 7 - Excavation, Embankment and Grading

Payment for Excavation, Embankment and Grading shall be made at the Contract lump sum (LS) price and shall be full compensation for grading of shoulders, graded road connections, slopes, compaction, final dressing, subsoil excavation (except in surcharge areas), select and replacement material, and all work required for completing the project that is not paid for under other pay items. Also included is removal and off-site disposal or on-site utilization of all materials, structures, abandoned utilities and obstructions as directed by the Engineer.

H. Bid Item No. 8. - Type B Stabilization (12") (Min LBR 40)

Payment for Type B Stabilization (12")(Min. LBR 40) shall be made at the Contract square yard (SY) price and shall be full compensation for all work required for completing the work that is not paid for under other pay items. Also included is removal and off-site disposal or on-site utilization of all materials, structures, as directed by the Engineer.

I. Bid Item No. 9. - Graded Crushed Concrete Aggregate Base Course (Traffic Level B)

Payment for providing Graded Crushed Concrete Aggregate Base Course as shown on the Drawings and listed in the bid items, shall be made at the Contract unit price per square yard (SY) and shall be full compensation for all labor, material and equipment necessary to complete the work. Payment shall include full compensation for excavation, removal, grading, mixing, compaction preparation of sub-base, and traffic protection and routing during construction.

J. Bid Item No. 10. - Mill Existing Pavement, 1-1/2" Average Depth

Mill Existing Pavement, 1-1/2" Average Depth, shall be measured for payment by the square yard completed and accepted by the Town. The bid price and payment shall be full compensation for all materials, labor and equipment necessary to mill the existing pavement per the plans and in accordance with FDOT Specifications for Road and Bridge Construction Section 327, latest edition. Payment will also include the

delivery of millings to the Town at a location determined by the Town. Payment will be made under Item No. 327-70-6 Mill Existing Pavement, 1-1/2" Average Depth – per square yard (SY).

- K. Bid Item No. 11. - Type SP 9.5 Asphaltic Concrete, (1-1/2" Average Depth) (165 LB per SY) (Traffic Level B)

Type SP 9.5 Asphaltic Concrete (1-1/2") (165 LB per SY) (Traffic Level B) shall be measured for payment by the ton completed and accepted by the Town. The bid price and payment shall be full compensation for all materials, labor and equipment necessary to construct the Type SP 9.5 Asphaltic Concrete (1-1/2") (Traffic Level B) per the plans and in accordance with FDOT Specifications for Road and Bridge Construction Section 334, latest edition. Payment will be made under Item No. 334-1-12 Type SP 9.5 Asphaltic Concrete, 1-1/2" Average Depth, Traffic B (165 lb/SY) – per ton (TN).

- L. Bid Item No. 12. - Concrete Curb and Gutter (Drop)

Payment for concrete curb and gutter (drop) shall be made at the Contract unit price per linear foot (LF), and shall include full compensation for all labor, material and equipment required to complete the work. Payment includes full compensation for all materials required, excavation, form work, concrete and furnishing all equipment, labor and other incidentals as may be necessary to construct and finish the curb and gutter as specified. The measurement for payment under this item shall be the actual number of linear feet of Concrete Curb and Gutter (Drop) satisfactorily constructed.

- M. Bid Item No. 13. - Concrete Valley Gutter

Payment for Concrete Valley Gutter shall be made at the Contract unit price per linear foot (LF), and shall include full compensation for all labor, material and equipment required to complete the work. Payment includes full compensation for all materials required, excavation, form work, concrete and furnishing all equipment, labor and other incidentals as may be necessary to construct and finish the curb and gutter as specified. The measurement for payment under this item shall be the actual number of linear feet of Concrete Valley Gutter satisfactorily constructed.

- N. Bid Item No. 14. - Sidewalk, Concrete, 6" Thick

Payment for the construction of Concrete Sidewalk, 6" (Driveways) shall be made at the Contract unit price per square yard (SY), and shall include full compensation for all labor, material and equipment required to complete the work. Payment includes full compensation for all materials required, excavation, pouring of concrete and furnishing all equipment, labor and other incidentals as may be necessary to complete the concrete work as specified. The measurement for payment under this item shall be the actual number of square yards of Concrete Sidewalk, 6" (Driveways) poured satisfactorily constructed and accepted.

- O. Bid Item No. 15. - Detectable Warning on Existing Walking Surface

Payment for Detectable Warning on Existing Surface shall be made at the Contract unit price per each (EA), and shall include full compensation for all labor, material and equipment required to complete the work. Payment includes full compensation for all materials required and furnishing all equipment, labor and other incidentals as may be necessary to construct and finish the detectable warning as specified. The measurement for payment under this item shall be the actual number of Detectable Warning on Existing Walking Surface satisfactorily constructed.



P. Bid Item Nos. 16. - Performance Turf (Sod) (Match Existing)

Payment for Performance Turf, Sod will be made at the Contract unit price per square yard (SY) and shall be full compensation for furnishing all plant, labor and materials and equipment that is necessary to grade the right-of-way, pond area, swales, restore lawn areas, disturbed areas and other areas affected by the proposed work (roadway, drainage and utility improvements). Any costs to match existing sod type shall also be paid for under this pay item.

Q. Bid Item Nos. 17. - Tree Removal, Stump Grinding and Disposal

Payment for Tree Removal, Stump Grinding and Disposal will be made at the Contract unit price per each (EA) and shall be full compensation for furnishing all plant, labor and materials and equipment that is necessary to remove, grind and dispose of trees, as shown on the contract drawings.

R. Bid Item No. 18. – Rectangular Rapid Flashing Beacon, F&I, Solar Powered, Complete Sign Assembly Single Direction

Payment for Rectangular Rapid Flashing Beacon, F&I, Solar Powered, Complete Sign Assembly Single Direction shall be made per assembly completed and accepted by the Town. The bid price and payment shall be full compensation for all materials, labor and equipment necessary construct a Rapid Flashing Beacon, per the plans and in accordance with FDOT *Specifications for Road and Bridge Construction* (latest edition) Section 700 and Index 11860. RRFB shall be a Carmanah® Model R920 Rectangular Rapid Flashing Beacon or approved equivalent. Payment will be made under Item No. 654-2-23 Rectangular Rapid Flashing Beacon, F&I, Solar Powered, Complete Sign Assembly Single Direction – per assembly (AS).

S. Bid Item No. 19. - Single Post Sign, F&I, Ground Mount, 12-20 SF

Payment for Single Post Sign, F&I, Ground Mount, 12-20 SF shall be made per assembly completed and accepted by the Town. The bid price and payment shall be full compensation for all materials, labor and equipment necessary to relocate a Single Post Sign per the plans and in accordance with FDOT *Specifications for Road and Bridge Construction* (latest edition) Section 700 and Index 11860. Payment will be made under Item No. 700-1-50 Single Post Sign, Relocate – per assembly (AS).

T. Bid Item No. 20 – Single Post Sign, Relocate

Single Post Sign, Relocate shall be measured for payment per assembly completed and accepted by the Town. The bid price and payment shall be full compensation for all materials, labor and equipment necessary to relocate a Single Post Sign per the plans and in accordance with FDOT *Specifications for Road and Bridge Construction* (latest edition) Section 700 and Index 11860. Payment will be made under Item No. 700-1-50 Single Post Sign, Relocate – per assembly (AS).

U. Bid Item No. 21 – Retro-Reflective Pavement Markers (Blue)

Retro-Reflective Pavement Markers shall be measured for payment per each completed and accepted by the Town. The bid price and payment shall be full compensation for all materials, labor and equipment necessary to install Retro-Reflective Pavement Markers (including colors) per the plans and in accordance with FDOT *Specifications for Road and Bridge Construction* (latest edition) Section 700 and Index 17346. Payment will be

made under Item No. 706-3 Retro-reflective Pavement Marker – per each (EA).

V. Bid Item No. 22 – Thermoplastic, Standard, White, Solid, 12”

Thermoplastic, Standard, White, Solid, 12” shall be measured for payment by the linear foot completed and accepted by the Town. The bid price and payment shall be full compensation for all materials, labor and equipment necessary to construct the Thermoplastic, Standard, White, Solid, 12” per the plans and in accordance with FDOT *Specifications for Road and Bridge Construction* (latest edition, Section 711 and FDOT Index 17346. Payment will be made under Item No. 711-11-123 Thermoplastic, Standard, White, Solid, 12”– per linear foot (LF).

W. Bid Item No. 23 – Thermoplastic, Standard, White, Solid, 24”

Thermoplastic, Standard, White, Solid, 24” shall be measured for payment by the linear foot completed and accepted by the Town. The bid price and payment shall be full compensation for all materials, labor and equipment necessary to construct per the plans and in accordance with FDOT *Specifications for Road and Bridge Construction* (latest edition) Section 711 and FDOT Index 17346. Payment will be made under Item No. 711-11-125 Thermoplastic, Standard, White, Solid, 24”– per linear foot (LF).

X. Bid Item No. 24 – Thermoplastic, Standard, White, Arrows

Thermoplastic, Standard, White, Arrows shall be measured for payment by each (EA) completed and accepted by the Town. The bid price and payment shall be full compensation for all materials, labor and equipment necessary to construct per the plans and in accordance with FDOT *Specifications for Road and Bridge Construction* (latest edition) Section 711 and FDOT Index 17346. Payment will be made under Item No. 711-11-170 Thermoplastic, Standard, White, Arrows – per each (EA).

**END OF SECTION**

## SECTION 01027

### APPLICATION FOR PAYMENT

#### PART 1 - GENERAL

- A. Coordinate the Schedule of Values and Applications for Payment with the Contractor's Construction Schedule, Submit Schedule, and List of Subcontractors.

#### 1.01 SCHEDULE OF VALUES

- A. Coordinate preparation of the Schedule of Values with preparation of the Contractor's Construction Schedule.
- B. Correlate line items in the Schedule of Values with other required administrative schedules and forms, including:
- Contractor's Construction Schedule.
  - Application for Payment forms, including Continuation Sheets.
  - List of Subcontractors.
  - List of Products.
  - List of Principal Suppliers and Fabricators.
  - Schedule of submittals.
- C. Submit the Schedule of Values at the earliest possible date, but no later than seven (7) calendar days after the date of the pre-construction conference.

#### 1.02 FORMAT AND CONTENT

- A. Use the Project Manual table of contents as a guide to establish the format for the Schedule of Values. Provide at least one (1) line item for each Specification Section.
- Include the following Project identification.
- Project Name and Location.
  - Name of Engineer.
  - Project Number.
  - Contractor's name and address.
  - Date of Submittal.
- B. Arrange the Schedule of Values in tabular form with separate columns to indicate the following for each item listed.
- Related Specification Section or Division.
  - Description of Work.
  - Name of Subcontractor.
  - Change Orders (numbers) that affect the value.
  - Dollar value.
  - Percentage of Contract Sum to the nearest one-hundredth percent, adjusted to total 100 percent.
- C. Provide a breakdown of the Contract Sum in sufficient detail to facilitate evaluation of Applications for Payment. Break subcontract amounts down into several line items. Round amounts to nearest whole dollar; the total shall equal the Contract sum.

- D. Update and resubmit the Schedule of Values when Change Orders or Construction Change Directives change the Contract sum.
- E. Applications for Payment shall be consistent with previous applications and payments as certified by the Engineer and paid for by the Owner.

#### 1.03 PAYMENT – APPLICATION TIMES

- A. Payment dates are indicated in the Agreement. The period covered by each application is the period indicated in the Agreement.

#### 1.04 APPLICATION PREPARATION

- A. Complete every entry, including notarization and execution by a person authorized to sign on behalf of the Contractor. The Engineer will return incomplete applications without action.
- B. Entries shall match data on the Schedule of Values and the Contractor's Construction Schedule. Use updated schedules if revisions were made.
- C. Include amounts of Change Orders and Construction Change Directives issued prior to the last day of the construction period covered by the application.

#### 1.05 TRANSMITTAL

- A. Submit seven (7) executed original copies of each Application for Payment to the Engineer within twenty-four (24) hours. All copies shall be complete, including waivers of lien and similar attachments.
- B. Transmit each copy with a transmittal listing attachments and recording appropriate information related to the application.

#### 1.06 INITIAL APPLICATION FOR PAYMENT

- A. Administrative actions and submittals that must precede or coincide with submittal of the first Application for Payment include:
  - List of Subcontractors.
  - List of Principal Suppliers and Fabricators.
  - Schedule of Values.
  - Contractor's Construction Schedule (preliminary, if not final).
  - Submittal Schedule (preliminary, if not final).
  - Copies of building permits.
  - Copies of licenses from governing authorities.
  - Certificate of insurance and insurance policies.
  - Performance and payment bonds.

#### 1.07 APPLICATION FOR PAYMENT AT SUBSTANTIAL COMPLETION

- A. Following issuance of the Certificate of Substantial Completion, submit an Application for Payment. This application shall reflect Certificates of Partial Substantial Completion issued previously for Owner occupancy of designation portions of the Work.

B. Administrative actions and submittals that shall precede or coincide with this application include the following:

- Occupancy permits (if applicable).
- Warranties and maintenance agreements.
- Test/Adjust/Balance records.
- Maintenance instructions.

1.08 FINAL PAYMENT APPLICATION

A. Administrative actions and submittals that must precede or coincide with the submittal of the final Application for Payment include the following:

- Completion of Project closeout requirements – see Section 01700.
- Completion of items specified for completion after Substantial Completion.
- Transmittal of Project construction records to the Owner.
- Proof that taxes, fees and similar obligations were paid.
- Removal of temporary facilities and services.

PART 2 – PRODUCTS

(Not applicable)

PART 3 – EXECUTION

(Not applicable)

**END OF SECTION**

## **SECTION 01040**

### **COORDINATION**

#### **PART 1 - GENERAL**

##### **1.01 PROJECT COORDINATION**

- A. The Contractor shall provide for the complete coordination of the construction efforts. This shall include, but not necessarily be limited to, coordination of the following:
1. The work of subcontractors;
  2. The flow of material and equipment from suppliers;
  3. The interrelated work with public utilities companies;
  4. The interrelated work with the Owner where tie-ins to existing facilities are required; and
  5. The effort of independent testing agencies.
- B. The Contractor will be allowed the widest practicable latitude in establishing his work plan. Contractor shall submit a plan of work to Owner and Engineer.

##### **1.02 CUTTING AND PATCHING**

- A. The Contractor shall do all cutting, fitting and patching of his work that may be required to make its several parts come together properly and integrate with such other work. The Contractor shall not endanger any work of others by cutting, excavating or otherwise altering their work and will only cut or alter their work with the written consent of the Engineer and the others whose work will be affected.

#### **PART 2 - MATERIALS AND EQUIPMENT**

(Not Applicable)

#### **PART 3 - EXECUTION**

(Not Applicable)

**END OF SECTION**

## SECTION 01050

### FIELD ENGINEERING

#### PART 1 - GENERAL

##### 1.01 DESCRIPTION OF WORK

- A. The Contractor shall provide and pay for field engineering service required for the project. Such work shall include survey work to establish lines and levels and to locate and lay out site improvements, structures, and controlling lines and levels required for the construction of the work. Also included are such Engineering services as are specified or required to execute the Contractor's construction methods. Engineers and Surveyors shall be licensed professionals under the laws of the state where the project is located.

##### 1.02 GRADES, LINES AND LEVELS

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

##### 1.03 LAYOUT DATA

- A. The Contractor shall lay out the work at the location and to the lines and grades shown on the Drawings. Survey notes indicating the information and measurements used in establishing locations and grades shall be kept and furnished with the record drawings for the project.

#### PART 2 - PRODUCTS

(Not Applicable)

#### PART 3 - EXECUTION

(Not Applicable)

**END OF SECTION**

**SECTION 01200**  
**PROJECT MEETINGS**

**PART 1 - GENERAL**

**1.01 DESCRIPTION OF WORK**

- A. Project meetings shall be scheduled as needed throughout the progress of the work. Those responsible for scheduling the meetings shall prepare the agenda, distribute written notice of each meeting not less than four days in advance of the meeting date, make physical arrangements for the meeting, preside at the meeting, record the minutes (include all significant proceedings and decisions), and reproduce and distribute copies of the minutes to all participants, all parties affected by decisions made, and the Engineer.
- B. Representatives attending the meetings shall be qualified and authorized to act on behalf of the entities they represent.

**1.02 PRE-CONSTRUCTION CONFERENCE**

- A. Before the Contractor starts the work at the site, the Engineer will schedule a preconstruction conference which will be held for review and acceptance of the schedules referred to in Section 01300, to establish procedures for handling shop drawings and other submittals and for processing Applications for Payment, and to establish a working understanding among the parties as to the work.
- B. The date for the start of construction shall be established at this conference.

**PART 2 - PRODUCTS**

(Not Applicable)

**PART 3 - EXECUTION**

(Not Applicable)

**END OF SECTION**



## SECTION 01300

### SUBMITTALS

#### PART 1 - GENERAL

##### 1.01 DESCRIPTION OF REQUIREMENTS

- A. The type of submittal requirements specified in this section include the following:
- Progress Schedules and Reports
  - Product Data
  - Shop Drawings
  - Manufacturer's Data
  - Miscellaneous
- B. Submittals shall be clear and legible, printed or typed. Submittals received that are not so, shall be returned to be resubmitted when in legible form.

##### 1.02 PROGRESS SCHEDULES AND REPORTS

- A. Within ten (10) days after the effective date of the Agreement, the Contractor shall submit to the Engineer for review and acceptance an estimated progress schedule indicating the starting and completion dates of the various stages of the work, a preliminary schedule of shop drawing submissions, and a preliminary schedule of values of the work. Include sub-schedules of related activities which are essential to its progress.
- B. Revised schedules shall be submitted periodically as changes become apparent.
- C. Unless other format or use of a network analysis system is required, schedules shall be prepared in the required format specified in 1.10 of Section 01001 - General Requirements. A separate horizontal bar shall be provided for each trade or operation. The first work day of each week shall be identified on the horizontal time scale. Scale and spacing will be such as to allow space for notations and revisions.
- D. Schedules shall show the complete sequence of construction by activity with dates for the beginning and completion of each major element of construction. Projected percentage of completion for each item as of the first day of each month shall be shown.
- E. Progress Reports
- The Contractor shall prepare and submit a monthly progress report. The report shall indicate the progress at the date of submission of each activity shown on his progress schedule. It shall show changes occurring since previous submissions, activities modified since previous submissions, and revised projections of progress and completion. The submittal shall include a narrative report to define: problem areas, anticipated delays, and the impact on the schedule, and corrective action recommended and its effect.

##### 1.03 PRODUCT DATA (Shop Drawings and Manufacturer's Data)

- A. The Contractor shall prepare and submit to the Engineer a schedule of the shop drawings, product data and samples which are required for the work together with anticipated submittal time. Any drawings which require critical timing for maintaining delivery or construction schedules shall be so noted. Shop drawing submittal schedule shall be coordinated with the requirements of construction progress schedules.

- B. Those submittals required under various sections of the specifications, but not listed on the Contract Submittal List shall be submitted as "RECORD SUBMITTALS" and given to the Engineer along with the Record Drawings as specified in Section 01700 - *Contract Closeout*.
- C. Product data submitted for substitutions shall be handled as specified in Section 01630 - *Substitutions and Product Options*.
- D. Definitions
  - 1. Work-related submittals of this section are categorized for convenience as follows:
    - a. Shop drawings include specially-prepared technical data for this project, including drawings, diagrams, performance curves, data sheets, schedules, templates, patterns, reports, calculations, instructions, measurements and similar information not in standard printed form for general application to several projects.
    - b. Product data include standard printed information on materials, products and systems; not specially-prepared for this project, other than the designation of selections from among available choices printed in the information.
    - c. Miscellaneous submittals related directly to the work (non-administrative) include warranties, maintenance agreements, workmanship bonds, project photographs, survey data and reports, physical work records, quality testing and certifying reports, copies of industry standard, record drawings, field measurement data, operating and maintenance materials, overrun stock, and similar information, devices and materials applicable to the work and not processed as shop drawings, product data or samples.

#### 1.04 GENERAL SUBMITTAL REQUIREMENTS

- A. After checking and verifying all field measurements, the Contractor shall submit to the Engineer for review and approval, in accordance with the accepted schedule of shop drawing submissions, five (5) copies of all shop drawings, which shall have been checked by and stamped with the approval of the Contractor and identified as the Engineer may require. The data shown on the shop drawings will be complete with respect to dimensions, design criteria, materials of construction and like information to enable the Engineer to review the information as required.
- B. The Contractor shall also submit to the Engineer for review and approval with such promptness as to cause no delay in work, all samples required by the Contract Documents. All samples will have been checked by and stamped with the approval of the Contractor, identified clearly as to material, manufacturer, and pertinent catalog numbers and the use for which intended. At the time of each submission, the Contractor shall, in writing, call the Engineer's attention to any deviations that the shop drawings or samples may have from the requirements of the Contract Documents.

- C. The Engineer will review and approve with reasonable promptness shop drawings and samples, but the Engineer's review and approval shall be only for conformance with the design concept of the project and for compliance with the information given in the Contract Documents and shall not extend to means, methods, sequences, techniques or procedures of construction or to safety precautions or programs incident to the work. The review and approval of a separate item as such will not indicate approval of the assembly in which the item functions. The Contractor shall make any corrections required by the Engineer and shall return the required number of corrected copies of shop drawings and resubmit new samples for review and approval. The Contractor shall direct specific attention, in writing, to revisions other than the corrections called for by the Engineer on previous submittals. The Contractor's stamp of approval on any shop drawing or sample shall constitute a representation to the Owner and the Engineer that the Contractor has either determined and verified all quantities, dimension, field construction criteria, materials, catalog numbers, and similar data or assumes full responsibility for doing so, and that the Contractor has reviewed or coordinated each shop drawing or sample with the requirements of the work and the Contract Documents.
- D. Where a shop drawing or sample is required by the Specifications, no related work shall be commenced until the submittal has been reviewed and approved by the Engineer.
- E. The Engineer's review and approval of shop drawings or samples shall not relieve the Contractor from responsibility for any deviations from the Contract Documents unless the Contractor has in writing called the Engineer's attention to such deviations at the time of submission and the Engineer has given written concurrence and approval to the specific deviation, nor shall any concurrence or approval by the Engineer relieve the Contractor from responsibility for errors or omissions in the shop drawings.
- F. Systems to be submitted in the shop drawing submittal shall include but not necessarily be limited to:
  - a. Each item of equipment and/or materials listed in the project equipment and material schedules.
- G. Certifications
  - a. Whenever a standard of quality is established by a reference specification, the Contractor shall submit a certificate by the manufacturer that the material supplied meets the requirements of both the project and reference specification.

H. Schedule of Values

- a. At least ten (10) days prior to submitting the first Application for a progress payment, the Contractor shall submit to the Engineer a schedule of values of the work. This schedule shall be satisfactory in form and substance to the Engineer. The schedule of values shall include quantities and unit prices aggregating the contract price, and shall subdivide the work into component parts in sufficient detail to serve as the basis for progress payments during construction. Upon acceptance of the schedule of values by the Engineer, it shall be incorporated into a form of Application for Payment acceptable to the Engineer.
  
- b. Where estimated quantities and unit prices are shown in the Bid Form as the basis of payment, the quantities shown in the Bid Form are approximate and are given only as a basis of calculation upon which the award of the contract is to be made. The Owner or Engineer do not assume any responsibility that the final quantities will remain in accordance with estimated quantities, nor shall the Contractor claim misunderstanding or deception because of such estimate of quantities. Final payment will be made on the basis of the actual completed quantities of each item.

PART 2 - PRODUCTS

(Not Applicable)

PART 3 - EXECUTION

(Not Applicable)

**END OF SECTION**

**SECTION 01400**  
**QUALITY CONTROL**

**PART 1 - GENERAL**

**1.01 TESTING LABORATORY SERVICES**

- A. Arrangements for testing laboratory services will be made by the OWNER. Payment for testing to show compliance with specified requirements will be paid for by the OWNER. The cost of retesting when materials and workmanship fail to meet specified requirements will be deducted from monies due the Contractor or billed directly to the Contractor by the soils testing laboratory.

**1.02 INSPECTION SERVICES**

- A. The authorized representative of all applicable Federal and/or State agencies, including the United States Environmental Protection Agency (USEPA), U.S. Army Corps of Engineers (USACE), the Florida Department of Environmental Protection (FDEP) and the South Florida Water Management District (SFWMD), shall be permitted to inspect all work, materials, payrolls, records of personnel, invoice of materials, and other relevant data and records. The Owner and his authorized representatives shall be permitted free access and every reasonable facility for the inspection of all work and materials, including the removal or uncovering of such portions of the finished work as may be directed. The Owner and his authorized representative shall also be permitted to inspect payrolls, invoices of materials and other relevant data and records.

**1.03 INSPECTION OF WORK AWAY FROM SITE**

- A. If work to be done away from the construction site is to be inspected on behalf of the Owner during its fabrication, manufacture or testing or before shipment, the Contractor shall give notice to the Engineer of the time and place where such fabrication, manufacturing, testing or shipping is to be done. Such notice shall be in writing and delivered to the Engineer in ample time so that the necessary arrangements for the inspection can be made.

**PART 2 - PRODUCTS**

(Not Applicable)

**PART 3 - EXECUTION**

(Not Applicable)

**END OF SECTION**

**SECTION 01490**

**CONTRACTOR SAMPLING AND TESTING**

**PART 1 - GENERAL**

**1.01 DESCRIPTION**

- A. Scope of Work: This work consists of obtaining samples for testing for all items. The costs of the tests will be borne by the Owner.

**PART 2 - SAMPLING AND TESTING**

**2.01 SAMPLING**

- A. Sample material to be tested. Contractor shall sample any material that appears defective or inconsistent with similar material being produced, unless such material is voluntarily removed and replaced or corrected.

**2.02 TESTING:** Allow the Owner and/or Owner's Engineer the opportunity to witness all testing.

**2.03 RECORDS:** Contractor shall record test results on acceptable forms. Furnish all test results in the minimum time reasonably necessary to perform the tests and transmit the results. When tests are on material being incorporated in the work, report test results within twenty-four (24) hours. Payment for work may be delayed or the work suspended until test results are provided.

**2.04 ACCEPTANCE:** Contractor sampling and testing will be evaluated under the following subsections based on Owner verification testing.

- A. Visual Inspection: Acceptance is based on visual inspection of the work for compliance with the contract and prevailing industry standards.

- B. Measured or Tested Conformance

1. Provide all necessary production, processing, and control performance of the work so as to comply with the contract requirements.
2. Results from inspection or testing shall have values within the specified tolerances or specification limits. When no tolerance values are identified in the contract, the work will be accepted based on customary manufacturing and construction tolerances.

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**END OF SECTION**

## SECTION 01500

### TEMPORARY FACILITIES AND CONTROLS

#### PART 1 - GENERAL

##### 1.01 DESCRIPTION OF REQUIREMENTS

- A. This section specifies the minimum requirements for temporary facilities, utilities to be brought to the site, refuse/waste collection and control required to enable the construction of the project to progress adequately. The providing of adequate facilities at every stage of performing the work is the Contractor's sole responsibility, and is not limited by the requirement of this section.
- B. Except as otherwise indicated, the Contractor may, at his option, provide stand-alone utility plants to provide needed services, in lieu of connected services from available public utilities, provided such stand-alone plant facilities comply with governing regulations. Prior to availability of temporary utility services, provide trucked-in/trucked-out containerized or unitized services for startup of construction operations at the site.
- C. Except as otherwise indicated, the costs of providing and using temporary utility services are included in the Contract Sum.

##### 1.02 TEMPORARY FACILITIES

- A. The types of utility services required for general temporary use at the project site include the following (other specific services may be required for specific construction methods or operations):
  - Electrical Power Service
  - Water Service (potable for certain uses)
  - Sanitary
  - Storm Sewer or Open Drainage/Run-off Control
  - Refuse/Waste Collection
- B. Temporary Electricity
  - 1. The Contractor shall make necessary applications and arrangements and pay all fees and charges for electrical energy for power and light necessary for proper completion of the work and during its entire progress up to time of final acceptance by the Owner. The Contractor shall provide and pay for all temporary switches, connections and meters.
- C. Temporary Water
  - 1. The Contractor shall make all necessary application and arrangements, and pay all fees and charges for water necessary for the proper completion of the project up to the time of final acceptance. The Contractor shall provide and pay for any temporary piping and connections.
- D. Temporary Sanitary Facilities
  - 1. The Contractor shall provide adequate sanitary facilities for the use of those employed on the work. Such facilities shall be made available when the first employees arrive on the site of the work, shall be properly secluded from public

observation, and shall be constructed and maintained during the progress of the work in suitable numbers and at such points and in such manner as may be required or approved.

2. The Contractor shall provide these portable sanitary facilities "on-site" for use by workers. Transporting workers to the nearest "public" sanitary facility will not be considered an acceptable alternative to these requirements.
3. The Contractor shall maintain the sanitary facilities in a satisfactory and sanitary condition at all times and shall enforce their use. He shall rigorously prohibit the committing of nuisances on the site of the work, on the lands of the Owner, or on adjacent property. The cost of providing these sanitary facilities shall be included in the Contractor's applicable pay items of work and no separate payment shall be made thereof.

E. Temporary Refuse/Waste Collection

1. The Contractor shall provide for adequate refuse/waste collection and disposal.
2. It will be the Contractor's responsibility to make all necessary arrangements for refuse/waste collection and disposal. The cost of providing for such refuse/waste collection and disposal shall be included in the Contractor's applicable pay items of work and no separate payment shall be made thereof.

F. Termination and Removal

1. At the time the need for temporary utility service or a substantial portion thereof has ended, or when its service has been replaced by use of permanent services, or not later than the time of substantial completion, promptly remove the installation unless requested by the Engineer to retain it for a longer period. Complete and restore work which may have been delayed or affected by the installation and use of the temporary utility, including repairs to construction and grades and restoration and cleaning of exposed surfaces. Replace work damaged beyond acceptable restoration.

1.03 TEMPORARY CONTROLS

A. Noise Control

1. The Contractor shall provide adequate protection against objectionable noise levels caused by the operation of construction equipment.

B. Dust Control

1. The Contractor shall provide for adequate protection against raising objectionable dust clouds caused by moving construction equipment, high winds or any other cause.

C. Water Control

1. The Contractor shall provide for satisfactory disposal of surplus water and shall submit a plan to the Engineer for his review prior to initiation and implementation of the plan. Prior approval shall be obtained from the proper authorities for the use of public or private lands or facilities for such disposal.



D. Pollution Control

1. The Contractor shall provide for adequate protection against polluting any public or private lands, lakes, ponds, rivers, streams, creeks, and other such areas, by the disposal of surplus material in the form of solids, liquids, or gases or from any other cause. The Contractor shall provide for adequate refuse/waste collection and disposal as described in Part 1, paragraph 1.02 of this Section.
2. The Contractor shall evaluate and assess the impact of any adverse effects on the natural environment which may result from construction operations and shall operate to minimize pollution of air, ground or surface waters vegetation, and afford the neighboring community the maximum protection during and up to completion of the construction project.
3. The Contractor shall take sufficient precautions to prevent pollution of streams, lakes and reservoirs with fuels, oils, bitumens, calcium chloride or other harmful materials. He shall conduct and schedule his operations so as to avoid or otherwise prevent pollution of siltation of streams, lakes and reservoirs and to avoid interference with movement of migratory fish.
4. All chemicals used during project construction or furnished for project operation, whether herbicide, pesticide, disinfectant, polymer, reactant or of other classification, must show approval of either EPA or USDA. Use of all such chemicals and disposal of residues shall be in strict conformance with instructions.

E. Erosion Control

1. The Contractor shall not expose, by construction operations, a larger area of erosive land at any one time than the minimum necessary for efficient construction operations, and the duration of exposure of the uncompleted construction to the elements shall be as short as practicable.
2. Erosion control features shall be constructed concurrently with other work and at the earliest practicable time.

1.04 STORAGE FACILITIES

- A. All products, materials and equipment shall be stored in accordance with the manufacturer's instructions, with seals and labels intact and legible. Products subject to damage by the elements shall be stored in weathertight enclosures. Temperature and humidity shall be maintained within the ranges required by the manufacturer's instructions. Fabricated products shall be stored above the ground on blocking or skids. Products which are subject to deterioration shall be covered with impervious coatings with adequate ventilation to avoid condensation. Loose granular materials shall be stored in a well-drained area on solid surfaces to prevent mixing with foreign matter. Any products which will come in contact with potable water shall be stored off the ground so as to prevent contamination.
- B. Storage shall be arranged in such a manner to provide easy access for inspection. Periodic inspections shall be made of all stored products to assure that they are maintained under specified conditions, and free from damage or deterioration.
- C. After installation, Contractor shall provide substantial coverings as necessary to installed products to protect from damage from traffic and subsequent construction operations. Coverings shall be removed when no longer needed.

#### 1.05 PRESERVATION OF PROPERTY

- A. Preserve from damage all property along the line of the work, or which is in the vicinity of or in any wise affected by the work, the removal or destruction of which is not called for by the plans. Wherever such property is damaged due to the activities of the Contractor, it shall be immediately restored to its original condition by the Contractor at no cost to the Owner.
- B. In case of failure on the part of the Contractor to restore such property, or make good such damage or injury, the Owner may, after 48 hours notice to the Contractor, proceed to repair, rebuild or otherwise restore such property as may be deemed necessary and the cost thereof will be deducted from any monies due or which may become due the Contractor under this Contract.
- C. The Contractor shall be responsible for the protection of property, in the areas in the vicinity of the project; and for the protection of his equipment, supplies, materials and work, against any damage resulting from the elements, such as flooding, by rainstorm, wind damage, or other elemental cause resulting from the project configuration. The Contractor shall take all precautions against any such damage occurrence, and shall be responsible for damage resulting from same. The Contractor shall provide adequate drainage facilities, tie-downs, or other protection, throughout the Contract period, for the protection of his, the Owner's, and other properties from such damage.

#### 1.06 TRAFFIC REGULATION

- A. Signs, marking barricades and procedures shall conform to the requirements of the Florida Department of Transportation Manual on Traffic Controls and Safe Practices for Street and Highway Construction, Maintenance and Utility Operations.
- B. The Contractor shall maintain one-lane, two-way traffic at all times and maintain customer access to local businesses at all times throughout the course of the work.
- C. The Contractor shall provide and maintain adequate barricades, construction signs, torches, flashers, guards and flagmen as required in pedestrian and vehicular traffic areas. Regulations of local authorities shall be complied with.
- D. The contractor shall provide suitable crossings at street intersections and driveways, and supply such aid as may be required for pedestrians and motorists, including delivery vehicles, to safely negotiate the construction areas.
- E. The Contractor shall carry on the work in a manner that will cause the least interruption in traffic. Closing to through travel of more than two consecutive blocks, including the cross streets intersected will not be permitted without specific authorization from the local authorities. Where traffic must cross open trenches, the Contractor shall provide suitable bridges at street intersections and driveways and provide adequate ingress and egress to dwellings, business facilities, utilities and services. At any time the streets are required to be closed, the Contractor shall notify, in writing, law enforcement agencies, fire departments, and parties operating emergency vehicles before the street is closed and again as soon as it is opened. Access to fire hydrants and other fire extinguishing equipment shall be provided and maintained at all times. Refer to Section 01010 of these Specifications for "Notification of Construction" and "Notification of Street Closure" requirements.

- F. On completion of work, the Contractor shall remove all debris, excess materials, barricades and temporary work leaving walkways and road clear of obstructions.

**PART 2 - PRODUCTS**

(Not Applicable)

**PART 3 - EXECUTION**

(Not Applicable)

**END OF SECTION**

## SECTION 01558

### TRAFFIC CONTROL

#### PART 1 - GENERAL

##### 1.01 DESCRIPTION: (Contractor shall)

- A. Maintain traffic within the limits of the project for the duration of the construction period, including any temporary suspensions of the work. Construct and maintain any necessary detour facilities. Provide necessary facilities for access to residences, businesses, etc., along the project. Furnish, install, and maintain traffic control and safety devices during construction. Furnish and install work zone pavement markings for maintenance of traffic in construction areas. Furnish and apply calcium chloride on the subgrade, unsurfaced base, or other unsurfaced traveled ways in order to control dust during construction operations. Provide any other special requirements for safe and expeditious movement of traffic as may be specified on the plans. Develop Maintenance of Traffic Plans if required. The term, Maintenance of Traffic, includes all of such facilities, devices and operations as are required for the safety and convenience of the public as well as for minimizing public nuisance.

##### 1.02 CONTRACTOR'S RESPONSIBILITY: (Contractor shall)

- A. Maintain traffic starting the day work begins on the project or on the first day Contract time is charged, whichever is earlier.
- B. Continually and adequately review traffic control devices to ensure proper installation and working order, including monitoring of lights. Provide an individual responsible for this review who is certified as an American Traffic Safety Services Association Certified Work Site Supervisor.

#### PART 2 - SPECIFIC REQUIREMENTS

##### 2.01 MAINTENANCE OF ROADWAY SURFACES: (Contractor shall)

- A. Maintain all lanes that are being used for the maintenance of traffic, including those on detours and temporary facilities, under all weather conditions. Keep the lanes reasonable free of dust, and, when necessary to accomplish this, sprinkle them with water, or apply some other dust palliative. Provide the lanes with the drainage facilities necessary to maintain a smooth riding surface under all weather conditions. Refer to the Contract Documents to see if they require a paved surface for lanes being used for the maintenance of traffic.

##### 2.02 STANDARDS

- A. Contractor's traffic control Work and if required, the Contractor prepared Work Zone Traffic Control Plan shall conform to detailed procedures and protective measures for protection and control of traffic affected by the Work consistent with the following applicable standards.
  - 1. Florida Department of Transportation (FDOT) *Standard Specifications for Road and Bridge Construction*, Latest Edition including all subsequent supplements issued thereto.
  - 2. Manual of Traffic Control and Safe Practices for Street and Highway construction. Maintenance and Utility Operations, FDOT.

3. FDOT Roadway and Traffic Design Standards, Latest Edition.
4. Manual on Uniform Traffic Control Devices (MUCTD), Latest Edition.

B. All references to the respective agency in the above referenced standards shall be construed to also include the Owner of this work.

#### 2.03 NOTICE REQUIREMENT AND PERMITS

A. Before closing any thoroughfare, the Contractor shall give written notice to and, if necessary, obtain a permit or permits from the duly constituted public authority having jurisdiction over the thoroughfare. Notice shall be given no less than 72 hours in advance of the time when it may be necessary in the process of construction to close such thoroughfare, or as may be otherwise provided in the approved Traffic Control Plan.

#### 2.04 WORK ZONE TRAFFIC CONTROL PLAN

A. If Maintenance of Traffic (MOT) Plans is not provided as part of the Contract Documents, the Contractor shall be responsible for development of project MOT Plan. If a MOT Plan is provided as part of the Contract Documents and the Contractor requests modification(s) to same, the Contractor shall be responsible for development of such modification(s) to Project MOT Plan.

B. Contractor shall provide three (3) complete copies of signed and sealed MOT Plan(s) for review by Owner and/or Owner's Engineer. MOT Plan must be provided to scale in plan view as a Contract Plan overlay. Drop-offs in work zones must also be addressed in profile and cross section as required. The Contractor shall provide additional MOT Plans as required to other jurisdictional agencies for separate review and approval. List of other jurisdictional agencies to be provided with MOT Plans as follows:

C. The MOT Plan developed by the Contractor shall be submitted to Owner and/or Owner's Engineer for review/approval twenty-eight (28) calendar days prior to the implementation of the contemplated MOT Plan. Owner and/or Owner's Engineer shall be allotted fourteen (14) calendar days to review the MOT Plan from date of receipt of same. If the MOT Plan is not approved or if additional information is required for re-submittal, the referenced twenty-eight (28) calendar day implementation period shall re-start as of the date of the Owner and/or Owner's Engineers receipt date of the MOT Plan re-submittal. MOT Plan to be submitted to other jurisdictional agencies shall be provided within time limits as established by the individual agencies. The Contractor shall directly contact individual agencies to determine such time limits.

D. Contractor shall submit names of individuals to serve as Engineer, Professional Engineer and Work Zone Traffic Control Supervisor (WTS). Provide copies of required certifications and resumes listing previous experience for these individuals at the Project Pre-construction Conference or with the initial MOT Plan submittal, whichever is earlier.

**END OF SECTION**

## SECTION 01600

### MATERIALS AND EQUIPMENT

#### PART 1 - GENERAL

##### 1.01 DESCRIPTION OF REQUIREMENTS

- A. Materials and equipment furnished by CONTRACTOR shall be new and shall not have been in service at any other installation unless otherwise provided. Materials and equipment shall conform to applicable specifications and standards and comply with the size, make, type and quality specified, or as specifically approved in writing by ENGINEER.
- B. Manufactured and fabricated items shall be designed, fabricated and assembled in accordance with the best engineering and shop practices. Like parts of duplicate units shall be manufactured to standard sizes and gauges to be interchangeable.
- C. Two or more things of the same kind shall be identical, by the same manufacturer.
- D. Materials and equipment shall be suitable for service conditions shown or specified.
- E. Equipment which requires auxiliary devices or equipment in order to operate properly shall have such auxiliary devices or equipment included as a part of its system.
- F. Equipment sizes, capacities and dimensions shown or specified shall be adhered to unless variations are specifically approved in writing.
- G. Materials and equipment shall not be used for any purpose other than that for which it is designed or is specified.
- H. Where existing materials or equipment is specifically shown or specified to be reused in the work, special care shall be used in removal, handling, storage, and reinstallation, to assure proper function in the completed work.
- I. CONTRACTOR shall arrange for transportation, storage and handling of products which require off-site storage, restoration or renovation.
- J. Salvaged Materials
  - 1. In the absence of special provisions to the contrary, salvaged materials, equipment or supplies are the property of OWNER and shall be cleaned and stored as directed by ENGINEER.
- K. Manufacturer's Instructions
  - 1. The installation of all work shall comply with manufacturer's written instructions. CONTRACTOR shall obtain and distribute copies of such instructions to parties involved in the installation including two copies to ENGINEER. One complete set of instructions shall be maintained at the job site during installation and until completion All products and equipment shall be handled, installed, connected, cleaned, conditioned and adjusted in accordance with the manufacturer's instructions and specified requirements. Should job conditions or specified requirements conflict with manufacturers instructions, such conflicts shall be called to ENGINEER'S attention for resolution and revised instructions.

L. Equipment Guarantee

1. All mechanical and electrical equipment, together with devices of whatever nature and all components, which are furnished and/or installed by CONTRACTOR shall be guaranteed. The guarantee shall be against manufacturing and/or design inadequacies, materials and workmanship, improper assembly, hidden damage, failure of devices and/or components, excessive leakage or other circumstances which would cause the equipment to fail under normal design and/or specific operating conditions for a period of one year or such longer period as may be shown and/or specified from and after the date of acceptance of the equipment by OWNER. Each piece of equipment, device or component which shall fail within the above specified term shall be replaced with reasonable promptness by CONTRACTOR without cost to OWNER.

M. Operating Characteristics

1. Rotating machinery shall be designed and fabricated to provide satisfactory operation without excessive wear and without excessive maintenance during its operating life. Rotating parts shall be statically and dynamically balanced and shall operate without excessive vibration.

N. Lubrication System

1. The minimum design criteria for lubrication of moving parts of the equipment shall include one week of continuous operation during which no lubricants shall be added to the system. The system shall also be designed to receive lubricants whether in operation or shut down, and shall not leak or waste lubricants under either condition. The manufacturer's recommendations of grade and quality and a supply of the lubricants so recommended in quantities sufficient to conduct startup and testing operations shall be furnished with the equipment.

O. Safety Requirements

1. Screens, guards or cages shall be provided for all exposed, rotating or moving parts in accordance with accepted practices of applicable governmental agencies.

P. Nameplates

1. Each major component of equipment shall have the manufacturers name, catalog and/or model number, serial number and applicable performance requirements and characteristics embossed, stamped, or engraved on a stainless steel plate securely attached to the item of equipment.

Q. Anchor Bolts

1. The manufacturer shall provide stainless steel anchor bolts for each piece of equipment furnished.

1.02 TRANSPORTATION AND HANDLING

- A. Materials and equipment shall be loaded and unloaded by methods affording adequate protection against damage. Every precaution shall be taken to prevent injury to the materials or equipment during transportation and handling. Suitable power equipment will be used and the materials or equipment shall be under control at all times. Under no

condition shall the materials or equipment be dropped, bumped or dragged. When a crane is used, a suitable hook or lift sling shall be used. The crane shall be so placed that all lifting is done in a vertical plane. Materials or equipment skid loaded, palletized or handled on skidways shall not be skidded or rolled against materials or equipment already unloaded.

- B. Materials and equipment shall be delivered to the job site by means that will adequately support it and not subject it to undue stresses. Contractor shall promptly inspect the products for damage and defects and conformance with the specification. Materials and equipment damaged or injured in the process of transportation, unloading or handling will be rejected and shall be immediately removed from the site.

#### 1.03 STORAGE AND PROTECTION

- A. All materials and equipment shall be stored in accordance with the manufacturer's instructions, with seals and labels intact and legible. Items subject to damage by the elements shall be stored in weathertight enclosures. Temperature and humidity shall be maintained within the ranges required by the manufacturer's instructions. Fabricated items shall be stored above the ground on blocking or skids. Items which are subject to deterioration shall be covered with impervious coatings with adequate ventilation to avoid condensation. Loose granular materials shall be stored in a well-drained area on solid surfaces to prevent mixing with foreign matter. Any items which will come in contact with potable water shall be stored off the ground so as to prevent contamination.
- B. Storage shall be arranged in such a manner to provide easy access for inspection. Periodic inspections shall be made of all stored items to assure that they are maintained under specified conditions, and free from damage or deterioration.
- C. After installation, CONTRACTOR shall provide substantial coverings as necessary to protect installed items from damage, from traffic, and subsequent construction operations. Coverings shall be removed when no longer needed.

#### PART 2 - MATERIALS AND EQUIPMENT

(Not Applicable)

#### PART 3 - EXECUTION

(Not Applicable)

**END OF SECTION**



## SECTION 01630

### SUBSTITUTIONS AND PRODUCT OPTIONS

#### PART 1 - GENERAL

##### 1.01 REQUESTS FOR REVIEW

- A. Requests to review substitute items of material and equipment will not be accepted by the Engineer from anyone other than the Contractor. If the Contractor wishes to furnish or use a substitute or equivalent item of material or equipment, the Contractor shall make written application to the Engineer for acceptance, certifying that the proposed substitute will perform adequately the functions called for by the general design, be similar and of equivalent substance to that specified and be suited to the same use and capable of performing the same function as that specified. The application will state whether or not acceptance of the substitute for use in the work will require a change in Drawings or Specifications to adapt the design to the substitute and whether or not incorporation or use of the substitute in connection with the work is subject to payment of any license fee or royalty. All variations of the proposed substitute from that specified shall be identified in the application and available maintenance, repair and replacement service will be indicated. The application will also contain an itemized estimate of all costs that will result directly or indirectly from acceptance of such substitute, including costs of redesign and claims of other contractors affected by the resulting change, all of which shall be considered by the Engineer in evaluating the proposed substitute. The Engineer may require the Contractor to furnish at the Contractor's expense additional data about the proposed substitute. The Engineer will be the sole judge of acceptability, and no substitute will be ordered or installed without the Engineer's prior written acceptance. The Owner may require the Contractor to furnish at the Contractor's expense, a special performance guarantee or other surety with respect to any substitute.

##### 1.02 SUBSTITUTION AFTER EXECUTION OF AGREEMENT

- A. After execution of the Agreement, substitution of materials or equipment supplied by manufacturers or suppliers other than those listed, will be considered only if it is demonstrated by the Contractor that:
1. The material or equipment proposed for substitution is superior in design, construction and/or efficiency to that of the listed manufacturer or supplier;
  2. The material proposed for substitution is in every way equal to that of the listed supplier, and that availability and/or delivery of listed materials within the time frame scheduled cannot be met; or
  3. The material proposed for substitution is in every way equal to that of the listed supplier and is available at a lower cost. In the event such a substitution is allowed, the Contractor shall accept and execute a Change Order reducing the Contract Price by an amount equal to the cost differential.

### 1.03 EQUIVALENT MATERIALS AND EQUIPMENT

- A. Whenever materials or equipment are specified or described in the Drawings or fabricator, supplier or distributor, the naming of the item is intended to establish the type, function, and quality required. Unless the name is followed by words indicating that no substitution is permitted, materials or equipment of other manufacturers, fabricators, suppliers or distributors may be accepted by the Engineer to determine that the material or equipment proposed is equivalent to that named.
- B. It is not the intent of the Contract Documents to function as proprietary specifications. Where a particular manufacturer make and model are cited and specifically required for interchangeability of parts and/or match existing equipment, this has been so stated in the Specifications.

#### PART 2 - PRODUCTS

(Not Applicable)

#### PART 3 - EXECUTION

(Not Applicable)

**END OF SECTION**

## SECTION 01700

### CONTRACT CLOSEOUT

#### PART 1 - GENERAL

##### 1.01 DESCRIPTION OF REQUIREMENTS

###### A. Definition

Closeout is defined to include general requirements near end of Contract Time, in preparation for final acceptance, final payment, normal termination of contract, occupancy by OWNER and similar actions evidencing completion of the work. Specific requirements for individual units of work are specified in sections of Division 2 through 16. Time of closeout is directly related to "Substantial Completion", and therefore may be either a single time period for entire work or a series of time periods for individual parts of the work which have been certified as substantially complete at different dates. That time variation (if any) shall be applicable to other provisions of this section.

##### 1.02 PREREQUISITES TO SUBSTANTIAL COMPLETION

- A. When the CONTRACTOR considers the work to be substantially complete, he shall submit to the ENGINEER: a written notice that the work, or designated portion thereof, is substantially complete; and a list of items to be completed or corrected.
- B. Within a reasonable time after receipt of such notice, the ENGINEER will make an inspection to determine the status of completion.
- C. Should the ENGINEER determine that the work is not substantially complete, the ENGINEER will promptly notify the CONTRACTOR, in writing, giving the reasons. The CONTRACTOR shall remedy the deficiencies in the work and send a second written notice of substantial completion to the ENGINEER. The ENGINEER will reinspect the work.
- D. When the ENGINEER finds that the work is substantially complete, he will prepare and deliver to the OWNER a tentative Certificate of Substantial Completion with a tentative list of items to be completed or corrected before final payment. After consideration of any objections made by the OWNER as provided in Conditions of the objections made by the OWNER as provided in Conditions of the Contract, and when the ENGINEER considers the work substantially complete, he will execute and deliver to the OWNER and the CONTRACTOR a definite Certificate of Substantial Completion with a revised tentative list of items to be completed or corrected.
- E. When the CONTRACTOR considers the work complete, he shall submit written certification that the Contract Documents have been reviewed, the work has been inspected for compliance with the Contract Documents, the work has been completed in accordance with the Contract Documents, equipment and systems have been tested in the presence of the OWNER's representative and are operational, and the work is completed and ready for final inspection.
- F. With reasonable promptness after receipt of such certification, the ENGINEER will make an inspection to verify the status of completion. Should the ENGINEER consider that the work is incomplete or defective, he will promptly notify the CONTRACTOR, in writing, listing the incomplete or defective work. The CONTRACTOR shall take immediate steps to remedy the stated deficiencies and send a second written certification to the ENGINEER that the work is complete. The ENGINEER will reinspect the work.

- G. Should the ENGINEER perform reinspections due to failure of the Work to comply with the claims of status of completion made by the CONTRACTOR, the OWNER will compensate the ENGINEER for such additional services and the OWNER will deduct the amount of such compensation from the final payment to the CONTRACTOR.

#### 1.03 CLOSEOUT SUBMITTALS

- A. When the ENGINEER finds that the work is acceptable under the Contract Documents, he shall request the CONTRACTOR to make closeout submittals.

The CONTRACTOR's closeout submittals shall include:

1. Evidence of compliance with requirements of governing authorities.
2. Project Record Documents.
3. Operating and Maintenance Data
4. Evidence of Payment and Release of Liens.
5. Certificate of Insurance for Products and Completed Operations.
6. Warranties and Bonds (required for the Correctional Period and Maintenance Period)
7. Spare parts and maintenance materials.

#### 1.04 ADDITIONAL CLOSEOUT REQUIREMENTS

- A. Project Record Documents
  1. The CONTRACTOR shall keep one (1) Record copy of all specifications, drawings, addenda, modifications, shop drawings, field test records, and samples at the site in good order and annotated in red to show all changes made during the construction process. These shall be available to the ENGINEER for examination and shall be delivered to the ENGINEER for the OWNER upon completion of the work.
  2. Documents and samples shall be stored in the CONTRACTOR's field office apart from documents used for construction. The CONTRACTOR shall provide files and racks for storage of documents, and a locked cabinet or secure storage space for storage of samples. Documents shall be maintained in a clean, dry, legible condition and in good order.
  3. Record Documents shall not be used for construction purposes.
  4. Each Document shall be labeled "PROJECT RECORD" in neat, large printed letters.
  5. Information shall be recorded by the CONTRACTOR, on a daily basis, concurrently with construction progress. No work shall be concealed until required information is recorded on the CONTRACTOR's Record Drawings.
  6. Drawings shall be legibly marked to record actual construction information on: depths of various elements of foundation in relation to finish first floor datum;

horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements; location of internal utilities and appurtenances concealed in the construction, referenced to visible and accessible features of the structure; field changes of dimension and detail; changes made by Field Order or by Change Order; and details not on original contract drawings.

7. Specifications and Addenda shall have each section legibly marked to record: manufacturer, trade name, catalog number, and supplier of each product and item of equipment actually installed; and changes made by Field Order or by Change Order.
8. At contract closeout Record Documents shall be delivered to the ENGINEER for the OWNER. The submittal shall be accompanied with a transmittal letter in duplicate, containing:
  1. Date
  2. Project title and number
  3. CONTRACTOR's name and address
  4. Title and number of each Record Document
  5. Signature of CONTRACTOR or his authorized representative

**B. As-Built Survey Requirements**

1. The CONTRACTOR shall provide the ENGINEER with an as-built survey as follows:
2. After completion of the construction, the as-built configuration (both horizontally and vertically) of all the facilities shall be determined and a complete set of as-built drawings prepared.
3. The survey drawing shall be prepared in AutoCAD (2018 or earlier version) format showing all the as-built improvements and elevations where proposed work is shown on the construction drawings. The CONTRACTOR shall submit three (3) sets of check prints to the ENGINEER for approval prior to the request for final inspection. After the check prints are approved, the CONTRACTOR shall submit four (4) sets of certified prints and a copy of the AutoCAD drawings on a compact disc (CD).
4. The as-built survey shall be performed and certified by a registered Florida Land Surveyor meeting the Florida minimum technical standards for surveys and the Surveyor shall provide to the ENGINEER a copy of the Surveyor's professional liability insurance coverage in the amount of one million dollars (\$1,000,000.00). The survey shall be certified to the OWNER.

**1.05 WARRANTIES AND BONDS**

- A. The CONTRACTOR shall compile and submit to the ENGINEER in duplicate, for review and transmittal to the OWNER, warranties, bonds, service and maintenance contracts as specified in the respective sections of Specifications. Submittal shall be made within ten days after Substantial Completion and prior to final request for payment.

1.06 FINAL STATEMENT OF ACCOUNTING

- A. The CONTRACTOR shall submit a final statement of accounting to the ENGINEER. The statement shall reflect all adjustments to the Contract Sum.
1. The original Contract Sum
  2. Additions and deductions resulting from:
    - a. Previous Change Orders
    - b. Deductions for uncorrected work
    - c. Deductions for liquidated damages
    - d. Deductions for reinspection payments
    - e. Other adjustments
    - f. Allowance
    - g. Unit Prices
    - h. Penalties and Bonuses
  3. Total Contract Sum, as adjusted
  4. Previous payments
  5. Sum remaining due

1.07 FINAL CHANGE ORDER

- A. The ENGINEER will prepare a final Change Order, if required, reflecting approved adjustments to the Contract Price which were not previously made by Change Orders.

1.08 FINAL APPLICATION FOR PAYMENT

- A. The CONTRACTOR shall submit the final Application for Payment in accordance with procedures and requirements stated in the Conditions of the Contract.

PART 2 - PRODUCTS

(Not Applicable)

PART 3 - EXECUTION

(Not Applicable)

**END OF SECTION**

## SECTION 01710

### FINAL CLEANING

#### PART 1 - GENERAL

##### 1.01 DESCRIPTION OF REQUIREMENTS

- A. The CONTRACTOR shall execute cleaning, during progress of the work, and at the completion of the work, as required by General Conditions.
- B. Cleaning and disposal operations shall comply with all applicable codes, ordinances, regulations, and anti-pollution laws.
- C. Refer to Section 01500 - *Temporary Facilities and Controls* for additional requirements.

#### PART 2 - MATERIALS

- A. The CONTRACTOR shall:
  - 1. Use only those materials which will not create hazards to health or property and which will not damage surfaces.
  - 2. Use only those cleaning materials and methods recommended by manufacturer of the surfaces to be cleaned.
  - 3. Use cleaning materials only on surfaces recommended by cleaning material manufacturer.

#### PART 3 - EXECUTION

##### 3.01 CLEANING DURING CONSTRUCTION

- A. The CONTRACTOR shall:
  - 1. Execute periodic cleaning to keep the work, the site and adjacent properties free from accumulations of waste materials, rubbish and windblown debris, resulting from construction operations.
  - 2. Provide on-site containers for the collection of waste materials, debris and rubbish. Rental of refuse/waste containers must fully comply with the requirements of Section 01500 - *Temporary Facilities and Controls*.
  - 3. Remove waste materials, debris and rubbish from the site at least once a week and dispose of at legal disposal areas away from the site.
  - 4. Prior to final completion, CONTRACTOR shall conduct an inspection of work areas, to verify that the entire work is clean.

### 3.02 FINAL CLEANING

#### A. The CONTRACTOR shall:

1. Employ skilled workmen for final cleaning.
2. Remove grease, mastic, adhesives, dust, dirt, stains, and other foreign materials from sight-exposed surfaces.
3. Broom clean exterior paved surface; rake clean other surfaces of the grounds.
4. Except as otherwise indicated or requested by the ENGINEER, remove temporary protection devices and facilities which were installed during the course of the work to protect previously completed work during the remainder of the construction project.
5. Prior to final completion, CONTRACTOR shall conduct an inspection of work areas, to verify that the entire work is clean.
6. Where extra materials of value remaining after completion of the associated work have become the OWNER's property, dispose or store at the site, as directed by the ENGINEER.

**END OF SECTION**



**DIVISION 2**  
**SITE CONSTRUCTION**

## SECTION 02140

### DEWATERING

#### PART 1 - GENERAL

##### 1.01 DESCRIPTION OF WORK

- A. Scope: In general, the work specified in this section of the specifications shall consist of supplying labor, materials, and plant, and performing all work necessary to lower and control the groundwater levels and hydrostatic pressures to permit all excavations and construction specified under this Contract to be performed in the dry. Dewatering activities shall conform to the conditions of the SFWMD dewatering general water use permit conditions (Chapter 40E-20.302) including short term dewatering operations.
- B. Examination of Site: The Contractor shall take all steps that he considers necessary to familiarize himself with the site conditions, the ground conditions and the groundwater conditions. It is expressly understood that neither the Owner nor the Engineer will be held responsible for any interpretations or conclusions drawn by the Contractor.

#### PART 2 - PRODUCT

##### 2.01 METHOD AND EQUIPMENT

- A. The Contractor may use any dewatering method he deems feasible so long as it results in working in the dry and in stable soil conditions. It is the intent of these specifications that an adequate dewatering system be installed to lower and control the groundwater in order to permit excavation, construction of the structures, construction of pipelines, and the placement of the fill materials, all to be performed under dry conditions. The dewatering system shall be adequate to pre-drain the water-bearing strata above and below the bottom of the foundations, the drains, the sewers and all other excavations. An adequate weight of fill material shall be in place prior to discontinuing operation of dewatering to prevent buoyancy of the structure.

#### PART 3 - EXECUTION

##### 3.01 GENERAL

- A. The Contractor shall be solely responsible for the arrangement, location and depths of the dewatering system necessary to accomplish the work described under this section of the specifications. The dewatering shall be accomplished in a manner that will reduce the hydrostatic head below any excavation to the extent that the water level and piezometric water levels in the construction area are below the prevailing excavation surface; will prevent the loss of fines, seepage, boils, quick conditions, or softening of the foundation strata; will maintain stability of the sides and bottom of the excavation; and will result in all construction operations being performed in the dry.
- B. Disposal of Water: The Contractor shall promptly dispose of all water removed from the excavation in such a manner as will not endanger public health, damage public or private property, or affect adversely any portion of the work under construction or completed by him or any other Contractor. Contractor shall obtain written permission from the Owner of any property involved before digging ditches or constructing water courses for the removal of water.

C. Siltation and Erosion

1. The Contractor shall take steps and make suitable provisions to minimize siltation and erosion which may result from, or as a result of, his operations during the course of construction of this project.
2. The methods and provisions utilized by the Contractor to minimize siltation and erosion shall be approved by the Engineer and shall be in conformance with current Florida Department of Environmental Protection and South Florida River Water Management District practices and regulations.

D. Inadequate System: If the dewatering requirements are not satisfied due to inadequacy or failure of the dewatering system, then loosening of the foundation strata, or instability of the slopes, or damage to the foundations or structures may occur. The supply of all labor, materials, and plant, and the performance of all work necessary to carry out additional work for reinstatement of the structures of foundation soil resulting from such inadequacy or failure shall be undertaken by the Contractor to the approval of the Engineer, and at no additional expense to the Owner.

**END OF SECTION**

## SECTION 02200

### EARTHWORK

#### PART 1 - GENERAL

##### 1.01 DESCRIPTION OF WORK

- A. The extent of earthwork is shown on the drawings.
- B. Related Work Specified Elsewhere  
*Section 02222 - Trenching, Backfilling and Compacting.*

##### 1.02 QUALITY ASSURANCE

- A. Codes and Standards
  - 1. Perform earthwork in compliance with applicable requirements of governing authorities having jurisdiction.
- B. Testing and Inspection Service
  - 1. The Owner will engage a testing and inspection service, to include testing soil materials proposed for use in the work and field facilities for quality control testing during earthwork operations.
  - 2. Soil survey for satisfactory soil materials and samples of soil materials shall be furnished to the testing service by the Contractor.
  - 3. All test reports must be signed by a licensed Professional Engineer.

##### 1.03 JOB CONDITIONS

- A. Existing Utilities
  - 1. Locate existing underground utilities in the areas of work before starting earthwork operations. Where utilities are to remain in place, provide adequate means of protection during earthwork operations.
  - 2. Should uncharted, or incorrectly charted, piping or other utilities be encountered during excavation, consult the utility owner immediately for directions. Cooperate with the Owner and public and private utility companies in keeping their respective services and facilities in operation. Repair damaged utilities to the satisfaction of the utility owner.
  - 3. Do not interrupt existing utilities serving facilities occupied and used by the Owner or others, except when permitted in writing by the Engineer and then only after acceptable temporary utility services have been provided.
  - 4. Demolish and completely remove from the site underground utilities indicated to be removed. Coordinate with local utility companies for shut-off of services if lines are active.

B. Use of Explosives

1. The use of explosives is not permitted.

C. Temporary Protection

1. Barricade open excavations made as a part of earthwork operations and post with warning lights. Operate warning lights as recommended by authorities having jurisdiction.
2. Protect structures, utilities, sidewalks, pavements, and other facilities from damages caused by settlement, lateral movement, undermining, washout, and other hazards created by earthwork operations.

PART 2 - PRODUCTS

2. 01 SOIL MATERIALS

A. Backfill and Fill Materials

1. Soil materials for use as backfill and fill shall be free of rock or gravel larger than 2-inches in any dimension, debris, waste, vegetable, and other deleterious matter.
2. Use excavated or borrow material that has been sampled, tested and certified as satisfactory soil material.

B. Subbase Material

1. Properly graded mixture of natural and crushed gravel, crushed stone, crushed slag, natural or processed sand that will readily compact to the required density.
2. Use material complying with AASHTO M147, Grade A, unless otherwise indicated or acceptable to the Engineer.

PART 3 - EXECUTION

3. 01 INSPECTION

- A. Examine the areas and conditions under which earthwork is to be performed and notify the Engineer in writing of conditions detrimental to the proper and timely completion of the work. Do not proceed with the work until unsatisfactory conditions have been corrected in an acceptable manner.

3. 02 EXCAVATION

- A. Excavation consists of the removal and disposal of materials encountered when establishing the required grade elevations.
1. Where it is necessary to cut roots projecting into an excavation or to trim branches for equipment clearance, all severed root ends or cuts to branches over 1/2-inch diameter shall be treated with an asphalt base pruning paint. Backfill over exposed roots as soon as possible.

B. Excavation Classifications

1. The following classifications of excavation will be made when unanticipated rock excavation is encountered in the work. Do not perform such work until material to be excavated has been cross-sectioned and classified by the Engineer. Such excavation will be paid for under the appropriate bid item in the Bid Proposal.
  - a. Earth excavation includes the removal and disposal of pavements and other obstructions visible on the ground surface, underground structures and utilities indicated to be demolished and removed, material of any classification indicated in data on subsurface conditions, and all other materials encountered that are not classified as rock excavation or unauthorized excavation.
  - b. Rock excavation consists of the removal and disposal of materials encountered that cannot be excavated with a 3/4 cubic yard capacity power shovel without drilling and blasting, or continuous use of a ripper or other special equipment, except such materials that are classified as earth excavation. Typical of materials classified as rock are boulders 1/2 cu. yard or more in volume, solid rock, rock in ledges, and rock-hard cementitious aggregate deposits.
  - c. Intermittent drilling that may be performed to increase production and is not necessary to permit excavation of the material encountered will be classified as earth excavation.

C. Rock shall be removed to the following limits:

1. Two (2) feet outside of concrete work for which forms are required, except footings. One foot outside the perimeters of footings.
2. In pipe trenches, a minimum of 4-inches below invert elevation of pipe and 2-feet wider than the inside diameter of pipe, but not less than 3-foot minimum trench width.
3. Neat outside dimensions of concrete work where no forms are required.
4. Under slabs on grade, 6-inches below bottoms of concrete slab.

D. Unauthorized excavation consists of removal of materials beyond indicated elevations without the specific direction of the Engineer. Replace unauthorized excavation by backfilling and compacting as specified for authorized excavations of the same classification, unless otherwise directed by the Engineer.

E. Additional Excavation

1. When excavation has reached required subgrade elevations, notify the Engineer who will make an inspection of conditions.
2. If unsuitable materials are encountered at the required subgrade elevations, carry excavations deeper and replace the excavated material as directed by the Engineer.
3. Removal of unsuitable material and its replacement as directed will be paid for under the appropriate bid item in the Bid Proposal.

F. Dewatering

1. Prevent surface water and subsurface or groundwater from flowing into excavations, and flooding the project site and surrounding area.
2. Do not allow water to accumulate in excavations. Remove water from excavations to prevent softening of foundation bottoms, undercutting footings, and soil changes detrimental to the stability of subgrades and foundations. Provide and maintain pumps, well points, sumps, suction and discharge lines, and other dewatering system components necessary to convey the water away from the site.
3. Convey water removed from excavations and rainwater to collecting or run-off areas. Do not use trench excavations for site utilities as temporary drainage ditches.
4. Contractor shall be required to obtain any demolition permits as may be required due to dewatering volume requirements set by local and state agencies.

G. Material Storage

1. Stockpile excavated materials classified as satisfactory soil material where directed, until required for fill. Place, grade, and shape stockpiles for proper drainage.
2. Dispose of excess unsatisfactory soil material, trash and debris, as specified.

3.03 BACKFILL AND FILL

A. Ground Surface Preparation

1. Remove vegetation, debris, unsatisfactory soil materials, obstructions, and deleterious materials from ground surface prior to placement of fills. Plow, strip, or break-up sloped surfaces steeper than one vertical to four horizontal so that fill material will bond with existing surface.
2. When the existing ground surface has a density less than that specified under "Compaction" for the particular area classification, break-up the ground surface, pulverize, moisture-condition to the optimum moisture content, and compact to the required depth and percentage of maximum density.

B. Placement and Compaction

1. Place backfill and fill materials in layers not more than 8-inches in loose depth for material compacted by heavy compaction equipment, and not more than 4-inches loose depth for material compacted by hand-operated equipment.
2. Before compaction, moisten or aerate each layer as necessary to provide the optimum moisture content of the soil material. Compact each layer to the required percentage of maximum dry density or relative dry density for each area classification. Do not place backfill or fill material on surfaces that are muddy, frozen, or contain frost or ice.
  - a. Backfill excavations as promptly as the work permits, but not until completion of inspection, testing, approval, and recording location of underground utilities, as required.

### 3. 04 COMPACTION

#### A. General

1. Control soil compaction during construction, providing the minimum percentage of density specified for each area classification.
2. Percentage of Maximum Density Requirement:
  - a. Lawn Areas: Compact each layer of backfill or fill material at 85% maximum density (optimum moisture).
  - b. Walkways: Compact top 6-inches of subgrade and each layer of backfill or fill material at 95% maximum density (optimum moisture).

#### B. Moisture Control

1. Where the subgrade or layer of soil materials must be moisture conditioned before compaction, uniformly apply water to the surface of subgrade, or layer of soil material, to prevent free water appearing on the surface during or subsequent to compaction operations. Remove and replace, or scarify and air dry, soil material that is too wet to permit compaction to specified density.
2. Soil material that has been removed because it is too wet to permit compaction may be stockpiled or spread and allowed to dry. Assist drying by disking, harrowing or pulverizing, until the moisture content is reduced to a satisfactory value.

### 3. 05 FIELD QUALITY CONTROL

#### A. Quality Control Testing During Construction:

1. Testing service must inspect and approve subgrades and fill layers before further construction work is performed thereon.
2. Secure representative samples of the fill material and determine the Standard Density and required moisture content to be maintained by the Moisture-Density Relation Test ASTM D-1557.
3. Make in-place soil density tests during compaction operations in accordance with ASTM D-1556.
4. If, in the opinion of the Engineer, based on reports of the testing service and inspection, the subgrade or fills which have been placed are below the specified density, additional compaction and testing will be required until satisfactory results are obtained.
  - a. The results of density tests of soil-in-place will be considered satisfactory if the average of any four consecutive density tests which may be selected are in each instance equal to or greater than the specified density, and if not more than one density test out of five has a value more than 2% below the required density.



3. 06 MAINTENANCE

A. Reconditioning Compacted Areas

1. Where completed compacted areas are disturbed by subsequent construction operations or adverse weather, scarify the surface, re-shape, and compact to the required density prior to further construction.

3. 07 DISPOSAL OF EXCESS AND WASTE MATERIALS

A. Removal from Owner's Property

1. Remove waste materials, including excavated material classified as unsatisfactory soil material, trash and debris, and dispose of it off the Owner's property in a lawful manner.

**END OF SECTION**

## SECTION 02222

### TRENCHING, BACKFILLING AND COMPACTING

#### PART 1 - GENERAL

##### 1.01 DESCRIPTION OF WORK

- A. The extent of trenching, backfilling and compacting is shown on the drawings.
- B. This section includes furnishing equipment, labor and materials, and performing all operations necessary and incidental to perform the required work.

#### PART 2 - PRODUCTS

(Not Applicable)

#### PART 3 - EXECUTION

##### 3.01 CLEARING OF THE SITE

- A. The site of the work shall be cleared of all trees, shrubs, paving and objectionable material which interfere with the prosecution of the proposed work. Trees and shrubs which will not interfere with construction shall be protected from damage. Clearing shall be considered as an incidental item of excavation.

##### 3.02 EXCAVATION

###### A. General

- 1. Perform excavation described of whatever substance encountered to the dimensions and depths specified or shown on the drawings. Undercutting will not be permitted, except when ordered by the ENGINEER. Material suitable for backfill shall be stockpiled near the site. Rock or other material undesirable for backfill shall be spoiled outside the area in a neat manner, as directed by the ENGINEER. Where it is necessary to cut roots projecting into an excavation or where it is necessary to trim branches for equipment clearance, all severed root ends or cuts to branches over 1/2-inch diameter shall be treated with an asphalt base pruning paint. Backfill over exposed roots as soon as possible.

###### B. Rock

- 1. Where encountered in the trench bed, rock shall be excavated to a depth of 1/4 of the pipe diameter below the bottom of the pipe but in no case less than 4-inches. All undercut trench excavation shall be backfilled and tamped with materials as specified in the following paragraphs under Unstable Subgrade.

###### C. Unstable Subgrade

- 1. In the event that unsuitable material is encountered at or below the excavation depth specified or shown on the drawings, the ENGINEER shall be notified. Such material shall be removed and replaced with suitable material. Methods and materials used for replacement shall be one of the following as directed by the ENGINEER in writing.

- a. Suitable earth or sand, compacted in the trench. Materials shall be furnished as a part of the Bid Proposal item covering excavation and backfill.
  - b. Gravel or crushed limerock, compacted in the trench and paid for under the appropriate item.
  - c. Existing materials, stabilized after removal and then replaced and compacted in the trench at no additional cost to the OWNER.
2. The ENGINEER shall determine the methods and materials to be used, based upon the condition of the excavation, the pipe structure to be supported, and the availability and character of stabilizing materials.

D. Trenches

1. Keep pipe laying operation as close to the excavation operation as possible during the prosecution of the work. The ENGINEER reserves the right to stop the excavation at any time when, in his opinion, the excavation is opened too far in advance of the pipe laying.
2. Pipe trenches shall be only of sufficient width to provide a free working space on each side of the pipe. To prevent excess pressure on the pipe, the maximum width of trench at the top of the pipe and at the bottom of the trench shall not be greater than 2-feet more than the greatest exterior diameter of the pipe. If this maximum width is exceeded, it shall be the CONTRACTOR's responsibility to provide, at no additional cost to the OWNER, such additional bedding or select backfill materials as the ENGINEER may require. The excavation below the spring line shall be made to conform as near as possible to the shape of the lower third of the pipe. To protect the pipe lines from unusual stresses, all work shall be done in open trenches. Excavation shall be made for bells of all pipes and of sufficient depth to permit access to the joint for construction and inspections. In no case will the bells be used to support the body of the pipe.
3. In order to avoid existing utilities, at times it may be necessary for the pipe to be laid deeper than the minimum cover specified in the preceding paragraph. At such time the CONTRACTOR will not be allowed extra compensation for additional excavation involved.
4. In case excavation has been made deeper than necessary, a layer of concrete, fine gravel or other material satisfactory to the ENGINEER shall be placed, at no extra cost, to secure a firm foundation for the lower third of each pipe. Where possible, excavated material shall be placed so as not to interfere with public travel. Bridging shall be provided to afford necessary access to public or private premises. Bridging shall be considered as part of the excavation operation and shall be supplied at no additional cost to the OWNER.

E. Structural: (For inlets, manholes, and similar structures)

1. Remove sufficient material to allow proper space for erecting and removing forms. The elevations of the bottoms of footings, if shown on the drawings, shall be considered as approximate only, and the ENGINEER may order, in writing, such changes in dimensions or elevations of footings as may be deemed necessary to secure a satisfactory foundation. Excavation for structures shall be sufficient to leave at least 12-inches in the clear between their outer surfaces and the embankment or timber that may be used to protect them. Backfill of earth

under structures will not be permitted. Excess excavation for structures shall be filled with thoroughly compacted sand, gravel, or concrete at the expense of the CONTRACTOR.

2. After excavation for a structure is completed, the CONTRACTOR shall notify the ENGINEER to that effect. No concrete or reinforcing steel shall be placed until the ENGINEER has approved the depth of the excavation and the character of the foundation material.

F. Sheeting and Shoring

1. The CONTRACTOR shall provide all trench and structural bracing, sheeting or shoring necessary to construct and protect the excavation, existing utilities, structures and private property of all types and as required for the safety of the employees. Sheeting shall be removed or cut off by the CONTRACTOR during backfilling operations as directed by the ENGINEER. Removal of shoring for structures shall be done in such a manner as not to disturb or mar finished masonry or concrete surfaces.

3.03 DRAINAGE

- A. Grading shall be controlled in the vicinity of excavations so that the surface of the ground will be properly sloped to prevent water from running into trenches or other excavated areas. Any water which accumulates in the excavations shall be removed promptly by well point or by other means satisfactory to the ENGINEER in such a manner as to not create a nuisance to adjacent property or public thoroughfare. Trenches shall be kept dry while pipe is being laid. Bridging of dewatering pipe shall be provided where necessary. Pumps and engines for well point systems shall be operated with mufflers, and at a minimum noise level suitable to a residential area. The CONTRACTOR will not be allowed to discharge water into the OWNER's storm drainage system without the written approval of the ENGINEER. Approval will be subject to the condition that the storm sewer be returned to its original condition.
- B. The CONTRACTOR is responsible for carrying the water to the nearest ditch or body of water and for obtaining the necessary permission to use same. The CONTRACTOR shall be financially responsible for any nuisance created due to carrying off water from his drainage system.

3.04 BACKFILL

A. Trenches

1. Trenches shall be backfilled immediately after the pipe is laid unless other protection for the pipe line is provided. Clean earth, sand, crushed limerock or other material approved by the ENGINEER shall be used for backfill. Backfill material shall be selected, deposited and compacted (simultaneously on both sides of the pipe) so as to eliminate the possibility of lateral displacement of the pipe. Backfill material shall be solidly tamped around the pipes in layers to a level at least 1-foot above the top of the pipe. Each layer shall be compacted to a maximum thickness of 6-inches.
2. In unpaved areas, the remainder of the backfill shall be deposited and then compacted by puddling, water flooding or mechanical tampers. Mechanical tamping of layers in unpaved areas shall be to a maximum thickness of 12-inches. In areas to be paved or repaved, the entire depth of backfill shall be deposited in layers and compacted by hand or mechanical tampers to a

maximum thickness of 6-inches. Compaction shall be carried out to achieve a density of at least 98% of the maximum density as determined by AASHTO, Method T-180. Under areas to be paved, puddling may be used for backfill consolidation after tamping to 1-foot over the pipe, as specified, provided the method is first approved by the ENGINEER and the density requirements are met.

3. In areas to be paved, density tests for determination of the specified compaction shall be made by a testing laboratory and spaced one in every 300-feet of trench cut. It is the intent of this specification to secure a condition where no further settlement of trenches will occur. When backfilling is completed, the roadway base for pavement replacement may be placed immediately. It will be the responsibility of the CONTRACTOR to restore the surface to the original grade wherever settlement occurs.

B. Structural

1. After completion of foundation footings and walls and other construction below the elevation of the final grades, and prior to backfilling, forms shall be removed and the excavation shall be cleared of all trash and debris. Material for backfilling shall consist of the excavation, borrow sand or other approved materials, and shall be free of trash, lumber or other debris. Backfill shall be placed in horizontal layers not in excess of 9-inches in thickness, and have a moisture content such that a density may be obtained to prevent excessive settlement or shrinkage. Each layer shall be compacted by hand or approved machine tampers with extreme care being exerted not to damage pipe or structures. Backfill shall be placed and compacted evenly against the exposed surfaces to prevent undue stress on any surface.

3.05 RESTORATION OF SURFACE IMPROVEMENTS

- A. Roadways, including shoulders, alleys and driveways of shell, limerock, stabilized soil or gravel, grass plots, sod, shrubbery, ornamental trees, signs, fences, or other surface improvements on public or private property which have been damaged or removed in excavating, shall be restored to conditions equal to or better than conditions existing prior to beginning work. Restoration of shoulders shall consist of sodding, seeding and mulching, or stabilizing with limerock as selected by the ENGINEER. The cost of doing this work shall be included in the cost of the various applicable items.
- B. Materials for unpaved roadways, road shoulders, alleys, or drive-ways, shall be compacted to a minimum of 98% of the maximum density as determined by AASHTO, Method T-180. The cost of this work and furnishing new materials shall be included in the cost of the applicable items of work as no separate payment will be made, unless a separate bid item is provided.

3.06 FINE GRADING

- A. Finished areas around structures shall be graded smooth and hand raked and shall meet the elevations and contours shown on the drawings. Lumber, earth clods, rocks and other undesirable materials shall be removed from the site.

3.07 DISPOSAL OF MATERIAL

- A. Such portions of the excavated materials as needed and as suitable, shall be used for backfilling and grading about the completed work to the elevations as shown on the drawings or as directed. Excavated material in excess of the quantity required for this

purpose shall be disposed of by the CONTRACTOR. The CONTRACTOR shall leave the earth over the trenches or other excavations in a neat and uniform condition acceptable to the OWNER.

### 3.08 TESTS

- A. The CONTRACTOR shall furnish facilities for making all density tests and make such restorations as may be necessary due to test operations. All density tests on backfill or base replacement will be made by a commercial testing laboratory employed by the OWNER and at such locations as may be recommended by the ENGINEER. If the densities as determined by the specified tests fall below the required minimums, the CONTRACTOR shall pay for all retests.

**END OF SECTION**

## SECTION 02605

### PRECAST CONCRETE MANHOLES AND STRUCTURES

#### PART 1 GENERAL

##### 1.01 SCOPE OF WORK

- A. Furnish all labor, materials and equipment required and install precast concrete stormwater manholes, stormwater structures, frames and covers, access hatches, manhole rungs, ladders and appurtenances as shown on the Drawings and as specified herein.

##### 1.02 RELATED WORK

- A. Excavation and backfill is included in Section 02220.
- B. Drainage structures and piping are included in Section 02720.

##### 1.03 SUBMITTALS

- A. Submit to the ENGINEER, in accordance with Section 01300, shop drawings, product data, materials of construction, and details of installation. Submittals shall include at least the following:
  - 1. Base sections, riser sections, eccentric and concentric conical top sections, flat slab tops, grade rings with notarized certificate indicating compliance with ASTM C478.
  - 2. Pipe connection to manhole.
  - 3. Manhole rungs, including method of installation and notarized certificate indicating compliance with pull-out resistance test specified herein.
  - 4. Manhole frame and cover with notarized certificate indicating compliance with ASTM A48, Class 30.
  - 5. Method of repair for minor damage to precast concrete sections.
  - 6. Building brick with notarized certificate indicating compliance with ASTM C62.
- B. Samples
- C. Design Data
  - 1. Precast concrete structures:
    - a. Six copies of sectional plan(s) and elevations showing dimensions and reinforcing-steel placement.
    - b. Six copies of structural calculations including assumptions.
    - c. Six copies of concrete design mix.

- D. Test Reports
  - 1. Precast concrete structures
    - a. Six (6) copies of concrete test cylinder reports from an approved testing laboratory certifying conformance with this Section.
- E. Certificates
- F. Manufacturers Installation (or Application) Instructions
- G. Statement of Qualifications
- H. Manufacturer's Field Report
- I. Project Record Documents
- J. Operation and Maintenance Data
- K. Warranties

#### 1.04 REFERENCE STANDARDS

- A. American Society for Testing and Materials (ASTM)
  - 1. ASTM A48 - Standard Specification for Gray Iron Castings.
  - 2. ASTM A615 - Standard Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement.
  - 3. ASTM C32 - Standard Specification for Sewer and Manhole Brick (Made from Clay or Shale).
  - 4. ASTM C33 - Standard Specification for Concrete Aggregates.
  - 5. ASTM C62 - Standard Specification for Building Brick (Solid Masonry Units Made from Clay or Shale)
  - 6. ASTM C 150 - Standard Specification for Portland Cement
  - 7. ASTM C207 - Standard Specification for Hydrated Lime for Masonry Purposes
  - 8. ASTM C443 - Standard Specification for Joints for Circular Concrete Sewer and Culvert Pipe, Using Rubber Gaskets
  - 9. ASTM C478 - Standard Specification for Precast Reinforced Concrete Manhole Sections
  - 10. ASTM D4101 - Standard Specification for Propylene Plastic Injection and Extrusion Materials.
- B. American Concrete Institute (ACI)
  - 1. ACI 318 - Building Code Requirements for Reinforced Concrete
  - 2. ACI 350R - Environmental Engineering Concrete Structures



- C. American Association of State Highway and Transportation Officials (AASHTO)
  - 1. Standard Specifications for Highway Bridges
- D. Occupational Safety and Health Administration (OSHA)
- E. Where reference is made to one of the above standards, the revision in effect at the time of bid opening shall apply.

#### 1.05 QUALITY ASSURANCE

- A. All material shall be new and unused.
- B. Materials' quality, manufacturing process and finished sections are subject to inspection and approval by ENGINEER or other OWNER representative. Inspection may be made at place of manufacture, at work site following delivery, or both.
- C. Materials will be examined for compliance with ASTM standards, this Section and approved manufacturer's drawings. Additional inspection criteria shall include, appearance, dimensions(s), blisters, cracks and soundness.
- D. Materials shall be rejected for failure to meet any requirements specified herein. Rejection may occur at place of manufacture, at work site, or following installation. Mark for identification rejected materials and remove from work site immediately. Rejected materials shall be replaced at no cost to OWNER.
- E. Repair minor damage to precast concrete sections by approved method, if repair is authorized by ENGINEER.

### PART 2 - PRODUCTS

#### 2.01 GENERAL

- A. Reference to a manufacturer's name and model or catalog number is for the purpose of establishing the standard of quality and general configuration desired.
- B. Like items of materials/equipment shall be the end products of one manufacturer in order to provide standardization for appearance, operation, maintenance, spare parts and manufacturer's service.
- C. Provide lifting lugs or holes in each precast section for proper handling.

#### 2.02 PRECAST CONCRETE MANHOLE SECTIONS

- A. Precast concrete base sections, riser sections, transition top sections, flat slab tops and grade rings shall conform to ASTM C478 and shall be in accordance with FDOT standards.
  - 1. Top section shall be eccentric cone where cover over pipe exceeds 4-ft. Top section shall be a flat slab where cover over top of pipe is 4-ft or less. Top section shall be a plastic lined flat slab where manhole riser sections are to be plastic lined.
  - 2. Base, riser and transition top sections shall have tongue and groove joints.
  - 3. Sections shall be cured by an approved method.

4. Precast concrete sections shall be shipped after concrete has attained 3000 psi compressive strength.
5. Design precast concrete base, riser, transition top, flat slab top and grade ring for a minimum H-20 loading plus earth load. Calculate earth load with a unit weight of 130 pcf.
6. Mark date of manufacture, name and trademark of manufacturer on the inside of each precast section.
7. Construct and install precast concrete base as shown on the Drawings and specified in FDOT standards.
8. Provide integrally cast knock-out panels in precast concrete manhole sections at locations, and with sizes shown on Drawings. Knock-out panels shall have no steel reinforcing.

## 2.03 PRECAST CONCRETE STRUCTURES

- A. Refer to FDOT Standards for inside dimensions, headroom requirements and minimum thickness of concrete.
- B. Manufacturer shall notify ENGINEER at least 5 working days prior to placing concrete during manufacturing process. ENGINEER may inspect reinforcing steel placement prior to placing concrete.
- C. Structural design calculations and Drawings shall be prepared and stamped by a professional engineer registered in Florida.
- D. Design Criteria
  1. Precast concrete
    - a. Minimum compressive strength shall be 5,000 psi at 28 days.
    - b. Maximum water-to-cement ratio shall be 0.40 by weight.
    - c. Minimum cement content shall be 600 lbs of cement per cubic yard of concrete.
  2. Manufactured products
    - a. Conform to ACI 318 and ACI 350R.
    - b. Analyze walls and slabs using accepted engineering principals.
    - c. When "fy" exceeds 40,000 psi, "z" (ACI 318) shall not exceed 95,000 psi. "fs" shall not exceed 50 percent of "fy".
    - d. Design products to support their own weight, weight of soil at 120 pcf, and a live load equal to AASHTO HS-20 applied to top slab.
    - e. Cast base slab and walls together to form a monolithic base section.

- f. Design structure walls for a water pressure of 90 psf. Originate pressure diagram at finished ground surface. Include lateral pressure from vehicles in accordance with AASHTO.
- g. Consider discontinuities in structure produced by openings and joints. Provide additional reinforcing around openings. Frame openings to carry full design loads to support walls.
- h. Prevent flotation, with ground water level at finished ground surface, by dead weight of structure and soil load above structure. Do not consider skin friction, soil friction, or weight of equipment in structure.
- i. Locate horizontal wall joints 18-in minimum from horizontal centerline of wall openings.
- j. Design structure with a minimum number of joints. Maximum number of structure sections, including top slab, shall be four.
- k. Provide lifting hooks for top slab.
- l. Locate access openings, wall sleeves and pipe penetrations as shown on Drawings.
- m. Wall sleeves shall be provided by the precast concrete manufacturer.

#### 2.04 BRICK MASONRY

- A. Bricks shall be sound, hard, uniformly burned, regular and uniform in shape and size. Underburned or salmon brick shall not be acceptable. Only whole brick shall be used.
  - 1. Bricks for channels and shelves shall conform to ASTM C32, Grade SS except that the mean of five tests for absorption shall not exceed 8 percent and no individual brick exceed 11 percent.
  - 2. Bricks for raising manhole frames to finished grade shall conform to ASTM C62.
- B. Mortar shall be composed of 1 part Portland cement, 2 parts sand, and hydrated lime not to exceed 10-lbs to each bag of cement. Portland cement shall be ASTM C150, Type II; hydrated lime shall conform to ASTM C207.
- C. Sand shall be washed, cleaned, screened, well graded with all particles passing a No.4 sieve and conform to ASTM C33.

#### 2.05 JOINTING PRECAST MANHOLE SECTIONS AND STRUCTURES

- A. Seal tongue and groove joints of precast manhole and structure sections with either rubber O-ring gasket or preformed flexible joint sealant. O-ring gasket shall conform to ASTM C443. Preformed flexible joint sealant shall be Kent Seal No.2 by Hamilton-Kent; Ram-Nek by K. T. Snyder Company or equal.
- B. Completed joint shall withstand 15 psi internal water pressure without leakage or displacement of gasket or sealant.

## 2.06 MANHOLE RUNGS

- A. Manhole rungs shall be either of the following types:
1. Cast aluminum alloy 6061-T6, drop front design, 12-in wide with an abrasive step surface conforming to OSHA requirements.
  2. Steel reinforced, copolymer polypropylene, 16-in wide, M. A. Industries Inc, PF Series or equal. Copolymer polypropylene shall conform to ASTM D4101 Classification PP0344 B33534 Z02. Steel reinforcing shall be 1/2-in diameter, conforming to ASTM A615, Grade 60 and shall be continuous throughout rung.

## 2.07 PIPE CONNECTIONS TO MANHOLE

- A. Connect pipe to manhole in the following ways:
1. Grout in place - Precast manhole section shall have a formed, tapered circular opening larger than the pipe outside diameter. Grout shall be non-shrink and waterproof equal to Hallemite, Waterplug or Embeco. Plastic pipe shall have a waterstop gasket secured to pipe with a stainless steel clamp.
  2. Flexible sleeve - Integrally cast sleeve in precast manhole section or install sleeve in a formed or cored opening. Fasten pipe in sleeve with stainless steel clamp(s). Coat stainless steel clamp(s) with bituminous material to protect from corrosion. Flexible sleeve shall be Lock Joint Flexible Manhole Sleeve; Kor-N-Seal connector; PSX Press-Seal Gasket or equal.
  3. Compression gasket - Integrally cast compression gasket in precast manhole section. Insert pipe into compression gasket. Compression gasket shall be A-Lok or equal.

## 2.08 DAMPPROOFING

- A. Dampproofing shall be Hydrocide 648 by Sonneborn Building Products; Dehydratine 4 by A. C. Horn Inc; RIW Marine Liquid by Toch Brothers or equal.

## PART 3 EXECUTION

### 3.01 INSTALLATION

- A. Manhole and Structure Installation.
1. Manhole and structure shall be constructed to the dimensions shown on the Drawings and as specified in FDOT standards. Protect all work against flooding and flotation. Construct cast-in-place bases in accordance with the requirements of Division 3 and the details shown on the Drawings.
  2. Place manhole base on a bed of 12-in screened gravel as shown on the Drawings. Set manhole base grade so that a maximum grade adjustment of 8-in is required to bring the manhole frame and cover to final grade.
    - a. Use precast concrete grade rings or brick and non-shrink mortar to adjust manhole frame and cover to final grade.
  3. Set precast concrete barrel sections and structures plumb with a 1/4-in maximum out of plumb tolerance allowed. Seal joints of precast barrel sections with either a

rubber O-ring set in a recess or preformed flexible joint sealant in sufficient quantity to fill 75 percent of the joint cavity. Fill the outside and inside joint with non-shrink mortar and finished flush with the adjoining surfaces. Caulk the inside of any leaking barrel section joint with lead wool or non-shrink grout to the satisfaction of the ENGINEER.

4. Allow joints to set for fourteen (14) hours before backfilling unless a shorter period is specifically approved by the ENGINEER.
5. Plug holes in the concrete barrel sections required for handling with a non-shrinking grout or non-shrinking grout in combination with concrete plugs. Finish flush on the inside.
6. Cut holes in precast sections to accommodate pipes prior to setting manhole sections in place to prevent jarring which may loosen the mortar joints.
7. Backfill carefully and evenly around manhole sections.

**B. Manhole Pipe Connections**

1. Construct manhole pipe connections, including pipe stubs, as specified above. Close or seal pipe stubs for future connections with a gasketed watertight plug.

**C. Manhole Rung Installation**

1. Aluminum Manhole Rungs
  - a. Grout aluminum manhole rungs into precast sections, on 12-in centers. Preform holes in riser and cone sections for rungs during casting. Holes for rungs shall be 1-1/8-inch in diameter and a minimum of 3-1/2-in deep.
  - b. Grout rungs into precast sections immediately after casting and placing in the curing area, or immediately after coring holes for manhole rungs into base section. Fill holes with grout consisting of Portland Type II cement and mortar sand in a 1 to 1/2 ratio mixed to a putty consistency.
  - c. Paint those parts of the rungs which are embedded with a heavy coating of zinc chromate or other approved paint.
2. Steel Reinforced Polypropylene Plastic Manhole Rungs
  - a. Preform holes for manhole rungs during casting of the riser and cone sections, using tapered form pins specifically made for preforming manhole rung holes.
  - b. Drive manhole rungs into preformed holes after concrete has developed a compressive strength of 3,000 psi.
  - c. Alternatively, cast manhole rungs into riser and cone sections when concrete is placed.
  - d. Drilling holes for manhole rungs may be used to accommodate field conditions when approved by the ENGINEER. Drill holes of diameter, spacing and depth required by manhole rung manufacturer.

3. Pull-out resistance test

- a. All manhole rung installation methods shall withstand a pull-out resistance test of 1,500 pounds.

D. Brickwork

1. Mix mortar only in such quantity as may be required for immediate use. Use mortar before initial set has taken place. Mortar shall be used within 1-1/2 hours and shall be constantly worked with hoe or shovel until used. Anti-freeze mixtures shall not be included in the mortar. Install masonry when the outside temperature is above 40 degrees F unless provisions are made to protect the mortar, bricks and finished work from frost by heating and enclosing the work with tarpaulins or other suitable material. ENGINEER's decision regarding the adequacy of protection against freezing shall be final.
2. Construct channels and shelves of brick and concrete as shown on the Drawings and as specified in FDOT standards. Brick lined channels shall correspond in shape with the lower half of the pipe. Set shelf elevation at crown of highest pipe and slope 1-in/ft to drain toward the flow through channel. Construct brick surfaces exposed to sewage flow with nominal 2-in by 8-in face exposed (i.e. bricks on edge).

E. Setting Manhole Frame and Cover

1. Set manhole covers and frames in a full mortar bed. Utilize bricks or precast concrete grade rings, a maximum of 8-in thick, to assure frame and cover are set to the finished grade. Set manhole frame and cover to final grade prior to placement of permanent paving.

F. Dampproofing

1. Paint outer surfaces of precast and cast-in-place manholes and structures with two coats of bituminous dampproofing at the rate of 30 to 60 sq ft per gallon, in accordance with manufacturer's instructions.

3.02 LEAKAGE TESTS

- A. Test each manhole for leakage. ENGINEER shall observe each test. Perform exfiltration test as described below:
- B. Assemble manhole in place; fill and point all lifting holes and exterior joints within 6-ft of the ground surface with an approved non-shrinking mortar. Test prior to placing the shelf and invert and before filling and pointing the horizontal joints below 6-ft of depth. Lower ground water table below bottom of the manhole for the duration of the test. Plug all pipes and other openings into the manhole and brace to prevent blow out.
- C. Fill manhole with water to the top of the cone section. If the excavation has not been backfilled and no water is observed moving down the surface of the manhole, the manhole is satisfactorily water-tight. If the test, as described above is unsatisfactory as determined by the ENGINEER, or if the manhole excavation has been backfilled, continue the test. A period of time may be permitted to allow for absorption. Following this period, refill manhole to the top of the cone, if necessary and allow at least 8 hours to pass. At the end of the test period, refill the manhole to the top of the cone again, measuring the volume of water added. Extrapolate the refill amount to a 24-hour leakage rate. The leakage for each manhole shall not exceed one gallon per vertical foot for a 24-

hour period. If the manhole fails this requirement, but the leakage does not exceed three gallons per vertical foot per day, repairs by approved methods may be made as directed by the ENGINEER. If leakage due to a defective section of joint exceeds three gallons per vertical foot per day, the manhole shall be rejected. Uncover the rejected manhole as necessary and to disassemble, reconstruct or replace it as directed by the ENGINEER. Retest the manhole and, if satisfactory, fill and paint the interior joints.

- D. No adjustment in the leakage allowance will be made for unknown causes such as leaking plugs, absorptions, etc. It will be assumed that all loss of water during the test is a result of leaks through the joints or through the concrete.
- E. An infiltration test may be substituted for an exfiltration test if the ground water table is above the highest joint in the manhole. If there is no leakage into the manhole as determined by the ENGINEER, the manhole will be considered water-tight. If the ENGINEER is not satisfied, testing shall be performed as described hereinbefore.
- F. Leakage Tests for Structures
  - 1. The ENGINEER will visually inspect structure(s) for possible leaks before backfilling of structures is allowed. Seal all joints to the satisfaction of the ENGINEER.
  - 2. The ENGINEER may require an exfiltration test as described for manholes on any structure for which he/she deems the test appropriate.

### 3.03 CLEANING

- A. Thoroughly clean all new manholes of all silt, debris and foreign matter of any kind, prior to final inspections.

**END OF SECTION**

## SECTION 02611

### REINFORCED CONCRETE PIPE FOR GRAVITY SERVICE

#### PART 1 - GENERAL

##### 1.01 DESCRIPTION OF WORK

- A. This section covers materials and methods of installation of Reinforced Concrete Pipe for non-pressure or gravity service in Piped Utility Systems.

##### 1.02 HANDLING AND STORAGE

- A. Pipe, fittings, and accessories shall be loaded and unloaded by lifting with hoists or skidding in order to avoid shock or damage. Under no circumstances shall such material be dropped. Pipe handled on skidways shall not be rolled or skidded against pipe on the ground. Slings, hooks or pipe tongs shall be padded and used in such a manner as to prevent damage to the exterior surface or internal lining of the pipes.
- B. Materials, if stored, shall be kept safe from damage. The interior of all pipe, fittings, and other appurtenances shall be kept free from dirt or foreign matter at all times.
- C. Gaskets for joints shall be placed in a cool location out of direct sunlight. Gaskets shall not come in contact with petroleum products. Gaskets shall be used on a first-in, first-out basis.
- D. Inspection
  - 1. Pipe and appurtenances shall be inspected at the point of delivery. Material found to be defective due to manufacture or damage in shipment shall be rejected. Tests as specified in the applicable material standard may be performed to ensure conformance with the standard.

#### PART 2 - PRODUCTS

##### 2.01 ROUNDED PIPE

- A. Pipe shall be cast vibrated, machine-made or flat bed concrete pipe that is designed, manufactured, cured, tested and marked in accordance with the requirements of ASTM Designation C-76. Pipe shall be equivalent to Class III, unless otherwise noted on plans, and Wall B or C of the proper strength for the depth of cover required. Pipe shall be manufactured in lengths no longer than 16-feet nor shorter than 8-feet, except that shorter lengths as required at closures or junctions of structures will be permitted. Pipe with elliptical reinforcing shall be adequately marked to prevent improper placement in the trench. Lift holes or eyes may be provided in each pipe for the purpose of handling.
- B. Joints shall be of either a bell and spigot or double spigot and sleeve design using round rubber gaskets. The joint shall be so designed and fabricated that when the pipe is laid it shall be self-centering, and when the joint completed, the gasket will be enclosed on all four surfaces. The gasket shall not be required to support the weight of the pipe, but shall keep the joint tight under all normal conditions of service, including expansion, contraction and earth settlement.
- C. Joints and gaskets shall conform to the requirements of ASTM C443.



## 2.02 ELLIPTICAL PIPE

- A. Pipe shall be cast vibrated, machine made or flat bed elliptically shaped concrete pipe designed, manufactured, cured, tested and marked in accordance with ASTM C507.
- B. Pipe shall be of the proper strength for the depth of cover involved and shall be manufactured in lengths not longer than 16-feet nor shorter than 8-feet, except that shorter lengths as required at closures or junctions with structures will be permitted.
- C. Pipe designed for placement with the major axis horizontal shall be designated as "Horizontal Elliptical" and shall be so marked.
- D. Joints for elliptical pipe shall be cold adhesive, pre-formed plastic gaskets conforming to *Standard Specifications for Road and Bridge Construction* of Florida Department of Transportation, Section 942, paragraph 942-2 (latest edition).

## 2.03 EXTERNAL CONCRETE JOINT WRAP

- A. All concrete pipe joints and pipe connections to structures shall be wrapped with an approved filter fabric joint wrap product. Joint material and installation shall be in accordance with Section 440 of the FDOT Standard Specifications, latest edition.

## PART 3 - EXECUTION

### 3.01 UNDERGROUND STRUCTURES AND CONFLICTS

- A. Prior to excavation, investigation shall be made to the extent necessary to determine the location of existing underground structures and conflicts. Care shall be exercised to avoid damage to existing structures. When obstructions that are not shown on the drawings are encountered during the progress of work and interfere so that an alteration of the plans is required, the Engineer will alter the drawings or order a deviation in line and grade or arrange for removal, relocation, or reconstruction of the obstructions. When crossing existing pipelines or other structure, alignment and grade shall be adjusted as necessary, with the approval of the Engineer to provide clearance as required by federal, state or local regulations or as deemed necessary by the Engineer to prevent future damage or contamination of either structure.

### 3.02 ALIGNMENT AND GRADE

- A. The pipelines shall be laid and maintained to the lines and grades established by the drawings and specifications, with manholes, service connections, fittings, and appurtenances at the required locations unless otherwise approved by the Engineer.

### 3.03 TRENCH CONSTRUCTION

- A. The trench shall be excavated to the required alignment, depth, and width. Trench preparation shall proceed in advance of pipe installation for only as far as necessary to allow proper pipe installation. The width of the trench at the top of the pipe shall be ample to permit the pipe to be laid and joined properly and allow the backfill to be placed as specified. Trenches shall be of such extra width, when required, to permit the placement of timber supports, sheeting, bracing and appurtenances.
- B. Holes for the bells shall be provided at each joint but shall not be larger than necessary for joint assembly and assurance that the pipe barrel will lie flat on the trench bottom. Other than noted previously, the trench bottom shall be true and even in order to provide

support for the full length of the pipe barrel, except that slight depression may be provided to allow withdrawal of pipe slings or other lifting tackle.

- C. When excavation of rock is encountered, all rock shall be removed to provide a clearance of at least 6-inches below and on each side of all pipe for pipe sizes 24-inches or smaller, and 9-inches for pipe sizes 30-inches and larger. When excavation is completed, a bed of sand, crushed stone, or earth that is free from stones, large clods, or frozen earth, shall be placed on the bottom of the trench to the previously mentioned depths, leveled, and tamped. These clearances and bedding procedures shall also be observed for pieces of concrete or masonry and other debris or subterranean structures, such as masonry walls, piers, or foundations that may be encountered during excavation. This installation procedure shall be followed when gravel formation containing loose boulders greater than 8-inches in diameter are encountered. In all cases, the specified clearances shall be maintained between the bottom of all pipe and appurtenances and any part, projection, or point or rock, boulder, or stones of sufficient size and placement which, in the opinion of the Engineer could cause a fulcrum point.
- D. Should the trench pass over a sewer or other previous excavation, the trench bottom shall be sufficiently compacted to provide support equal to that of the native soil or conform to other regulatory requirements in a manner that will prevent damage to the existing installation.
- E. When the subgrade is found to be unstable or to include ashes, cinders, refuse, organic material, or other unsuitable material, such material shall be removed, to a minimum of at least 3-inches, or to the depth ordered by the Engineer and replaced under the directions of the Engineer with clean, stable backfill material. The bedding shall be consolidated and leveled in order that the pipe may be installed as specified.
- F. When the bottom of the trench or the subgrade is found to consist of material that is unstable to such a degree that, in the judgment of the Engineer, it cannot be removed, a foundation for the pipe and/or appurtenance shall be constructed using piling, timber, concrete, or other materials at the direction of the Engineer.
- G. Pipe cutting for the insertion of fittings, or closure pieces shall be done in neat, workmanlike manner without creating damage to the pipe or lining.

#### 3.04 TESTING

- A. After completion of installation, perform testing for gravity sewers in accordance with requirements of Section 430 – Pipe Culverts and Storm Sewers in the FDOT *Standard Specifications for Road and Bridge Construction*, latest edition.

**END OF SECTION**

## SECTION 02720

### DRAINAGE STRUCTURES AND PIPING

#### PART 1 - GENERAL

##### 1.01 DESCRIPTION OF WORK

- A. The extent of drainage structures and piping is shown on the drawings.
- B. Related Work Specified Elsewhere

Section 02200 - *Earthwork*.

Section 02222 - *Trenching, Backfilling and Compacting*.

Section 02611 - *Reinforced Concrete Pipe for Gravity Service*

##### 1.02 SUBMITTALS

- A. Submit shop drawings of precast manholes, inlets, grating, frames and lids, and pipe.
- B. Submit cut sheets 24-hours in advance of pipe excavation for ENGINEER approval.

##### 1.03 QUALITY ASSURANCE

- A. All material shall be new and unused.
- B. Materials' quality, manufacturing process and finished sections are subject to inspection and approval by ENGINEER or other OWNER representative. Inspection may be made at place of manufacture, at work site following delivery, or both.
- C. Materials will be examined for compliance with ASTM standards, this Section and approved manufacturer's drawings. Additional inspection criteria shall include, appearance, dimensions(s), blisters, cracks and soundness.
- D. Materials shall be rejected for failure to meet any requirements specified herein. Rejection may occur at place of manufacture, at work site, or following installation. Mark for identification rejected materials and remove from work site immediately. Rejected materials shall be replaced at no cost to OWNER.
- E. Repair minor damage to precast concrete sections by approved method, if repair is authorized by ENGINEER.

#### PART 2 - PRODUCTS

##### 2.01 GENERAL

- A. Reference to a manufacturer's name and model or catalog number is for the purpose of establishing the standard of quality and general configuration desired.
- B. Like items of materials/equipment shall be the end products of one manufacturer in order to provide standardization for appearance, operation, maintenance, spare parts and manufacturer's service.
- C. Provide lifting lugs or holes in each precast section for proper handling.

## 2.02 PRECAST CONCRETE MANHOLE SECTIONS

- A. Precast concrete base sections, riser sections, transition top sections, flat slab tops and grade rings shall conform to ASTM C478 and shall be in accordance with FDOT standards.
  - 1. Top section shall be eccentric cone where cover over pipe exceeds 4-ft. Top section shall be a flat slab where cover over top of pipe is 4-ft or less. Top section shall be a plastic lined flat slab where manhole riser sections are to be plastic lined.
  - 2. Base, riser and transition top sections shall have tongue and groove joints.
  - 3. Sections shall be cured by an approved method.
  - 4. Precast concrete sections shall be shipped after concrete has attained 3000 psi compressive strength.
  - 5. Design precast concrete base, riser, transition top, flat slab top and grade ring for a minimum H-20 loading plus earth load. Calculate earth load with a unit weight of 130 pcf.
  - 6. Mark date of manufacture, name and trademark of manufacturer on the inside of each precast section.
  - 7. Construct and install precast concrete base as shown on the Drawings and specified in FDOT standards.
  - 8. Provide integrally cast knock-out panels in precast concrete manhole sections at locations, and with sizes shown on Drawings. Knock-out panels shall have no steel reinforcing.

## 2.03 PRECAST CONCRETE STRUCTURES

- A. Refer to FDOT Standards for inside dimensions, headroom requirements and minimum thickness of concrete.
- B. Manufacturer shall notify ENGINEER at least 5 working days prior to placing concrete during manufacturing process. ENGINEER may inspect reinforcing steel placement prior to placing concrete.
- C. Structural design calculations and Drawings shall be prepared and stamped by a Professional Engineer registered in Florida.
- D. Design Criteria
  - 1. Precast concrete
    - a. Minimum compressive strength shall be 5,000 psi at 28 days.
    - b. Maximum water-to-cement ratio shall be 0.40 by weight.
    - c. Minimum cement content shall be 600 lbs of cement per cubic yard of concrete.

2. Manufactured products
  - a. Conform to ACI 318 and ACI 350R.
  - b. Analyze walls and slabs using accepted engineering principals.
  - c. When "fy" exceeds 40,000 psi, "z" (ACI 318) shall not exceed 95,000 psi. "fs" shall not exceed 50 percent of "fy".
  - d. Design products to support their own weight, weight of soil at 120 pcf, and a live load equal to AASHTO HS-20 applied to top slab.
  - e. Cast base slab and walls together to form a monolithic base section.
  - f. Design structure walls for a water pressure of 90 psf. Originate pressure diagram at finished ground surface. Include lateral pressure from vehicles in accordance with AASHTO.
  - g. Consider discontinuities in structure produced by openings and joints. Provide additional reinforcing around openings. Frame openings to carry full design loads to support walls.
  - h. Prevent flotation, with ground water level at finished ground surface, by dead weight of structure and soil load above structure. Do not consider skin friction, soil friction, or weight of equipment in structure.
  - i. Locate horizontal wall joints 18-in minimum from horizontal centerline of wall openings.
  - j. Design structure with a minimum number of joints. Maximum number of structure sections, including top slab, shall be four.
  - k. Provide lifting hooks for top slab.
  - l. Locate access openings, wall sleeves and pipe penetrations as shown on Drawings.
  - m. Wall sleeves shall be provided by the precast concrete manufacturer.

#### 2.04 BRICK MASONRY

- A. Bricks shall be sound, hard, uniformly burned, regular and uniform in shape and size. Underburned or salmon brick shall not be acceptable. Only whole brick shall be used.
  1. Bricks for channels and shelves shall conform to ASTM C32, Grade SS except that the mean of five tests for absorption shall not exceed 8 percent and no individual brick exceed 11 percent.
  2. Bricks for raising manhole frames to finished grade shall conform to ASTM C62.
- B. Mortar shall be composed of 1 part Portland cement, 2 parts sand, and hydrated lime not to exceed 10-lbs to each bag of cement. Portland cement shall be ASTM C150, Type II; hydrated lime shall conform to ASTM C207.
- C. Sand shall be washed, cleaned, screened, well graded with all particles passing a No.4 sieve and conform to ASTM C33.

## 2.05 JOINTING PRECAST MANHOLE SECTIONS AND STRUCTURES

- A. Seal tongue and groove joints of precast manhole and structure sections with either rubber O-ring gasket or preformed flexible joint sealant. O-ring gasket shall conform to ASTM C443. Preformed flexible joint sealant shall be Kent Seal No.2 by Hamilton-Kent; Ram-Nek by K. T. Snyder Company or equal.
- B. Completed joint shall withstand 15 psi internal water pressure without leakage or displacement of gasket or sealant.

## 2.06 MANHOLE FRAMES AND COVERS

- A. Manhole frames and covers shall be in accordance with FDOT Standard Index No. 201 for the type of manhole or inlet required. Covers shall have 2" raised letter identification: "Storm Sewer" cast into top.

## 2.07 PIPE CONNECTIONS TO MANHOLE

- A. Connect pipe to manhole in the following ways:
  - 1. Grout in place - Precast manhole section shall have a formed, tapered circular opening larger than the pipe outside diameter. Grout shall be non-shrink and waterproof equal to Hallemite, Waterplug or Embeco. Plastic pipe shall have a waterstop gasket secured to pipe with a stainless steel clamp.
  - 2. Flexible sleeve - Integrally cast sleeve in precast manhole section or install sleeve in a formed or cored opening. Fasten pipe in sleeve with stainless steel clamp(s). Coat stainless steel clamp(s) with bituminous material to protect from corrosion. Flexible sleeve shall be Lock Joint Flexible Manhole Sleeve; Kor-N-Seal connector; PSX Press-Seal Gasket or equal.
  - 3. Compression gasket - Integrally cast compression gasket in precast manhole section. Insert pipe into compression gasket. Compression gasket shall be A-Lok or equal.

## 2.08 DAMPPROOFING

- A. Dampproofing shall be Hydrocide 648 by Sonneborn Building Products; Dehydratine 4 by A. C. Horn Inc; RIW Marine Liquid by Toch Brothers or equal.

## 2.09 PIPING

- A. Reinforced Concrete Pipe (RCP)
  - 1. RCP pipe shall comply with the requirements of ASTM Designation C-76, as specified in Section 02611, Reinforced Concrete Pipe for Gravity Service.

## PART 3 - EXECUTION

### 3.01 INSTALLATION

- A. Manhole and Structure Installation
  - 1. Manhole and structure shall be constructed to the dimensions shown on the Drawings and as specified in FDOT standards. Protect all work against flooding

and flotation. Construct cast-in-place bases in accordance with the requirements of Division 3 and the details shown on the Drawings.

2. Place manhole base on a bed of 12-in screened gravel as shown on the Drawings. Set manhole base grade so that a maximum grade adjustment of 8-in is required to bring the manhole frame and cover to final grade.
  - a. Use precast concrete grade rings or brick and non-shrink mortar to adjust manhole frame and cover to final grade.
3. Set precast concrete barrel sections and structures plumb with a 1/4-in maximum out of plumb tolerance allowed. Seal joints of precast barrel sections with either a rubber O-ring set in a recess or preformed flexible joint sealant in sufficient quantity to fill 75 percent of the joint cavity. Fill the outside and inside joint with non-shrink mortar and finished flush with the adjoining surfaces. Caulk the inside of any leaking barrel section joint with lead wool or non-shrink grout to the satisfaction of the ENGINEER.
4. Allow joints to set for 14 hours before backfilling unless a shorter period is specifically approved by the ENGINEER.
5. Plug holes in the concrete barrel sections required for handling with a non-shrinking grout or non-shrinking grout in combination with concrete plugs. Finish flush on the inside.
6. Cut holes in precast sections to accommodate pipes prior to setting manhole sections in place to prevent jarring which may loosen the mortar joints.
7. Backfill carefully and evenly around manhole sections.

B. Manhole Pipe Connections

1. Construct manhole pipe connections, including pipe stubs, as specified above. Close or seal pipe stubs for future connections with a gasketed watertight plug.

C. Brickwork

1. Mix mortar only in such quantity as may be required for immediate use. Use mortar before initial set has taken place. Mortar shall be used within 1-1/2 hours and shall be constantly worked with hoe or shovel until used. Anti-freeze mixtures shall not be included in the mortar. Install masonry when the outside temperature is above 40 degrees F unless provisions are made to protect the mortar, bricks and finished work from frost by heating and enclosing the work with tarpaulins or other suitable material. ENGINEER's decision regarding the adequacy of protection against freezing shall be final.
2. Construct channels and shelves of brick and concrete as shown on the Drawings and as specified in FDOT standards. Brick lined channels shall correspond in shape with the lower half of the pipe. Set shelf elevation at crown of highest pipe and slope 1-in/ft to drain toward the flow through channel. Construct brick surfaces exposed to sewage flow with nominal 2-in by 8-in face exposed (i.e. bricks on edge).

D. Setting Manhole Frame and Cover

1. Set manhole covers and frames in a full mortar bed. Utilize bricks or precast concrete grade rings, a maximum of 8-in thick, to assure frame and cover are set to the finished grade. Set manhole frame and cover to final grade prior to placement of permanent paving.

E. Dampproofing

1. Paint outer surfaces of precast and cast-in-place manholes and structures with two coats of bituminous dampproofing at the rate of 30 to 60 sq ft per gallon, in accordance with manufacturer's instructions.

3.02 LEAKAGE TESTS

- A. Test each manhole for leakage. ENGINEER shall observe each test. Perform exfiltration test as described below.
- B. Assemble manhole in place; fill and point all lifting holes and exterior joints within 6-ft of the ground surface with an approved non-shrinking mortar. Test prior to placing the shelf and invert and before filling and pointing the horizontal joints below 6-ft of depth. Lower ground water table below bottom of the manhole for the duration of the test. Plug all pipes and other openings into the manhole and brace to prevent blow out.
- C. Fill manhole with water to the top of the cone section. If the excavation has not been backfilled and no water is observed moving down the surface of the manhole, the manhole is satisfactorily water-tight. If the test, as described above is unsatisfactory as determined by the ENGINEER, or if the manhole excavation has been backfilled, continue the test. A period of time may be permitted to allow for absorption. Following this period, refill manhole to the top of the cone, if necessary and allow at least 8 hours to pass. At the end of the test period, refill the manhole to the top of the cone again, measuring the volume of water added. Extrapolate the refill amount to a 24-hour leakage rate. The leakage for each manhole shall not exceed one gallon per vertical foot for a 24-hour period. If the manhole fails this requirement, but the leakage does not exceed three gallons per vertical foot per day, repairs by approved methods may be made as directed by the ENGINEER. If leakage due to a defective section of joint exceeds three gallons per vertical foot per day, the manhole shall be rejected. Uncover the rejected manhole as necessary and to disassemble, reconstruct or replace it as directed by the ENGINEER. Retest the manhole and, if satisfactory, fill and paint the interior joints.
- D. No adjustment in the leakage allowance will be made for unknown causes such as leaking plugs, absorptions, etc. It will be assumed that all loss of water during the test is a result of leaks through the joints or through the concrete.
- E. An infiltration test may be substituted for an exfiltration test if the ground water table is above the highest joint in the manhole. If there is no leakage into the manhole as determined by the ENGINEER, the manhole will be considered water-tight. If the ENGINEER is not satisfied, testing shall be performed as described hereinbefore.



F. Leakage Tests for Structures

1. The ENGINEER will visually inspect structure(s) for possible leaks before backfilling of structures is allowed. Seal all joints to the satisfaction of the ENGINEER.
2. The ENGINEER may require an exfiltration test as described for manholes on any structure for which he/she deems the test appropriate.

3.03 CLEANING

- A. Thoroughly clean all new manholes of all silt, debris and foreign matter of any kind, prior to final inspections.

**END OF SECTION**

## SECTION 02801

### RESTORATION OF SURFACE IMPROVEMENTS

#### PART 1 - GENERAL

##### 1.01 DESCRIPTION OF WORK

- A. The work includes the restoration of driveways, lawn areas, trees and plants, roadways, sprinkler systems, walks and any other existing improvement affected by the proposed work.
- B. This section includes furnishing equipment, labor and materials, and performing all necessary and incidental operations to perform the required work.

##### 1.02 QUALITY ASSURANCE

- A. Standards
  - 1. Florida Grades and Standards for Nursery Plants, Part 1:
- B. Irrigation Contractor Qualifications
  - 1. Irrigation Competency Card is required for contractor or sub-contractor doing any irrigation repair, including relocation of heads, lines or valves, or any new irrigation work.

#### PART 2 - MATERIALS AND EQUIPMENT

##### 2.01 SOD

- A. Sod used for restoration shall match the existing sod in the area. St. Augustine sod shall be replaced with St. Augustine Floratam. In areas without irrigation, Argentina Bahia sod shall be used, unless otherwise directed by the Engineer/Landscape Architect.
- B. Sod shall have well matted roots.
- C. The sod shall be sufficiently thick to secure a dense stand of live grass, with a minimum thickness of two-inches. The sod shall be live, fresh and uninjured at the time of planting. It shall be planted as soon as possible after being dug and shall be shaded and kept moist from the time it is dug until it is planted.
- D. The sod shall be commercial size rectangles measuring 12-inches by 24-inches or larger, except where 6-inch strip sodding is called for on the drawings.
- E. Sod shall be planted as soon as possible after being harvested and shall be shaded and kept moist from the time of harvesting until it is planted.
- F. The source of the sod may be inspected and approved by the Engineer/Architect prior to construction.

## 2.02 PLANTS

- A. Existing damaged plants shall be replaced by plants of equal type, quality and size whenever possible. All new plants shall be sound, healthy, vigorous and free from defects, decay, disfiguring, bark abrasions, plant diseases, insect pests, their eggs or larvae. The new plants shall be approved by the Engineer/Landscape Architect before placing.
- B. Existing plants may be removed, preserved, and replaced at the Contractors option, in which case, the plants shall be handled and maintained by approved nursery staff.
- C. Plants shall be watered and cared for until new growth appears. Dead and dying plants shall be immediately replaced.
- D. Plants used shall be in accordance with the standards for Florida No. 1 or better, as given in the current "Grades and Standards for Nursery Plants," State of Florida, Department of Agriculture, or their equal as approved by the Engineer/Landscape Architect.
- E. Plants shall conform to the sizes indicated by the Owner.

## 2.03 MULCH

- A. Mulch for all planter areas shall be shredded cypress or eucalyptus, clean, bright and free from weeds, moss, sticks, and other debris.

## 2.04 WATER

- A. The water used in the performance of this Contract shall be of drinking water quality, clean and free from injurious amounts of oil, acid, alkali, organic matter, or any substance which might be harmful to plant growth or obnoxious to traffic.

## 2.05 PLANTING MIXTURE

- A. The planting mixture, when required, shall consist of a thorough mixture of 40% peat and 60% sand. The peat shall be Florihome peat or equivalent and the sand shall be clean and free from debris of any kind.

## 2.06 FERTILIZER

- A. Fertilizer shall be granular 8-8-8, or equivalent.
- B. Commercial fertilizers shall comply with the State fertilizer laws.
- C. Fertilizer may, at the discretion of the Engineer/Architect, upon satisfactory evidence of its feasibility from the manufacturer, be applied in liquid form.

## 2.07 ASPHALTIC CONCRETE

- A. Asphaltic concrete for surface and base course applications shall be Superpave (SP) Asphaltic Concrete, as specified in the Florida Department of Transportation's *Standard Specifications for Road and Bridge Construction*, Latest Edition, and shall be in accordance with the project specifications and plans.

## 2.08 PORTLAND CEMENT CONCRETE

- A. Portland cement concrete used in the performance of this Contract shall have a compressive strength of 3,000 psi at 28 days and shall conform to the requirements of Section 03300.

## PART 3 - EXECUTION

### 3.01 LANDSCAPING RESTORATION

- A. All grass areas disturbed by construction shall be restored with the same type of sod as was existing prior to disturbance.
- B. Lawn Areas
  - 1. Any lawn area affected by the required work shall be restored to a condition equal or better than the conditions existing before the commencement of work.
- C. Balled Plants
  - 1. Plants where required shall be adequately balled with firm natural balls of soil, sized as set forth in "Grades and Standards". Balls shall be firmly wrapped with burlap or equally approved strong cloth. No balled plant will be planted if the ball is cracked or broken before or during the process of planting.
- D. Option
  - 1. Plants may be furnished as container grown instead of balled if all other requirements are met.
- E. Preparation of Plant Pits
  - 1. All plant pits shall be circular in outline and have vertical sides. Tree pits shall be two feet wider than the width of the ball and one foot deeper than the depth of the ball. Shrubs that are either B&B or in 3 gallon and under containers shall have pits that are one foot wider than the width of the plant ball and 6-inches deeper than the depth of the ball.
- F. Setting Plants
  - 1. All plants except as otherwise specified, shall be centered in pits. Deep planting shall be avoided and unless otherwise specified, plants shall be set at such a level that after settlement they will bear the same relation to the required grade as they have to the natural grade before being transplanted.
- G. Balled and burlapped plants and palms shall be placed on 6-inches to 12-inches of tamped planting mixture and adjusted so as to be at the proper level. The rope and burlap shall be cut away and the burlap folded down to the bottom of the pit. Very large B&B plants shall remain wrapped until fully backfilled and then just the upper portion of the burlap shall be removed. Backfill of planting mix shall be placed halfway up the pit and then water tamped. After this water has drained away, backfill around the edge of the pit to form a saucer and fill area three times with water.

H. Water

1. Water to be used initially during plant installation shall be furnished by the Contractor. The existing irrigation system, where damaged, shall be promptly repaired after the installation of the plants.

I. Sod Placement

1. The provisions for the preparation of the area to be sodded shall include scarifying and loosening the soil and application of fertilizer.
2. Sodding shall not be performed when weather and soil conditions are, in the Engineer's opinion, unsuitable for proper results.
3. The sod shall be placed on the prepared surface with edges in close contact, and shall be firmly and smoothly embedded by light tamping with appropriate tools.
4. Where sodding is used in drainage ditches or ponds, the setting of the pieces shall be staggered, such as to avoid a continuous seam along the line of flow. Along the edges of such staggered areas, the offsets of individual strips shall not exceed 6-inches.
5. In order to prevent erosion caused by vertical edges at the outer limits, the outer pieces of sod shall be tamped so as to produce a featheredge effect.
6. On areas where the sod may slide, due to height and slopes, it shall be pegged, with pegs driven through the sod blocks into firm soil and at intervals as shown on the drawings or as directed by the Engineer/Architect.
7. Any pieces of sod which, after placing, show appearance of extreme dryness shall be removed from the work.
8. The sod shall be kept in a moist condition after planting and for the duration of the Contract.

J. Maintenance

1. Contractor shall maintain the planted areas in a satisfactory condition until final acceptance of the project. Such maintenance shall include mowing, edging, weed control, watering, filling, leveling and repairing of any washed or eroded areas as may be necessary.

3.02 PAVEMENT REPLACEMENT

- A. Asphalt pavement shall be removed by saw cutting on a straight line with edges as vertical as possible. Concrete pavement or asphalt surfaced concrete shall be removed by cutting with a concrete saw in as straight a line and vertically as possible.
- B. Prior to replacing concrete or asphalt pavement replacement, a limerock base shall be laid. The base for concrete pavement shall be six (6) inches of compacted thickness, and that for asphalt pavement shall be eight (8) inches of compacted thickness for City driveways. For State or County roads the thickness shall be as required by that agency's permit. The base course for each shall be compacted in two equal layers to a minimum of 98% of the maximum density as determined by AASHTO, Method T-180. The Owner will have tests made by an independent testing laboratory to verify compaction results.

- C. Non-asphalt pavement replacement shall be replaced of like material and thickness. Asphalt or built-up asphalt pavement replacement shall be replaced with like material or concrete as directed by the Engineer/Architect. Where asphalt or built-up asphalt pavement is replaced by concrete, the concrete shall have a minimum of six (6) inches in thickness and be reinforced with 6 by 6 No. 6 gage welded wire fabric. Where the pavement replacement is of like material, it shall be replaced in thickness equal to or better than that existing at the time of removal.
- D. Unless the base is sealed or other temporary paving applied over driveway areas to be repaved, pavement shall be replaced not later than three weeks after completion of backfill.

### 3.03 CURB REMOVAL AND REPLACEMENT

- A. Curb removal and replacement required in the construction of this work shall be done by the Contractor. Reasonable care shall be exercised in removing the curb, and the Contractor shall either stockpile or dispose of this material as directed by the Engineer/Architect. Curb shall be replaced of like material in a manner and condition equal to or better than that existing at the time of removal. Materials and methods of replacing State Highway sidewalks or curbs shall conform to the Department of Transportation specifications.

### 3.04 TESTS

- A. The Contractor shall furnish facilities for making all density tests and make such restorations as may be necessary due to test operations. All density tests on backfill or base replacement will be made by a commercial testing laboratory employed by the Owner and at such locations as may be recommended by the Engineer/Architect. If the densities as determined by the specified tests fall below the required minimums, the Contractor shall pay for all retests.

**END OF SECTION**

## SECTION 02930

### GRASSING

#### PART 1 - GENERAL

##### 1.01 DESCRIPTION OF WORK

- A. The extent of grassing consists of supplying and planting grass seed and/or sod in the locations shown on the drawings and in those areas where construction activity has damaged or destroyed the ground cover.
- B. The grassing work shall include, but not be limited to, supplying all labor, materials, and equipment necessary to perform seeding, sodding, fertilizing, liming when specified, mulching, watering, mowing, and clean-up.

##### 1.02 QUALITY ASSURANCE

- A. Seeds shall meet the requirements of the State Department of Agriculture and Consumer Services and all applicable State laws.
- B. The Engineer/Architect reserves the right to test, reject or approve all materials before application.

##### 1.03 DELIVERY, STORAGE, AND HANDLING

- A. Deliver grass seed in original containers showing analysis of seed mixture, percentage of pure seed, year of production, net weight, date of packaging, and location of packaging. Damaged packages will not be accepted.
- B. Deliver fertilizer in water proof bags showing weight, chemical analysis, and name of manufacturer.
- C. The Contractor shall, at the time of delivery, furnish the Engineer/Architect invoices of all materials received in order that the minimum application rate of materials may be determined. Failure to supply invoices at the time of delivery will warrant that payment for those items be delayed until proper submittal of invoices are obtained and the minimum application rates of material can be verified.
- D. Mixtures of different types of seed called for in these specifications shall be mixed in the proper proportions at the site of the work in the presence of the Engineer/Architect or his representative.

#### PART 2 - PRODUCTS

##### 2.01 SEED

- A. Unless otherwise provided for on the drawings, the Contractor shall conform to the following seed schedule. The total pounds of seed per acre shall be the sum total shown for all the varieties of seed opposite the schedule number.

## SEEDING SCHEDULE

<u>SCHEDULE NUMBER</u>	<u>COMMON NAME OF SEED</u>	<u>LBS./ ACRE</u>	<u>PLANTING DATES</u>
1.	Pensacola Bahia (scarified)	90	March 15 -
	Bermuda Common (50% hulled)	25	October 15
2.	Pensacola Bahia (scarified)	100	October 16 -
	Bermuda Common (50% hulled)	35	March 14
	Annual Rye Grass	10	
	Rye Grain	30	

- B. The Bermuda seed shall be an equal mixture of hulled and unhulled seed.
- C. The Pensacola Bahia seed shall be scarified seed, having a minimum active germination of 40 percent and a total germination of 85 percent.
- D. Quick-growing type grass seed shall be a species approved by the Engineer/Architect which will provide an early ground cover during the particular season when planting is done and will not later compete with permanent grass.

### 2.02 SOD

- A. Sod shall be St. Augustine with well matted roots, unless otherwise noted or directed by the Engineer.
- B. The sod shall be commercial size rectangles measuring 12-inches by 24-inches or larger, except where 6-inch strip sodding is called for on the drawings.
- C. The sod shall be sufficiently thick to secure a dense stand of live grass, with a minimum thickness of 2-inches. The sod shall be live, fresh, and uninjured at the time of planting. It shall have a soil mat of sufficient thickness adhering firmly to the roots to withstand all necessary handling. It shall be reasonably free of weeds and other grasses.
- D. Sod shall be planted as soon as possible after being harvested and shall be shaded and kept moist from the time of harvesting until it is planted.
- E. The source of the sod may be inspected and approved by the Engineer/Architect prior to construction.

### 2.03 MULCH

- A. Dry Mulch
  - 1. Dry mulch shall be straw or hay, consisting of oat, rye, or wheat straw, or of Pangola, Peanut, Coastal Bermuda or Bahia grass hay. Only undeteriorated mulch which can readily be cut into the soil shall be used.
- B. Manufactured Mulch
  - 1. Manufactured mulches may consist of jute, cotton, or other fiber materials, plastic sheeting, netting, chemical adhesive soil stabilizers, or other approved coverings.



Manufactured mulch shall only be used when specifically called for on the drawings and shall be as approved by the Engineer/ Architect.

2. The Contractor shall, if requested, submit appropriate certification from the manufacturer that the material meets all of the above requirements, based on laboratory and field tests of the product.
3. The air-dry weight (as defined by the Technical Association of the Pulp and Paper Industry for wood cellulose) shall be marked on each package by the manufacturer.

#### 2.04 FERTILIZER

- A. The fertilizer shall be a commercial granular type with a chemical designation of 16-4-8 or 20-5-10.
- B. The numerical designations for fertilizer indicate the minimum percentages (respectively) of (1) total nitrogen, (2) available phosphoric acid, and (3) water-soluble potash, contained in the fertilizer.
  1. At least 50 percent of the phosphoric acid shall be from a normal super phosphate or an equivalent source which will provide a minimum of two units of sulfur.
  2. The amount of sulfur shall be indicated on the quantitative analysis card attached to each bag or container.
- C. Commercial fertilizers shall comply with the State fertilizer laws.
- D. Fertilizer may, at the discretion of the Engineer/Architect, upon satisfactory evidence of its feasibility from the manufacturer, be applied in liquid form.

#### 2.05 LIME

- A. Lime shall be agricultural grade, ground limestone minimum 80 percent passing No. 8 sieve, calcium carbonate equivalent minimum 80 percent and shall conform to the requirements of the State Department of Agriculture and Consumer Affairs.

#### 2.06 WATER

- A. The water used in the grassing operations may be obtained from any approved spring, pond, lake, stream, or municipal water system.
- B. The water shall be free of excess and harmful chemicals, acids, alkalis, or any substance which might be harmful to plant growth or obnoxious to traffic.
- C. Salt water shall not be used.

#### 2.07 GRAVEL BED

- A. In the locations shown on the drawings, provide a 3-inch deep bed of river-run gravel of rounded particles ranging in size from 1/2-inch to 2-inches. Gravel shall be as obtained from the vicinity of Montgomery, Alabama, or Chattahoochee, Florida, or equal.
- B. Where gravel is not kept in place by walls or sidewalk, an edging strip shall be used. The edging strip shall be of 1" x 6" cypress, and extend 1/2-inch above the gravel surface.

## PART 3 - EXECUTION

### 3.01 GENERAL

- A. Grassing operations will not be permitted when wind velocities exceed 15 miles per hour. Grassing will be accomplished only when the soil is moist and in proper condition to induce growth. No grassing shall be done when the ground is frozen, unduly wet, or otherwise not in a tillable condition.
- B. Before acceptance of the seeding performed for the establishment of permanent vegetation, the Contractor will be required to produce a satisfactory stand of perennial grass whose root system shall be developed sufficiently to survive dry periods and winter weather and be capable of reestablishment in the spring.

### 3.02 GRASSING BY SEEDING

- A. Sequence of Operations
  - 1. The several operations involved in the work shall proceed in the following sequence: grading, fertilizing (and/or application of lime) and preparation of the ground, spreading of the mulch, seeding, cutting in mulch, and rolling.
- B. Preparation of Area to be Seeded
  - 1. The ground over which the seed is to be sown shall be prepared by disk-harrowing and thoroughly pulverizing the soil to a depth of 4-inches. The prepared soil shall be loose and reasonably smooth. The area shall be reasonably free of large clods, roots, and other material which will interfere with the work or subsequent mowing and maintenance operations.
- C. Application of Fertilizer
  - 1. The fertilizer (and/or lime) shall be spread uniformly in one or more applications as specified below.
    - a. An initial application of 275 lbs. per acre.
  - 2. Unless otherwise directed, a second application of 275 lbs. per acre shall be applied within 90 calendar days after the initial application on projects which have not been accepted prior to this time.
  - 3. Unless otherwise directed, a third application of 500 lbs. per acre shall be applied within 270 to 360 calendar days after the initial application on projects which have not been accepted prior to this time.
  - 4. Lime shall be spread at a minimum uniform rate of 250 lbs. per acre and thoroughly mixed with the soil to a depth of 4-inches.
- D. Dry Mulching
  - 1. Approximately 2-inches, loose thickness, of the dry mulch material shall be applied uniformly over the area to be seeded. After the area has been seeded, the mulch material shall be cut into the soil so as to produce a loose mulched thickness of 3- to 4-inches. Care shall be exercised that the materials are not cut too deeply into the soil.

- E. While the soil is still loose and moist, the seed shall be scattered uniformly over the area to be grassed. The application rates of the various types of seed shall be as described in Paragraph 2.01.
- F. Rolling
  - 1. Immediately after completion of the seeding, the entire grassed or mulched area shall be rolled with a cultipacker, traffic roller, or other suitable equipment. At least two trips over the entire area will be required.
- G. Watering
  - 1. The seeded areas shall be watered so as to provide optimum growth conditions for the establishment of the grass. The period for maintaining such moisture conditions shall not be less than two weeks after planting.

### 3.03 GRASSING BY HYDRO-SEEDING

- A. General
  - 1. This method of grassing generally consists of distributing materials over the area to be grassed by spraying a slurry composed of water, seed, fertilizer, and mulch (wood cellulose fiber mulch for hydro-seeding applications).
- B. Ground Preparation
  - 1. The provisions for the preparation of the seeding areas and for the subsequent maintaining of the moisture condition shall be as specified in Paragraphs 3.02 B, C and G.
- C. Equipment
  - 1. Equipment used in hydro-seeding shall have a built-in agitation system with an operating capacity sufficient to agitate, suspend, and homogeneously mix a slurry of the specified amount of fiber, fertilizer, seed, and water. The slurry distribution lines shall be large enough to prevent stoppage. The discharge line shall be equipped with a set of hydraulic spray nozzles which will provide even distribution of the slurry on the various areas to be grassed. The slurry tank shall have a minimum capacity of 1,000 gallons.
- D. Application
  - 1. Wood cellulose fiber mulch shall be applied at the rate of 1,500 lbs. per acre in a mixture of seed, fertilizer, and water. The seed, fertilizer, mulch, and water shall be combined into the slurry tank for distribution of all ingredients in one operation. The materials shall be combined in a manner recommended by the mulch manufacturer. The slurry mixture shall be so regulated that the amounts and rates of application shall result in a uniform application of all materials at rates not less than the amounts specified herein. Using the color of the mulch as a guide, the equipment operator shall spray the prepared seed-bed with a uniform visible coat. The slurry shall be applied in a sweeping motion, in an arched stream, so as to fall like rain, allowing the mulch fibers to build upon each other until an even coat is achieved.

### 3.04 SODDING

#### A. Ground Preparation

1. The provisions for the preparation of the area to be sodded shall include scarifying and loosening the soil and application of fertilizer as described in Paragraphs 3.02 B. and C.

#### B. Inclement Weather and Unsuitable Conditions

1. Sodding shall not be performed when weather and soil conditions are, in the Engineer/Architect's opinion, unsuitable for proper results.

#### C. Sod Placement

1. The sod shall be placed on the prepared surface with edges in close contact, and shall be firmly and smoothly embedded by light tamping with appropriate tools.
2. Where sodding is used in drainage ditches or ponds, the setting of the pieces shall be staggered, such as to avoid a continuous seam along the line of flow. Along the edges of such staggered areas, the offsets of individual strips shall not exceed 6-inches.
3. In order to prevent erosion caused by vertical edges at the outer limits, the outer pieces of sod shall be tamped so as to produce a featheredge effect.
4. On areas where the sod may slide, due to height and slopes, it shall be pegged, with pegs driven through the sod blocks into firm soil and at intervals as shown on the drawings or as directed by the Engineer/Architect.
5. Any pieces of sod which, after placing, show appearance of extreme dryness shall be removed from the work.

#### D. Watering

1. The sod shall be kept in a moist condition after planting and for the duration of the Contract. Water shall not be applied between the hours of 8:00 A.M. and 4:00 P.M.

### 3.05 MAINTENANCE

- A. The Contractor shall, at his expense, maintain the planted areas in a satisfactory condition until final acceptance. Such maintenance shall include watering, filling, leveling, and repairing of any washed or eroded areas and additional seed, fertilizer, and mulch or sod applied to areas where a satisfactory stand of grass has not been achieved.
- B. Immediately prior to final inspection, the Contractor shall mow and remove clippings from the areas grassed under this Contract.

**END OF SECTION**

**DIVISION 3**  
**CONCRETE**

**SECTION 03100**

**CAST-IN-PLACE AND POURED CONCRETE**

**PART 1 - GENERAL**

**1.01 WORK INCLUDED**

- A. The work included under this section consists of furnishing all materials, forms, transportation and equipment, and performing all necessary labor to do all the plain and reinforced concrete work shown on the Drawings, or incidental to the proper execution of the work, or as herein specified.
- B. Composition: Concrete shall be composed of cement, fine aggregate, coarse aggregate, and water so proportioned and mixed as to produce a plastic workable mixture in accordance with all requirements under this section suitable to the specific conditions of placement.

**1.02 SUBMITTALS**

- A. All materials specified shall be certified by the producer or manufacturer that the furnished material meets the specific requirements of the specifications. Concrete mix designs shall be submitted for approval prior to placement.

**PART 2 - MATERIALS AND EQUIPMENT**

**2.01 PORTLAND CEMENT**

- A. Shall comply with the standard specifications for Portland Cement, A.S.T.M. designation C-150, Type II, or Type III (high-early), where indicated on drawings.

**2.02 CONCRETE AGGREGATE**

- A. Shall conform to standard specifications for concrete aggregate, A.S.T.M. Designation C-33. Maximum size of aggregate shall not exceed one-fifth of the narrowest dimension between reinforcing bars.
- B. Fine Aggregate. Fine aggregate shall be clean, hard, strong, durable, uncoated particles of natural sand known as Lake Wales, Interlachen, or approved equal. The source, composition, quality and gradation of the fine aggregate shall be subject to the approval of the Engineer. Samples of the sand shall be furnished, together with certified copies of the gradation and analysis from the recognized testing laboratory.

- 1. The weight of extraneous or deleterious substances shall not exceed the following percentages.

Loss by Decantation	3%
Shale	1%
Clay Lumps	1%
Coal and Lignite	1%

- 2. The fine aggregate shall be reasonably well graded from coarse to fine and when tested by means of laboratory sieves shall meet the following requirements in percent of total weight:

<u>Total Retained On</u>	<u>Percent Retained</u>
No. 4 Sieve	0 - 5
No. 10 Sieve	3 - 30
No. 30 Sieve	30 - 70
No. 50 Sieve	65 - 95
No. 100 Sieve	95 - 100

3. Deficiencies in the percentages of the fine aggregates passing the No. 50 and No. 100 Sieves may be remedied by the addition of pozzolanic or cementitious materials excepting Portland cement. Such materials must meet the approval of the Engineer.

C. Coarse Aggregate

1. Coarse aggregate shall consist of hard, tough, durable components, free from adherent coatings and vegetable matter, and shall not contain soft, friable, thin or elongated particles in quantities considered deleterious by the Engineer. Coarse aggregate shall be properly graded from fine to coarse to produce concrete of desired strength, density, and workability. The source, composition, quality and gradation of the coarse aggregate shall be subject to the approval of the Engineers. Samples of the coarse aggregate shall be furnished together with certified copies of the gradation and analysis from a recognized testing laboratory.

2. All coarse aggregate shall be washed and shall be free from disintegrated pieces, salt, alkali, vegetable matter and adherent coatings. The total percentage of all deleterious substances shall not exceed 5 percent by weight. The substances designated shall not be presented in excess of the following amounts.

Loss by Decantation	1%
Clay Lumps or Other Soluble Materials	1/4%
Soft Fragments	5%

3. Where the cover over reinforcing is two (2) inches or more, the maximum size of aggregate shall be 1 1/2 inches. Where the cover over reinforcing is less than 2 inches, the maximum size of aggregate shall be 3/4 inch. The maximum size of aggregate shall not exceed one-fifth of the narrowest dimension between forms nor three-fourths of the minimum clear spacing between reinforcing bars. The grading of the coarse aggregate in the concrete shall be within the following limits.

Percent Passing

Maximum Size Square Mesh Screen	97 - 100%
1/2 Maximum Size Square Mesh Screen	40 - 70%
No. 4 Sieve	0 - 6%

2.03 WATER

- A. Water shall be clean and free from oil, acids, alkalis, organic materials or other injurious substances.

## 2.04 REINFORCEMENT

- A. Reinforcing Bars: ASTM A615, Grade 60, deformed bars of USA manufacture.
- B. Welded Wire Fabric: ASTM A185, gauges, spacing and dimensions as indicated.
- C. Metal Bar Supports: CRSI MSP-1, Chapter 3, Class 2, Type B, Stainless Steel Protected Bar Supports, or otherwise approved by the Engineer. Use concrete supports for reinforcement in concrete placed on grade.
- D. Tie Wire: 16 gauge minimum, black, soft annealed.
- E. Coupler Splice Devices: Cadweld tensions couplers, capable of developing the ultimate strength of the bar as manufactured by Erico Products, Incorporated, Solon, Ohio, or equal.

## 2.05 FORM WORK

- A. Lumber: Douglas Fir or Larch, No. 2 grade, seasoned and surfaced on four sides.
- B. Plywood: Plyform, Class 1, BB-Exterior type, mill oiled and edge sealed, with thickness not less than 3/4 inch.
- C. Medium Density Overlay (MDO) Plywood Forms: PS-1, B-B High Density Concrete Form Overlay, Class I, unoled.
  - 1. Butt form panels, make contact surface fully flush and seal butting holes with sponge form tape. Chamfer edges of beams and ceilings.
  - 2. Where MDO plywood is used to form beams, do not use MDO plywood that has been patched or damaged.
- D. Drip Forms: Varnished ponderosa pine or equally rigid non-staining plastic, 1/2 inch wide on each leg.

## 2.06 ADMIXTURES

- A. Air Entraining Admixture: ASTM C260.
- B. Water Reducing and Retarding Admixture:
  - 1. Concrete Without Superplasticizer:
    - a. Water Reducing Admixtures: ASTM C494, Type A, equal to Eucon WR-75 by the Euclid Company, Pozzoloth 200 N by Master Builders, Plastocrete 161 by Sika Chemical Corporation, and containing no calcium chloride.
    - b. Water Reducing and Retarding Admixtures: ASTM C494, Type D, equal to Eucon Retarder-75 by the Euclid Company, Pozzoloth 100 XR by Master Builders, Plastiment by Sika Chemical Corporation, and containing no calcium chloride.
    - c. Accelerating Admixtures: ASTM C494, Type C or E, equal to Accelguard 80 by the Euclid Company, Darex Set Accelerator by W.R. Grace, and containing no calcium chloride.



PART 3 - EXECUTION

3.01 PROPORTIONING

- A. The proportions of aggregate to cement shall be such as to produce a thoroughly plastic mixture, which will work readily into the corners and angles of the forms and around the reinforcement but without permitting the materials to segregate or excess free water to collect on the surface. The percentage of sand shall not be less than thirty (30) nor more than fifty (50) percent of the total weight of the aggregate.
- B. The total content, including the surface water contained in the aggregate, shall not exceed 5.7 gallons per sack of cement. The slump shall not exceed four (4) inches. Air-entraining admixture shall be Darex AEA as manufactured by the Dewey and Almy Chemical Company.
- C. The amount of air entrained in the freshly mixed concrete shall not be less than three (3) percent nor more than six (6) percent. The minimum cement content in sacks per cubic yard of concrete shall not be less than six (6) sacks per cubic yard for Class "A" concrete.
- D. Concrete materials shall be accurately measured by weight. Measurement of materials for ready-mixed concrete shall conform to the "Standard Specifications for Ready-Mixed Concrete", (A.S.T.M designation C-94).
  - 1. Class "A" concrete for all structures shall have minimum compressive Strength of 4000 psi at 28 days.
  - 2. Class "B" concrete for sidewalks shall have minimum compressive strength of 3000 psi at 28 days.
  - 3. All concrete shall be Class "A" unless otherwise shown on the drawings.

3.02 MIXING AND PLACING

- A. Concrete shall be mixed conveyed and deposited in accordance with the "A.C.I. Building Code" (A.C.I.318).
- B. Prior to placing any concrete, the Contractor shall submit for the Engineer's approval a design mix, calculated by a recognized testing laboratory, and using the approved aggregates to produce a workable mix of the desired strength, together with certified copies of 7 days and 28 day tests of cylinders taken from concrete made according to the design mix. The mixes shall be designed to secure concrete having a minimum compressive strength at age 28 days.
- C. Ready-mixed concrete delivered shall be accompanied by delivery tickets showing the following.

1.	Date and time leaving plant	Additives (if any)
2.	Type of cement and weight	Site arrival time
3.	Quantity of Water and time added	Site leaving time
- D. Concrete
  - 1. Ready-mixed concrete shall be used. All mixing requirements specified herein shall be enforced, and the Owner's laboratory representative and the Engineer shall have free access to the mixing plant at all times.

2. Except for materials and/or procedures otherwise specified herein, ready-mixed concrete shall be mixed and delivered in accordance with the requirements of ASTM C94.
3. No water shall be added to the concrete after it leaves the plant except where part of the design water was purposely omitted at the plant, and then only as approved by the Engineer.

E. Mixer Speed

1. Neither the speed of any mixer nor the quantity of material loaded into any mixer shall exceed the recommendations of the manufacturer.
2. Excessive over-mixing, required addition of water to preserve the required consistency, shall be cause of rejection of the batch.
3. Concrete shall not remain in a transit mixer or agitator truck more than 90 minutes after the water has been introduced, and not for more than 45 minutes if any approved retarding agent is not used.
4. Minimum mixing time shall be 50 revolutions of drum at rated speed.

F. Measurement

1. Equipment necessary to determine and control the actual amounts of all materials entering the concrete shall be provided by the concrete manufacturer.
2. All materials shall be measured by weight, except that water may be measured by volume calculated at 8-1/3 pounds per gallon. One bag of cement will be considered as 94 pounds in weight.

G. Mixes

1. Mix Design: Conform to ACI 318, Section 4.3. Submit data on consecutive tests and standard deviation.
2. Maximum Water-Cement Ratio:
  - .37 (lbs/lb) - Concrete with superplasticizer
  - .45 (lbs/lb) - Class A concrete without superplasticizer
  - .55 (lbs/lb) - Class B concrete without superplasticizer
  - .65 (lbs/lb) - Class C concrete without superplasticizer
3. Air Content: 5 percent plus or minus 1.5 percent (Class A and B).
4. Slump: 4 inches plus or minus 1 inch for Class A and B without superplasticizer. 7 inches plus or minus 1 inch for Class A and B with superplasticizer. 8 inches plus or minus 1 inch for tremie concrete or as specified by details.

## H. Placing Concrete

1. All concrete shall be placed in clean, damp forms that are not hot to the touch.
2. To prevent segregation, concrete shall be deposited as nearly as practicable in final position and not allowed to drop freely more than necessary and in no case more than five feet, except in an approved funnel or tremie. All concrete shall be placed during daylight unless otherwise authorized at least four hours in advance. Where the reinforcing steel above the top of the concrete being placed becomes coated with laitance or partially set-up concrete, all such concrete shall be removed from the reinforcing steel prior to placing concrete around the bars.
3. Concrete shall be packed carefully and tightly around pipe and other items to secure maximum adhesion.
4. Concrete shall be placed in layers not over 12 inches deep before compacting. Concrete shall be compacted by internal vibrating equipment supplemented by spading and hand-rodging between reinforcing steel and form to eliminate air bubbles and honeycomb. Vibrators shall not be used to move the concrete laterally inside the forms. Duration of vibration shall be limited to the time necessary to provide satisfactory consolidation without causing segregation, not less than five and more than 15 seconds per square foot of exposed top surface. The vibrator shall be constantly relocated and shall be placed in each specific spot only once for each layer. The Contractor shall take steps to assure that sufficient personnel are available to devote full time to operating vibrator, spading and rodging.
5. Wall concrete shall be placed in layers as indicated above, with the first lift preceded by a 1-inch minimum layer of 1:2-1/2 cement-sand grout, with a 6-inch to 8-inch slump, placed on existing concrete not more than 20 minutes before concrete placement. The surface of previously placed hardened concrete shall be clean and wet before grouting, or shall be treated with a bonding agent as required. Puddles of water in horizontal recessed keys shall be avoided by the use of drain recesses to outside edge of concrete. Concrete in walls and deep beams shall be placed in lifts not to exceed three layers at 12 inches each for the full length of the pour before proceeding higher. The placing of concrete shall not be delayed more than 20 minutes between layers or lifts.

## 3.03 CURING AND PROTECTION

### A. Curing

1. Immediately after surface defects have been repaired, apply a spray coat of curing compound to all exposed surfaces, including slabs, walls, beams and columns in accordance with the manufacturer's recommendations. Protect exposed steel keyways and other embedded items from the curing compound. Water cure, as specified in paragraph B hereunder, all concrete surfaces that is to be exposed to wastewater, surfaces that are to be coated with a coal tar epoxy system, and concrete floors requiring a bond for special finishes.
2. Do not apply compound during periods of rainfall. Should the film become damaged from any cause within the required curing period, immediately repair the damaged portions with additional compound. Upon removal of forms, immediately coat the newly exposed surfaces to provide a curing treatment equal to that provided for the surface.

3. Curing and Sealing Compound: Use clear compound conforming to Federal Specification TT-C-800A, 30% solids content minimum, having test data from an independent laboratory indicating a maximum moisture loss of 0.030 grams per sq. cm. when applied at a coverage rate of 300 sq. ft per gallon, and equal to Super Floor Coat or Super Pliocure by The Euclid Chemical Company or Masterseal 66 by Master Builders. Furnish manufacturer's certification as required.
  4. Apply specified clear curing and sealing compound to all horizontal areas so noted on the Drawings or in the Specifications. Apply immediately after final finishing. Apply this compound to non-structural construction joints of slabs on grade to act as a bond breaker prior to placement of adjacent concrete.
- B. Water Curing Method: Cure all concrete that is to be water cured by either the wet burlap method, by continuous fogging or by covering the waterproof sheet.
1. Wet Burlap Method: Cover concrete surface with a double thickness of burlap, cotton mats, or other approved materials, kept thoroughly saturated with water. Keep the forms wet until removed and upon removal, start the curing specified herein immediately. Cure the concrete for a period of 7 days for normal Portland cement or 4 days for high early strength cement. Do not submerge concrete poured in the dry until it has attained sufficient strength to adequately sustain the stress involved and do not subject it to flowing water across its surface until it has cured 4 days.
  2. Continuous Fogging: Perform continuous fogging by fogging with a nozzle, which so atomizes the flow of water that a mist, and not a spray, is formed. Fog the concrete surface regularly without allowing any part of the surface to become dry. Take all necessary precautions to prevent erosion of the concrete surface by water.
  3. Covering the Waterproof Sheets: Keep the entire area to be cured continuously wet by fogging, as specified in the fogging paragraph above, for at least 18 hours and then immediately cover the waterproof curing sheet conforming to ASTM C171, waterproof paper and polyethylene film, free of holes or tears. Keep sheet fully flat, without wrinkles or air bubbles, held down tautly at all edges. Do not use this method on slabs which will be exposed to view.

#### 3.04 PLACING REINFORCEMENT

- A. All reinforcement shall be detailed, fabricated and erected in accordance with the A.C.I. "Manual of Standard Practice for Detailing Reinforced Concrete Structure", (A.C.I. 315), including bar supports and spacers. At splices all reinforcing bars shall be lapped a minimum of twenty-four (24) bar diameters but not less than twelve (12) inches.
- B. The reinforcing shall be fabricated to the shapes and dimensions shown and shall be placed where indicated on the drawing. Before placing, all reinforced steel shall be thoroughly cleaned of rust, mill scale or coatings, which would reduce or destroy the bond. Reinforcing bars shall conform to the requirements of the latest editions of the A.C.I. Code and the CRSI Manuals.
- C. Wire mesh, unless otherwise shown on the drawings or specified, shall be 6" x 6" No.10 woven or electrically welded wire fabric conforming to the requirements of ASTM Designation A185, latest revision.

- D. Space chairs and bolsters in accordance with ACI 315 and 318 using height to furnish cover over reinforcing required. Chairs with plastic feet or stainless steel shall be used in all beams and elevated slabs. Chairs for other concrete adjacent to or on the ground may be pieces of concrete block or concrete brick compressed into subgrade with the rebars bearing directly on the pointed edge of the masonry supports, or chairs set on precast concrete pads compressed into the subgrade.
- E. When placed in the forms, reinforcement shall be clean and free of all loose rust, scale, dust, dirt, paint, oil or other foreign material, and shall be accurately and securely positioned both laterally and vertically before placing concrete.
- F. The rebars shall be fastened together at every intersection or at intervals not greater than 24 bar diameters by wire ties or by some alternate method acceptable to the Engineer. In areas where large bars are closer together, the wire ties may be spaced not more than 30 bar diameter apart, rather than as specified above.

### 3.05 FORMS

- A. Installation and erection shall be in accordance with ACI 347 and specified hereinafter.
- B. Forms shall conform to shape, lines and dimensions of numbers indicated, and shall be sufficiently tight to prevent leakage of mortar. They shall not deflect under dead load weight of construction as a liquid or of construction load. Forms shall be properly braced or tied together so as to maintain position and shape within specified tolerances. Construct forms so that they can be removed steadily without hammering or prying against the concrete. Forms for exposed concrete shall be carefully made and accurately placed to obtain correct shape and line.
- C. Forms shall be of wood, metal, or other approved materials. Metal forms shall be of a type and manufacture acceptable to the Engineer. Plywood, fiberboard, or absorptive type form linings may be used where appropriate. Sectional forms shall produce a uniform surface and shall be assembled in a modular pattern. Pours will not be scheduled until all erection and bracing is complete. Walers, ties and braces shall be required for all forms. Chamfer strips made from nominal dimensional 1" x 1" lumber cut on the diagonal shall be installed at the top of the forms on all exposed edges of walls, slabs, beams and other structures above grade.
- D. Drip edge shall be made from wood quarter round and installed where shown. Extruded plastic fillets shall be used where detailed. Circular structures shall be formed with special care, and attention to the appearance of the finished structure. Random location of fillers, non-modular sections, and excessive deviations from true circular segments shall be cause for rejection of the forms.
- E. The Contractor shall be fully responsible for the adequacy of form work in its entirety. Forms shall support required loads and shall maintain their dimensional and surface correctness to produce members required drawings.
- F. Slots, chases, recesses or other openings as shown on the drawings or as needed for the work of any other trades shall be boxed out.
- G. Box out for all temporary openings and build forms to seal them up when and as required.
- H. After sealing and immediately before the placing of reinforcing, faces of all forms in contact with the concrete shall receive a thorough coating of the liquid form releasing agent, applied in compliance with the Manufacturer's instructions.

- I. Reused forms shall be thoroughly cleaned out of dirt, debris, concrete and foreign matter. Forms shall not be reused if they have developed defects, which would affect their tightness and strength or desired surface finish. Used forms shall not be used for architectural concrete.
- J. Forms shall be removed in a manner that will prevent injury to concrete. Supporting forms or shoring shall not be removed until the members have acquired sufficient strength to support their weight and any load thereon.
- K. Removal shall be in sequence as approved by the Engineer. Unless test cylinders warrant another procedure, the forms shall not be removed from members prior to the time listed in the schedule hereinafter unless otherwise directed.
- L. Bonding To Existing Surfaces: Clean existing concrete surfaces that are to have new concrete bonded thereto of all grease, oil, dust, dirt and loose particles and coat with an epoxy bonding agent just prior to placing of the new concrete. Apply the bonding agent as recommended by the manufacturer and allow the agent to become tacky before the new concrete is placed. Do not allow the bonding agent to overlap or be spilled on the surfaces to be exposed after the work is completed.

### 3.06 FORM REMOVAL

- A. Maintain formwork in place for the following structural conditions until the concrete has attained the minimum percentage of indicated design compressive strength or for the period of time specified in the following table.

Note: Time periods in the table include all days except those in which the temperature falls below 40 degrees F.

### 3.07 CONCRETE FINISHINGS

- A. Repair of Surface Defects
  - 1. General: Repair surface defects, including tie holes immediately after form removal. Dampen the area to be patched and an area at least 6 inches wide surrounding it to prevent absorption of water from the patching mortar. Notify the Engineer prior to commencing operations.
  - 2. Removal of Defective Concrete: Remove all honeycombed and other defective concrete down to sound concrete. Cut edges perpendicular to the surface or slightly under cut. Sand blast surfaces to receive repair.
  - 3. Bonding Grout: Thoroughly dampen surfaces to be patched and apply a coat of bonding grout consisting of one-part cement to one-part fine sand passing a No. 30 sieve and having the consistency of thick cream.
  - 4. Placing Patching Mortar: After the bonding grout begins to lose its water sheen, apply a premixed patching mortar, thoroughly consolidating it into place and striking it off so as to leave the patch slightly higher than the surrounding surface. Leave mortar undisturbed for one hour to permit initial shrinkage and then finally finish.
  - 5. Tie Holes: After being cleaned and thoroughly dampened, fill the tie holes solid with patching mortar.

- B. Floated Finish: After concrete has been placed, consolidated, struck off and leveled, do not work the surface further until water sheen has disappeared and the surface has hardened sufficiently to permit floating. During the first floating, check the planeness of the slab with a 10-foot straightedge applied at no less than two angles. Cut down all high spots and fill all low spots to produce a surface having the required tolerance. Then refloat the slab to a uniform sandy texture.
- C. Light Broomed Finish: After floating, power trowel slabs to receive a light broomed finish to produce a smooth surface, relatively free of defects. Before the surface sets, pass a soft broom drag over the surface to produce a surface uniform in texture and appearance.
- D. Troweled Finish: After floating, power trowel slabs to receive a troweled finish to produce a smooth surface, relatively free of defects. Hand trowel after the surface has hardened sufficiently. When a ringing sound is produced as the trowel is moved over the surfaces, perform final troweling by hand to produce a surface which is thoroughly consolidated, free from trowel marks, uniform in texture and appearance and plane to a tolerance of 1/8 inch of 10 feet as determined by a 10 foot straightedge placed anywhere on the slab in any direction.
- E. Hardener Finish: Where indicated to receive a troweled hardener finish, water cure slabs without application of curing and sealing agent. When slab is at least 20 days old and thoroughly dry, apply the hardener in accordance with the manufacturer's recommendations. Where dry-shake hardener or slip resistant finish is required, apply the hardener or slip-resistant product prior to complete curing and finishing, in accordance with the requirements and recommendations of the product manufacturer.
- F. Saw Cut Joints: Cut joints that are to be saw cut not sooner than 2 hours after the concrete is poured and not later than 8 hours after the pour.

### 3.07 TESTS

- A. Compressive strength tests shall be made by breaking standard 6-inch diameter by 12-inch high test specimens prepared, cured and broken in accordance with the American Society for Testing Materials Methods C-31 and C-39, latest revision. Four specimen test cylinders shall be taken from each pour of five (5) cubic yards or more. One additional test shall be taken from each thirty (30) cubic yards or fraction thereof in each pour in excess of thirty (30) cubic yards.
- B. Test specimens shall be taken from manhole bottom pours of less than five (5) cubic yards as directed by the Engineer. Test specimens shall be taken in the presence of the Engineer. One cylinder from each pour shall be broken at seven (7) days, the remainder at twenty-eight (28) days. Additional test cylinders may be ordered for determining the characteristics of a new design mix or changes in equipment or methods, and under adverse weather or curing conditions.
- C. Slump test shall be made in accordance with ASTM C143, latest revision, and shall be made with each load and at time of cylinders.
- D. The Contractor shall supply all cylinder molds, slump cones, tools and labor for preparing specimen, and shall provide clean, moist sand or burlap for curing. Cylinder shall not be shipped to the testing laboratory until the third day following preparation, and shall be protected from accidental damage at all times.
- E. The test cylinders shall be tested in a recognized commercial testing laboratory at the expense of the Contractor.

### 3.08 EXPANSION JOINTS, CONSTRUCTION JOINTS AND WATER SPOTS

- A. Expansion Joints shall be placed as indicated on the drawings. Joint materials for surfaces exposed to water and sewage shall conform to ASTM D175, Preformed Joint Filler, non-extruding and resilient (bituminous type), thickness as shown on the drawings. Joint materials for isolation joints, slab-on-grade joints and wall joints not exposed to water and sewage shall conform to ASTM D994, preformed expansion joint filler for concrete (bituminous type), thickness as shown on the drawings.
- B. Construction Joints shall be located in accordance with a schedule of pours which shall be prepared and submitted by the Contractor. Vertical construction joints shall be held to the minimum number consistent with good standard practice.
- C. Water Stops. Material for water stops shall be 9-inch PVC multi-rib center-bulb type for expansion joints, and 1/4" x 4" and 1/8" x 4" structural steel sheets for construction joints. PVC joint material shall be as manufactured by The Burke Company, or approved equal.

**END OF SECTION**



**SECTION 03300**

**CONCRETE**

**PART 1 - GENERAL**

**1.01 DESCRIPTION OF WORK**

- A. Work consists of the forming, mixing, placing and curing concrete for use in small structures, sidewalk, and curb replacement.

**1.02 QUALITY ASSURANCE**

- A. Concrete may be standard design and product of commercial ready-mix or transit-mix supplier conforming to the following requirements:

<u>CLASS</u>	<u>CEMENT CONTENT PER CUBIC YARD</u>	<u>MINIMUM 28-DAY STRENGTH (lb. per sq. in.)</u>
Structural	6.25 bags or 600 pounds	4,000
Non-structural	6.75 bags or 560 pounds	3,000

- B. Job mixes of small quantities shall conform to the same requirements.

**1.03 SUBMITTALS**

- A. Compressive strength tests, when required by the Engineer, shall be made by breaking standard 6-inch diameter by 12-inch high test specimens prepared, cured and broken in accordance with the ASTM C31 and C39. Three specimen test cylinders shall be taken from each concrete pour of three cubic yards. One additional test cylinder shall be taken for quantities up to one truck load. Test specimens shall be taken in the presence of the Engineer. One cylinder from each pour shall be broken at seven days, the remainder at twenty-eight days. Additional test cylinders may be ordered for determining the characteristics of a new design mix or changes in equipment or methods, and under adverse weather or curing conditions.

- B. Slump test shall be made in accordance with ASTM C143, and shall be made whenever directed by the Engineer.

- C. Responsibility for Tests and Reports

- 1. The Contractor shall supply all cylinder molds, slump cones, tools and labor for preparing specimens, and shall provide clean, moist sand or burlap for curing. Cylinders shall be shipped to the testing laboratory until the third day following preparation, and shall be protected from accidental damage at all times.
- 2. The test cylinders shall be tested in a recognized commercial testing laboratory.

#### 1.04 DELIVERY AND STORAGE

- A. Ready-mixed concrete delivered shall be accompanied by delivery tickets showing the following:
  - Date and time leaving plant
  - Type of cement and weight
  - Quantity of water and time added
  - Additive (if any).
- B. Bulk or bagged cement or bagged concrete mix shall be stored off the ground in a sheltered area.

#### PART 2 - PRODUCTS

##### 2.01 CEMENT

- A. Portland cement shall conform to the latest revision of Federal and/or ASTM Specifications enumerated below:
  - 1. For general concrete construction, ASTM C150, Type I.
  - 2. Type II (meeting ASTM C150) cement shall be used in all areas where the concrete will be subjected to a hydrogen sulfide environment (i.e., direct contact with groundwater).

##### 2.02 AGGREGATES

- A. Fine Aggregate
  - 1. Fine aggregate shall be clean, hard, strong, durable, uncoated particles of natural sand.
  - 2. The fine aggregate shall be reasonably well graded from coarse to fine.
- B. Coarse Aggregate
  - 1. Coarse aggregate shall be washed and consist of hard, tough, durable components, free from adherent coatings, salt, alkali, vegetable matter, and shall no contain an excessive number of soft, friable, thin or elongated particles. Coarse aggregate shall be properly graded from fine to coarse to produce concrete of the desired strength, density, and workability.
  - 2. Where the cover over reinforcing is two inches or more, the maximum size of aggregate shall be 1-1/2 inches. Where the cover over reinforcing is less than two inches, the maximum size of aggregate shall be 3/4-inch. The maximum size of aggregate shall not exceed one-fifth of the narrowest dimension between forms nor three-fourths of the minimum clear spacing between reinforcing bars.

##### 2.03 BAGGED CONCRETE MIX

- A. For very small amounts of concrete a premixed sand, gravel and cement in 40 lb. (1/3 cu. ft.) or 80 lb. (2/3 cu. ft.) bags may be used. The Engineer must give approval for its use.

## 2.04 ADMIXTURES

- A. The design mix may be based upon the use of such admixtures as the designer may select to improve the workability, plasticity or rate of curing of the concrete.

## 2.05 MIXING WATER

- A. The water used in mixing concrete shall be fresh, clean and free from injurious amounts of oil, acid, alkali, or organic matter.
- B. Water from any source other than a municipal water supply shall be shown by test to comply with Florida State Department of Transportation requirements for mixing water.

## 2.06 STEEL BAR AND WIRE FABRIC REINFORCEMENT

- A. The reinforcing shall be fabricated to the proper shapes and dimensions. Before placing, all reinforcements shall be thoroughly cleaned of rust, mill scale and/or coatings.
- B. Reinforcing bars shall conform to the requirements of ASTM A615, Grade 60 including hoops and stirrups.
- C. Reinforcing steel shall be detailed, fabricated and placed according to the methods and standards recommended in the "Manual of Standard Practice for Detailing Reinforced Concrete Structures" of the American Concrete Institute.
- D. Splices in reinforcing mats shall be staggered. Horizontal mats shall be supported on metal chairs with all sills or pads below subgrade. Spacers shall be provided for wall and column steel and shall be removed as the concrete is placed.
- E. Wire fabric, unless otherwise shown or specified, shall be 6-inches by 6-inches by W1.4 x W1.4 woven or electrically welded wire fabric conforming to the requirements of ASTM A185.

## PART 3 - EXECUTION

### 3.01 FORMS

- A. Material
  - 1. Forms shall be of wood, metal, or other approved materials, shall be built true to line and grade, mortar-tight, adequately braced and supported, and sufficiently rigid to prevent displacement or sagging. Metal forms shall be of a type and manufacture acceptable to the Engineer. Plywood, fiberboard, or absorptive type form linings may be used where appropriate.
  - 2. Form work shall be constructed conforming to AC1 347 Chapter 2. Joints of sectional forms shall be located in a modular manner with as few fillers as possible. Voids in plywood and joints between form modules used for concrete exposed to view or hydraulic action shall be filled with silicone sealant and shall be too smooth. Profile items such reglets and anchors shall be securely fastened with flush mechanical fasteners.
  - 3. Pours shall not be scheduled until all erection and bracing of form work has been completed.

### 3.02 CONCRETE PLACING

- A. Concrete shall not be placed until forms and reinforcing have been inspected.
- B. Concrete shall be placed with the aid of mechanical vibrating equipment supplemented by hand forking or spading. Vibration shall be transmitted directly to the concrete and not through the forms. The duration of vibration at any location in the forms shall be held to the minimum necessary to produce through consolidation.
- C. Concrete shall be compacted and worked in an approved manner into all corners and angles of the forms and around reinforcement and embedded fixtures in such a manner as to prevent segregation of the coarse aggregate.
- D. Before depositing new concrete on or against concrete which has set, the existing surfaces shall be cleaned of all laitance, foreign matter and loose particles, and slushed with a neat cement grout. Grout for horizontal construction joints shall be of cement and fine aggregate in the same proportions as in the concrete to be placed, and shall be from 1/2- to 1-inch thickness.
- E. The concrete shall be placed by suitable equipment as nearly as possible to its final location and without any segregation of the aggregate. Free vertical drop shall not exceed three feet.

### 3.03 CONCRETE CURING

- A. Water for curing shall be clear and entirely free from any elements which might cause staining or discoloration.
- B. Concrete shall be kept wet by covering with water, water saturated covering, or by alternate methods which will keep all surfaces continuously wet, for a period of seven days.
- C. Where wood forms are left in place during curing, they shall be kept wet at all times.

### 3.04 WEATHER PROTECTION

- A. No concrete shall be mixed or placed when the air temperature in the shade and away from artificial heat is as low as 40 degrees F., and falling. Concrete may be mixed and placed when the air temperature in the shade and away from artificial heat is 35 degrees Fahrenheit, and rising.
- B. Fresh concrete shall be protected from rain, flowing water and mechanical injury.

### 3.05 CONCRETE FINISHING

- A. Slabs, Walks and Pavements shall be brought to a true and even finish by power or hand-floating. The surface shall be floated to a true, smooth finish. Troweling shall be the minimum to obtain a smooth, dense surface and shall not be done until the mortar has hardened sufficiently to prevent excess fine material from being worked to the surface. All walk and pavement surfaces, shall, immediately after troweling, be lightly broomed. The brooming shall be sufficient to mark the surface without appreciably disturbing the troweled finish.

**END OF SECTION**

## SECTION 03600

### GROUT

#### PART 1 - GENERAL

##### 1.01 WORK INCLUDED

- A. Provide all labor, materials, tools and equipment and perform all grouting as specified hereinafter and indicated on the Drawings.

##### 1.02 RELATED WORK

- A. Section 03100: *Cast-In-Place and Poured Concrete*.

##### 1.03 SUBMITTALS

- A. Submit manufacturer's literature for review on the following items:
  - 1. Nonshrink grout data including grout properties, mixing, surface preparation and installation instructions.

##### 1.04 DELIVERY AND STORAGE

- A. Deliver and store grouting materials in unbroken containers with seals and labels intact as packaged by the manufacturer.

#### PART 2 - PRODUCTS

##### 2.01 MATERIALS

- A. Nonshrink, Nonmetallic Grout: The Burke Company's Non-Ferrous, Non-Shrink Grout, Sauereisen F-100 Level Fill, Master Builders Masterflow 713, Eculid NS Grout, or equal-pre-mixed type.
- B. Nonshrink Metallic Grout: The Burke Company's Metallic Spec Grout, Master Builders Embeco 636 Grout pre-mixed type, or equal.
- C. Epoxy Grout: Sikadur 42 Grout-Pak, or equal, for grouting sleeves for anchor bolts, etc.

#### PART 3 - EXECUTION

##### 3.01 PREPARATION

- A. Clean all bonding surfaces from dust and oil.

### 3.02 INSTALLATION

#### A. Nonshrink Grout

1. Use nonshrink, nonmetallic grout for grouting precast concrete wall panel connections, column base plates, anchor bolts, reinforcing bars, pipe sleeves, machinery support and pump base plates. Use epoxy grout for anchor bolts, etc., where indicated on the Drawings.
2. Mix and place nonshrink grout as recommended by the manufacturer.
3. Mix grout as close to the work area as possible and transport quickly to its final position in a manner which will not permit segregation of materials.
4. Cure nonshrink grout with water saturated burlap for at least three days or with an application of Super Rez Seal cure and seal compound, or equal, applied immediately after grout placement.
5. Do not operate machinery set on grout pads until grout has cured for at least 24 hours.

**END OF SECTION**

## **ADDITIONAL TECHNICAL SPECIFICATIONS**

**SECTION 120**  
**EARTHWORK AND RELATED OPERATIONS**  
**FOR LOCAL AGENCIES**



## EARTHWORK AND RELATED OPERATIONS

### SECTION 120 EXCAVATION AND EMBANKMENT

#### 120-1 Description.

**120-1.1 General:** Excavate and construct embankments as required for the roadway, ditches, channel changes and borrow material. Use suitable excavated material or authorized borrow to prepare subgrades and foundations. Construct embankments in accordance with Standard Plans, Index 120-001. Compact and dress excavated areas and embankments.

Meet the requirements of Section 110 for excavation of material for clearing and grubbing and Section 125 for excavation and backfilling of structures and pipe. Material displaced by the storm sewer or drainage structure system is not included in the earthwork quantities shown in the Plans.

**120-1.2 Unidentified Areas of Contamination:** When encountering or exposing any abnormal condition indicating the presence of contaminated materials, cease operations immediately in the vicinity and notify the Engineer. The presence of tanks or barrels; discolored earth, metal, wood, ground water, etc.; visible fumes; abnormal odors; excessively hot earth; smoke; or other conditions that appear abnormal may indicate the presence of contaminated materials and must be treated with extreme caution.

Make every effort to minimize the spread of contamination into uncontaminated areas. Immediately provide for the health and safety of all workers at the job site and make provisions necessary for the health and safety of the public that may be exposed to any potentially hazardous conditions. Ensure provisions adhere to all applicable laws, rules or regulations covering potentially hazardous conditions and will be in a manner commensurate with the gravity of the conditions.

The Engineer will notify the District Contamination Impact Coordinator (DCIC) who will coordinate selecting and tasking the Department's Contamination Assessment/Remediation Contractor (CAR). Provide access to the potentially contaminated area. Preliminary investigation by the CAR Contractor will determine the course of action necessary for site security and the steps necessary under applicable laws, rules, and regulations for additional assessment and/or remediation work to resolve the contamination issue.

The CAR Contractor will delineate the contamination areas, any staging or holding area required; and, in cooperation with the Prime Contractor and Engineer, develop a work plan that will provide the CAR Contractor's operations schedule with projected completion dates for the final resolution of the contamination issue.

The CAR Contractor will maintain jurisdiction over activities inside any outlined contaminated areas and any associated staging holding areas. The CAR Contractor will be responsible for the health and safety of workers within the delineated areas. Provide continuous access to these areas for the CAR Contractor and representatives of regulatory or enforcement agencies having jurisdiction.

Both Contractors will use the schedule as a basis for planning the completion of both work efforts. The Engineer may grant the Contract Time extensions according to the provisions of 8-7.3.2.

Cooperate with the CAR Contractor to expedite integration of the CAR Contractor's operations into the construction project. The Prime Contractor is not expected to

engage in routine construction activities, such as excavating, grading, or any type of soil manipulation, or any construction processes required if handling of contaminated soil, surface water or ground water is involved. All routine construction activities requiring the handling of contaminated soil, surface water or groundwater will be by the CAR Contractor. Adjustments to quantities or to Contract unit prices will be made according to work additions or reductions on the part of the Prime Contractor in accordance with 4-3.

The Engineer will direct the Prime Contractor when operations may resume in the affected area.

## **120-2 Classifications of Excavation.**

**120-2.1 General:** The Department may classify excavation specified under this Section for payment as any of the following: regular excavation, subsoil excavation, lateral ditch excavation, and channel excavation.

If the proposal does not show subsoil excavation or lateral ditch excavation as separate items of payment, include such excavation under the item of regular excavation.

If the proposal shows lateral ditch excavation as a separate item of payment, but does not show channel excavation as a separate item of payment, include such excavation under the item of lateral ditch excavation. Otherwise, include channel excavation under the item of regular excavation.

**120-2.2 Regular Excavation:** Regular excavation includes roadway excavation and borrow excavation, as defined below for each.

**120-2.2.1 Roadway Excavation:** Roadway excavation consists of the excavation and the utilization or disposal of all materials necessary for the construction of the roadway, ditches, channel changes, etc., except as may be specifically shown to be paid for separately and that portion of the lateral ditches within the limits of the roadway right-of-way as shown in the Plans.

**120-2.2.2 Borrow Excavation:** Borrow excavation consists of the excavation and utilization of material from authorized borrow pits, including only material that is suitable for the construction of roadway embankments or of other embankments covered by the Contract.

A Cost Savings Initiative Proposal (CSIP) submittal based on using borrow material from within the project limits will not be considered.

**120-2.3 Subsoil Excavation:** Subsoil excavation consists of the excavation and disposal of muck, clay, rock, or any other material that is unsuitable in its original position and that is excavated below the finished grading template. For stabilized bases and sand bituminous road mixes, consider the finished grading template as the top of the finished base, shoulders and slopes. For all other bases and rigid pavement, consider the finished grading template as the finished shoulder and slope lines and bottom of completed base or rigid pavement. For pond and ditches that identify the placement of a blanket material, consider the finished grading template as the bottom of the blanket material. Subsoil excavation also consists of the excavation of all suitable material within the above limits as necessary to excavate the unsuitable material.

Consider the limits of subsoil excavation indicated in the Plans as being particularly variable, in accordance with the field conditions actually encountered.

The quantity of material required to replace the excavated material and to raise the elevation of the roadway to the bottom of the template will be paid for under embankment or borrow excavation (Truck Measure).

**120-2.4 Lateral Ditch Excavation:** Lateral ditch excavation consists of all excavation of inlet and outlet ditches to structures and roadway, changes in channels of streams, and ditches

parallel to the roadway right-of-way. Dress lateral ditches to the grade and cross-section shown in the Plans.

**120-2.5 Channel Excavation:** Channel excavation consists of the excavation and satisfactory disposal of all materials from the limits of the channel as shown in the Plans.

### **120-3 Preliminary Soils Investigations.**

When the Plans contain the results of a soil survey, do not assume such data is a guarantee of the depth, extent, or character of material present.

### **120-4 Removal of Unsuitable Materials and Existing Roads.**

**120-4.1 Subsoil Excavation:** Where muck, rock, clay, or other material within the limits of the roadway is unsuitable in its original position, excavate such material to the cross-sections shown in the Plans or indicated by the Engineer, and backfill with suitable material. Shape backfill material to the required cross-sections. Where the removal of plastic soils below the finished earthwork grade is required, meet a construction tolerance, from the lines shown in the Plans as the removal limits, of plus or minus 0.2 feet in depth and plus or minus 6 inches (each side) in width.

**120-4.2 Construction over Existing Old Road:** Where a new roadway is to be constructed over an old one, plow or scarify the old road, and break it up full width, regardless of height of fill. If the Plans provide that paving materials may be incorporated into the fill, distribute such material in a manner so as not to create voids. Recompact the old road meeting the requirements of 120-10.2.

**120-4.3 Obliterating Old Road:** Where the Plans call for obliteration of portions of an old road outside of the proposed new roadway, obliterate such sections of the old road by grading to fill ditches and to restore approximately the original contour of the ground or a contour which produces a pleasing appearance.

### **120-5 Disposal of Surplus and Unsuitable Material.**

**120-5.1 Ownership of Excavated Materials:** Dispose of surplus and excavated materials as shown in the Plans or, if the Plans do not indicate the method of disposal, take ownership of the materials and dispose of them outside the right-of-way.

**120-5.2 Disposal of Muck on Side Slopes:** As an exception to the provisions of 120-5. 1, when approved by the Engineer, in rural undeveloped areas, the Contractor may place muck (A-8 material) on the slopes, or store it alongside the roadway, provided there is a clear distance of at least 6 feet between the roadway grading limits and the muck, and the Contractor dresses the muck to present a neat appearance. In addition, the Contractor may also dispose of this material by placing it on the slopes in developed areas where, in the opinion of the Engineer, this will result in an aesthetically pleasing appearance and will have no detrimental effect on the adjacent developments. Where the Engineer permits the disposal of muck or other unsuitable material inside the right-of-way limits, do not place such material in a manner which will impede the inflow or outfall of any channel or side ditches. The Engineer will determine the limits adjacent to channels within which such materials may be disposed.

**120-5.3 Disposal of Paving Materials:** Unless otherwise noted, take ownership of paving materials, such as paving brick, asphalt block, concrete slab, sidewalk, curb and gutter, etc., excavated in the removal of existing pavements, and dispose of them outside the right-of-way. If the materials are to remain the property of the Department, place them in neat piles as directed. Existing limerock base that is removed may be incorporated in the stabilized portion of

the subgrade. If the construction sequence will allow, incorporate all existing limerock base into the project as allowed by the Contract Documents.

**120-5.4 Disposal Areas:** Where the Contract Documents require disposal of excavated materials outside the right-of-way, and the disposal area is not indicated in the Contract Documents, furnish the disposal area without additional compensation.

Provide areas for disposal of removed paving materials out of sight of the project and at least 300 feet from the nearest roadway right-of-way line of any State maintained road. If the materials are buried, disregard the 300 foot limitation.

**120-6 rrow.**

**120-6.1 Materials for Borrow:** Do not open borrow pits until the Engineer has approved their location.

Do not provide borrow materials that are polluted as defined in Chapter 376 of the Florida Statutes (oil of any kind and in any form, gasoline, pesticides, ammonia, chlorine, and derivatives thereof, excluding liquefied petroleum gas) in concentrations above any local, State, or Federal standards.

Prior to placing any borrow material that is the product of soil incineration, provide the Engineer with a copy of the Certificate of Materials Recycling and Post Burn Analysis showing that the material is below all allowable pollutant concentrations.

**120-6.2 Furnishing of Borrow Areas:** To obtain the Engineer's approval to use an off-site construction activity area that involves excavation such as a borrow pit or local aggregate pit, request in writing, a review for cultural resources involvement. Send the request to the Division of Historical Resources (DHR), Department of State, State Historic Preservation Officer, Tallahassee, FL. As a minimum, include in the request the Project Identification Number, the County, a description of the property with Township, Range, Section, etc., the dimensions of the area to be affected, and a location map. Do not start any work at the off-site construction activity area prior to receiving clearance from the DHR that no additional research is warranted.

For certain locations, the DHR will require a Cultural Resources Assessment (CRA) Survey before approval can be granted. When this is required, secure professional archaeological services to complete an historical and archaeological survey report. Submit the report to the DHR and to the Department. The Engineer will determine final approval or rejection of off-site construction activity areas based on input from the DHR.

Before receiving approval or before use of borrow areas, obtain written clearance from the Engineer concerning compliance with the Federal Endangered Species Act and other Wildlife Regulations as specified in 7-1.4 and Section 4(f) of the USDOT Act as specified in 7-1.8.

The Department will adjust Contract Time in accordance with 8-7 for any suspension of operations required to comply with this Article. The Department will not accept any monetary claims due to delays or loss of off-site construction activity areas.

Except where the Plans specifically call for the use of a particular borrow or dredging area, the Contractor may substitute borrow or dredging areas of his own choosing provided the Engineer determines the materials from such areas meet the Department's standards and other requirements for stability for use in the particular sections of the work in which it is to be placed, and the Contractor absorbs any increase in hauling or other costs. Stake the corners of the proposed borrow area and provide the necessary equipment along with an operator in order for the Engineer to investigate the borrow area. The Engineer will determine test locations, collect samples, and perform tests to investigate the proposed borrow area based on soil strata



and required soil properties. The Engineer will approve use of materials from the proposed area based on test results and project requirements. Final acceptance of materials will be based on Point of Use Test as described in 6-1.2.4.

Before using any borrow material from any substitute areas, obtain the Engineer's approval, in writing, for the use of the particular areas, and, where applicable, ensure that the Engineer has cross-sectioned the surface. Upon such written approval by the Engineer, consider the substitute areas as designated borrow areas.

When furnishing the dredging or borrow areas, supply the Department with evidence that the necessary permits, rights, or waivers for the use of such areas have been secured.

Do not excavate any part of a Contractor furnished borrow area which is less than 300 feet from the right-of-way of the project or any State Road until the Engineer has approved a plan for landscaping and restoring the disturbed area. Perform this landscaping and land restoration at no expense to the Department, prior to final acceptance of the project. Do not provide a borrow area closer than 25 feet to the right-of-way of any state road. In Department furnished borrow pits, do not excavate material within 5 feet of adjacent property lines.

Upon completion of excavation, neatly shape, dress, grass, vegetate, landscape, and drain all exposed areas including haul roads, as necessary so as not to present an objectionable appearance.

Meet the requirements of Section 104 when furnishing borrow areas, regardless of location.

**120-6.3 Borrow Material for Shoulder Build-up:** When so indicated in the Plans, furnish borrow material with a specific minimum bearing value, for building up of existing shoulders. Blend materials as necessary to achieve this specified minimum bearing value prior to placing the materials on the shoulders. Take samples of this borrow material at the pit or blended stockpile. Include all costs of providing a material with the required bearing value in the Contract unit price for borrow material.

**120-6.4 Haul Routes for Borrow Pits:** Provide and maintain, at no expense to the Department, all necessary roads for hauling the borrow material. Where borrow area haul roads or trails are used by others, do not cause such roads or trails to deteriorate in condition.

Arrange for the use of all non-public haul routes crossing the property of any railroad. Incur any expense for the use of such haul routes. Establish haul routes which will direct construction vehicles away from developed areas when feasible, and keep noise from hauling operations to a minimum. Advise the Engineer in writing of all proposed haul routes.

**120-6.5 Authorization for Use of Borrow:** When the item of borrow excavation is included in the Contract, use borrow only when sufficient quantities of suitable material are not available from roadway and drainage excavation, to properly construct the embankment, subgrade, and shoulders, and to complete the backfilling of structures. Do not use borrow material until so ordered by the Engineer, and then only use material from approved borrow pits.

## **120-7 Materials for Embankment.**

**120-7.1 Use of Materials Excavated from the Roadway and Appurtenances:** Assume responsibility for determining the suitability of excavated material for use on the project in accordance with the applicable Contract Documents. Consider the sequence of work and maintenance of traffic phasing in the determination of the availability of this material.

**120-7.2 General Requirements for Embankment Materials:** Construct embankments of acceptable material including reclaimed asphalt pavement (RAP), recycled concrete aggregate

(RCA) and portland cement concrete rubble, but containing no muck, stumps, roots, brush, vegetable matter, rubbish, reinforcement bar or other material that does not compact into a suitable and enduring roadbed. Do not use RAP or RCA in the top 3 feet of slopes and shoulders that are to be grassed or have other type of vegetation established. Do not use RAP or RCA in stormwater management facility fill slopes.

Remove all waste material designated as undesirable. Use material in embankment construction in accordance with plan details or as the Engineer directs.

Complete the embankment using maximum particle sizes (in any dimension) as follows:

1. In top 12 inches: 3-1/2 inches (in any dimension).
2. 12 to 24 inches: 6 inches (in any dimension).
3. In the depth below 24 inches: not to exceed 12 inches (in any dimension) or the compacted thickness of the layer being placed, whichever is less.

Spread all material so that the larger particles are separated from each other to minimize voids between them during compaction. Compact around these rocks in accordance with 120-9.2.

When and where approved by the Engineer, the Contractor may place larger rocks (not to exceed 18 inches in any dimension) outside the one to two slope and at least 4 feet or more below the bottom of the base. Compact around these rocks to a firmness equal to that of the supporting soil. Construct grassed embankment areas in accordance with 120-9.2.5. Where constructing embankments adjacent to bridge end bents or abutments, do not place rock larger than 3-1/2 inches in diameter within 3 feet of the location of any end-bent piling.

**120-7.3 Materials Used at Pipes, Culverts, etc.:** Construct embankments over and around pipes, culverts, and bridge foundations with selected materials.

## **120-8 mbankment Construction.**

**120-8.1 General:** Construct embankments in sections of not less than 300 feet in length or for the full length of the embankment. Do not construct another LOT over an untested LOT without the Engineer's approval in writing.

For construction of mainline pavement lanes, turn lanes, ramps, parking lots, concrete box culverts and retaining wall systems, a LOT is defined as a single lift of finished embankment not to exceed 500 feet.

For construction of shoulder-only areas, shared use paths, and sidewalks areas, a LOT is defined as a single lift of finished embankment not to exceed 2000 feet.

Isolated compaction operations will be considered as separate LOTs. For multiple phase construction, a LOT shall not extend beyond the limits of the phase.

### **120-8.2 Dry Fill Method:**

**120-8.2.1 General:** Construct embankments to meet the compaction requirements in 120-9 and in accordance with the acceptance program requirements in 120-10.

As far as practicable, distribute traffic over the work during the construction of embankments so as to cover the maximum area of the surface of each layer.

Construct embankment using the dry fill method whenever normal dewatering equipment and methods can accomplish the needed dewatering.

**120-8.2.1.1 Maximum Compacted Lift Thickness Requirements:** Construct the embankment in successive layers with lifts up to a maximum listed in the table below based on the embankment material classification group.

Group	AASHTO Soil Class	Maximum Lift Thickness	Thick Lift Control Test Section Requirements
1	A-3	12 inches	Not Needed
	A-2-4 (No. 200 Sieve $\leq$ 15%)		
2	A-1	6 inches without Control Test Section	Maximum of 12 inches per 120-8.2.1.2
	A-2-4 (No. 200 Sieve $>$ 15%)		
	A-2-5, A-2-6, A-2-7, A-4, A-5, A-6		
	A-7 (Liquid Limit $<$ 50)		

**120-8.2.1.2 Thick Lift Requirements:** For embankment materials classified as Group 2 in the table above, the option to perform thick lift construction in successive layers of not more than 12 inches compacted thickness may be used after meeting the following requirements:

1. Notify the Engineer and obtain approval in writing prior to beginning construction of a test section.

a. Demonstrate the possession and control of compacting equipment sufficient to achieve density required by 120-10.2 for the full depth of a thicker lift.

2. Construct a test section of the length of one full LOT of not less than 500 feet.

3. Perform five Quality Control (QC) tests at random locations within the test section.

a. All five QC tests and a Department Verification test must meet the density required by 120-10.2.

b. Identify the test section with the compaction effort and soil classification in the Department's Earthwork Records System (ERS).

4. Obtain Engineer's approval in writing for the compaction effort after completing a successful test section.

In case of a change in compaction effort or soil classification, failing QC test or when the QC tests cannot be verified, construct a new test section. The Contractor may elect to place material in 6 inches compacted thickness at any time. Construct all layers approximately parallel to the centerline profile of the road.

The Engineer reserves the right to terminate the Contractor's use of thick lift construction. Whenever the Engineer determines that the Contractor is not achieving satisfactory results, revert to the 6 inch compacted lifts.

**120-8.2.1.3 Equipment and Methods:** Provide normal dewatering equipment including, but not limited to, surface pumps, sump pumps and trenching/digging machinery. Provide normal dewatering methods including, but not limited to, constructing shallow surface drainage trenches/ditches, using sand blankets, sumps and siphons.

When normal dewatering does not adequately remove the water, the Engineer may require the embankment material to be placed in the water or on low swampy ground in accordance with 120-9.2.3.

**120-8.2.2 Placing in Unstable Areas:** When depositing fill material in water, or on low swampy ground that will not support the weight of hauling equipment, construct the

embankment by dumping successive loads in a uniformly distributed layer of a thickness not greater than necessary to support the hauling equipment while placing subsequent layers. Once sufficient material has been placed so that the hauling equipment can be supported, construct the remaining portion of the embankment in layers in accordance with the applicable provisions of 120-9.2.2.

**120-8.2.3 Placing on Steep Slopes:** When constructing an embankment on a hillside sloping more than 20 degrees from the horizontal, before starting the fill, deeply plow or cut steps into the surface of the original ground on which the embankment is to be placed.

**120-8.2.4 Placing Outside the Standard Minimum Slope:** The standard minimum slope is defined as the plane described by a one (vertical) to two (horizontal) slope downward from the roadway shoulder point or the gutter line, in accordance with Standard Plans, Index 120-001 and 120-002. Where material that is unsuitable for normal embankment construction is to be used in the embankment outside the standard minimum slope, place such material in layers of not more than 18 inches in thickness, measured loose. The Contractor may also place material which is suitable for normal embankment, outside such standard minimum slope, in 18 inch layers. Maintain a constant thickness for suitable material placed within and outside the standard minimum slope, unless placing in a separate operation.

### **120-8.3 Hydraulic Method:**

**120-8.3.1 Method of Placing:** When the hydraulic method is used, as far as practicable, place all dredged material in its final position in the embankment by such method. Place and compact any dredged material that is reworked, or moved and placed in its final position by any other method, as specified in 120-9.2. Baffles or any other form of construction may be used if the slopes of the embankments are not steeper than indicated in the Plans. Remove all timber used for temporary bulkheads or baffles from the embankment, and fill and thoroughly compact all voids. When placing fill on submerged land, construct dikes prior to beginning of dredging, and maintain the dikes throughout the dredging operation.

**120-8.3.2 Excess Material:** Do not use any excess material placed outside the prescribed slopes or below the normal high-water table to raise the fill areas. Remove only the portion of this material required for dressing the slopes.

**120-8.3.3 Protection of Openings in Embankment:** Leave openings in the embankments at the bridge sites. Remove any material which invades these openings or existing channels without additional compensation to provide the same existing channel depth as before the construction of the embankment. Do not excavate or dredge any material within 200 feet of the toe of the proposed embankment.

### **120-8.4 Reclaimed Asphalt Pavement (RAP) Method:**

**120-8.4.1 General:** Use only RAP material stored at facilities with an approved Florida Department of Environmental Protection Stormwater permit or, transferred directly from a milling project to the Department project. Certify the source if RAP material is from an identifiable Department project. Do not use RAP material in the following areas: construction areas that are below the seasonal high groundwater table elevation; MSE Wall backfill; underneath MSE Walls or the top 6 inches of embankment.

Prior to placement, submit documentation to the Engineer for his approval, outlining the proposed location of the RAP material.

**120-8.4.2 Soil and RAP Mixture:** Place the RAP material at the location and spread uniformly, using approved methods to obtain a maximum layer thickness of 4 inches. Mix this 4 inches maximum layer of RAP with a loose soil layer 8 to 10 inches thick. After mixing,



meet all embankment utilization requirements of Standard Plans, Index 120-001 for the location used. The total RAP and other embankment material shall not exceed 12 inches per lift after mixing and compaction if the contractor can demonstrate that the density of the mixture can be achieved. Perform mixing using rotary tillers or other equipment meeting the approval of the Engineer. The Engineer will determine the order in which to spread the two materials. Mix both materials to the full depth. Ensure that the finished layer will have the thickness and shape required by the typical section. Demonstrate the feasibility of this construction method by successfully completing a 500 foot long test section.

**120-8.4.3 Alternate Soil and RAP Layer Construction:** Construct soil in 6 to 12 inch compacted lifts and RAP in alternate layers with 6 inch maximum compacted lifts. Use soil with a minimum LBR value of 40 to prevent failure during compaction of the overlying RAP layer. Demonstrate the feasibility of this construction method by successfully completing a 500 foot long test section.

## **120-9 Compaction Requirements.**

**120-9.1 Moisture Content:** Compact the materials at a moisture content such that the specified density can be attained. If necessary to attain the specified density, add water to the material, or lower the moisture content by manipulating the material or allowing it to dry, as is appropriate.

### **120-9.2 Compaction of Embankments:**

**120-9.2.1 General:** Uniformly compact each layer, using equipment that will achieve the required density, and as compaction operations progress, shape and manipulate each layer as necessary to ensure uniform density throughout the embankment.

**120-9.2.2 Compaction Over Unstable Foundations:** Where the embankment material is deposited in water or on low swampy ground, and in a layer thicker than 12 inches (as provided in 120-8.2.2), compact the top 6 inches (compacted thickness) of such layer to the density as specified in 120-10.2.

**120-9.2.3 Compaction Where Plastic Material Has Been Removed:** Where unsuitable material is removed and the remaining surface is of the A-4, A-5, A-6, or A-7 Soil Groups (see AASHTO M145), as determined by the Engineer, compact the surface of the excavated area by rolling with a sheepsfoot roller exerting a compression of at least 250 psi on the tamper feet, for the full width of the roadbed (subgrade and shoulders). Perform rolling before beginning any backfill, and continue until the roller feet do not penetrate the surface more than 1 inch. Do not perform such rolling where the remaining surface is below the normal water table and covered with water. Vary the procedure and equipment required for this operation at the discretion of the Engineer.

**120-9.2.4 Compaction of Grassed Shoulder Areas:** For the upper 6 inch layer of all shoulders which are to be grassed, since no specific density is required, compact only to the extent directed.

**120-9.2.5 Compaction of Grassed Embankment Areas:** Do not compact the outer layers of any embankments where plant growth will be established. Leave this layer in a loose condition to a minimum depth of 6 inches for the subsequent seeding or planting operations. Do not place RAP or RAP blended material within the top 12 inches of areas to be grassed.

**120-9.3 Compaction for Pipes, Culverts, etc.:** Compact the backfill of trenches to the densities specified for embankment or subgrade, as applicable, and in accordance with the requirements of 125-9.2.

Thoroughly compact embankments over and around pipes, culverts, and bridges in a manner which will not place undue stress on the structures, and in accordance with the requirements of 125-9.2.

**120-9.4 Compaction of Subgrade:** If the Plans do not provide for stabilizing, compact the subgrade as defined in 1-3 in both cuts and fills, to the density specified in 120-10.2. For cut areas, determine Standard Proctor Maximum Density in accordance with FM 1-T099 at a frequency of one per mile or when there is a change in soil type, whichever occurs first. For undisturbed soils, do not apply density requirements where constructing paved shoulders 5 feet or less in width.

Where trenches for widening strips are not of sufficient width to permit the use of standard compaction equipment, perform compaction using vibratory rollers, trench rollers, or other type compaction equipment approved by the Engineer.

Maintain the required density until the base or pavement is placed on the subgrade.

## **120-10 Acceptance Program.**

### **120-10.1 General Requirements:**

**120-10.1.1 Initial Equipment Comparison:** Before initial production, perform an initial nuclear moisture density gauge comparison with the Verification and Independent Assurance (IA) gauges. When comparing the computed dry density of one nuclear gauge to a second gauge, three sets of calculations must be performed (IA to QC, IA to Verification, and QC to Verification). Ensure that the difference between any two computed dry densities does not exceed 2 lb/ft<sup>3</sup> between gauges from the same manufacturer, and 3 lb/ft<sup>3</sup> between gauges from different manufacturers. Repair or replace any gauge that does not compare favorably with the IA gauge.

Perform a comparison analysis between the QC nuclear gauge and the Verification nuclear gauge any time a nuclear gauge or repaired nuclear gauge is first brought to the project. Repair and replace any QC gauge that does not compare favorably with the Verification gauge at any time during the remainder of the project. Calibrate all QC gauges annually.

**120-10.1.2 Initial Production LOT:** Before construction of any production LOT, prepare a 500 foot initial control section consisting of one full LOT. Notify the Engineer in writing at least 24 hours prior to production of the initial control section. Perform all QC tests required in 120-10.1.4. When the initial QC test results pass specifications, the Engineer will perform a Verification test to verify compliance with the specifications. Do not begin constructing another LOT until successfully completing the initial production LOT. The Engineer will notify the Contractor in writing of the initial production LOT approval within three working days after receiving the Contractor's QC data when test results meet the following conditions:

1. QC and Verification tests must meet the density requirements.
2. Difference between QC and Verification computed dry density results shall meet the requirements of 120-10.1.1.

If Verification test result fails the density requirements of 120-10.2, correct the areas of non-compliance. The QC and Verification tests will then be repeated.

**120-10.1.3 Density over 105%:** When a QC computed dry density results in a value greater than 105% of the applicable Proctor maximum dry density, the Engineer will perform an Independent Verification (IV) density test within 5 feet. If the IV density results in a

value greater than 105%, the Engineer will investigate the compaction methods, examine the applicable Standard Proctor Maximum Density and material description. The Engineer may collect and test an IV Standard Proctor Maximum Density sample for acceptance in accordance with the criteria of 120-10.2.

**120-10.1.4 Quality Control (QC) Tests:**

**120-10.1.4.1 Standard Proctor Maximum Density Determination:**

Determine the QC standard Proctor maximum density and optimum moisture content by sampling and testing the material in accordance with the specified test method listed in 120-10.2.

**120-10.1.4.2 Density Testing Requirements:** Ensure compliance to the requirements of 120-10.2 by Nuclear Density testing in accordance with FM 1-T238. Determine the in-place moisture content for each density test. Use FM 1-T238, FM 5-507 (Determination of Moisture Content by Means of a Calcium Carbide Gas Pressure Moisture Tester), or ASTM D-4643 (Laboratory Determination of Moisture Content of Granular Soils by use of a Microwave Oven) for moisture determination.

**120-10.1.4.3 Soil Classification:** Perform soil classification tests on the sample collected in 120-10.1.4.1, in accordance with AASHTO T88, T89, T90, and FM 1-T267. Classify soils in accordance with AASHTO M145 in order to determine compliance with embankment utilization requirements as specified in Standard Plans, Index 120-001.

**120-10.1.5 Department Verification:** The Engineer will conduct Verification tests in order to accept all materials and work associated with 120-10.1.4. The Engineer will verify the QC results if they meet the Verification Comparison Criteria, otherwise the Engineer will implement Resolution procedures.

The Engineer will select test locations, including Station, Offset, and Lift, using a random number generator, based on the LOTs under consideration. Each Verification test evaluates all work represented by the QC testing completed in those LOTs.

In addition to the Verification testing, the Engineer may perform additional Independent Verification (IV) testing. The Engineer will evaluate and act upon the IV test results in the same manner as Verification test results.

When the project requires less than four QC tests per material type, the Engineer reserves the right to accept the materials and work through visual inspection.

**120-10.1.6 Reduced Testing Frequency:** Obtain the Engineer's written approval for the option to reduce density testing frequency to one test every two LOTs if Resolution testing was not required for 12 consecutive verified LOTs, or if Resolution testing was required, but the QC test data was upheld and all substantiating tests are recorded in the Earthwork Records System (ERS).

Generate random numbers based on the two LOTs under consideration. When QC test frequency is reduced to one every two LOTs, obtain the Engineer's approval to place more than one LOT over an untested LOT. Assure similar compaction efforts for the untested LOTs. If the Verification test fails, and QC test data is not upheld by Resolution testing, the QC testing will revert to the original frequency of one QC test per LOT. Do not apply reduced testing frequency in construction of shoulder-only areas, shared use paths, sidewalks, and first and last lift.

**120-10.1.7 Payment for Resolution Tests:** If the Resolution laboratory results compare favorably with the QC results, the Department will pay for Resolution testing. No additional compensation, either monetary or time, will be made for the impacts of any such testing.

If the Resolution laboratory results do not compare favorably with the QC results, the costs of the Resolution testing will be deducted from monthly estimates. No additional time will be granted for the impacts of any such testing.

**120-10.2 Acceptance Criteria:** Obtain a minimum QC density of 100% of the standard Proctor maximum density as determined by FM 1-T099, Method C, with the following exceptions: embankment constructed by the hydraulic method as specified in 120-8.3; material placed outside the standard minimum slope as specified in 120-8.2.4 except when a structure is supported on existing embankment; and, other areas specifically excluded herein.

**120-10.3 Additional Requirements:**

**120-10.3.1 Frequency:** Conduct QC sampling and testing at a minimum frequency listed in the table below. The Engineer will perform Verification sampling and tests at a minimum frequency listed in the table below.

Test Name	Quality Control	Verification	Verification of Shoulder-Only Areas, Shared Use Paths, and Sidewalks
Standard Proctor Maximum Density	One per soil type	One per soil type	One per soil type
Density	One per LOT	One per four LOTS and for wet conditions, the first lift not affected by water	One per two LOTS
Soil Classification and Organic Content	One per Standard Proctor Maximum Density	One per Standard Proctor Maximum Density	One per Standard Proctor Maximum Density

**120-10.3.2 Test Selection and Reporting:** Determine test locations including stations and offsets, using the random number generator approved by the Engineer. Do not use notepads or worksheets to record data for later transfer to the Density Log Book. Notify the Engineer upon successful completion of QC testing on each LOT prior to placing another lift on top.

**120-10.4 Verification Comparison Criteria and Resolution Procedures:**

**120-10.4.1 Standard Proctor Maximum Density Determination:** The Engineer will verify the QC results if the results compare within 4.5 lb/ft<sup>3</sup> of the Verification test result. Otherwise, the Engineer will take one additional sample of material from the soil type in question. The State Materials Office (SMO) or an AASHTO accredited laboratory designated by the SMO will perform Resolution testing. The material will be sampled and tested in accordance with FM 1-T099, Method C.

The Engineer will compare the Resolution test results with the QC test results. If all Resolution test results are within 4.5 lb/ft<sup>3</sup> of the corresponding QC test results, the Engineer will use the QC test results for material acceptance purposes for each LOT with that soil type. If the Resolution test result is not within 4.5 lb/ft<sup>3</sup> of the Contractor's QC test, the Verification test result will be used for material acceptance purposes.

**120-10.4.2 Density Testing:** When a Verification or IV density test fails the acceptance criteria, retest the site within a 5 foot radius and the following actions will be taken:



1. If the QC retest meets the acceptance criteria and meets the 120-10.1.1 criteria when compared with the Verification or IV test, the Engineer will accept those LOTs.

2. If the QC retest does not meet the acceptance criteria and compares favorably with the Verification or IV test, rework and retest the LOT. The Engineer will re-verify those LOTs.

3. If the QC retest and the Verification or IV test do not compare favorably, complete a new comparison analysis as defined in 120-10.1.1. Once acceptable comparison is achieved, retest the LOTs. The Engineer will perform new verification testing. Acceptance testing will not begin on a new LOT until the Contractor has a gauge that meets the comparison requirements.

Record QC test results in the density logbook on approved Department forms provided by the Engineer. Submit the original, completed density logbook to the Engineer at final acceptance.

**120-10.4.3 Soil Classification:** The Engineer will verify the QC test results if the Verification and the QC test results both match the soil utilization symbol listed in Standard Plans, Index 120-001. Otherwise, the Engineer will test the sample retained for Resolution testing. The SMO or an AASHTO accredited laboratory designated by the SMO will perform the Resolution testing. The material will be sampled and tested in accordance with AASHTO T88, T89, and T90, and classified in accordance with AASHTO M145.

The Engineer will compare the Resolution test results with the QC test results. If the Resolution test matches the QC soil utilization symbol, the Engineer will use the QC soil utilization symbol for material acceptance purposes. If the Resolution test result does not match the Contractor's QC soil utilization symbol, the Verification test results will be used for material acceptance purposes.

**120-10.4.4 Organic Content:** The Engineer will verify the QC test results if the Verification test results satisfy the organic content test criteria in Standard Plans, Index 120-001. Otherwise, the Engineer will test the sample retained for Resolution testing. The SMO or an AASHTO accredited laboratory designated by the SMO will perform Resolution testing. The material will be sampled and tested in accordance with FM 1-T267. If the Resolution test results satisfy the required criteria, material of that soil type will be verified and accepted. If the Resolution test results do not meet the required criteria, reject the material and reconstruct with acceptable material.

**120-10.5 Disposition of Defective Materials:** Assume responsibility for removing and replacing all defective material, as defined in Section 6.

Alternately, submit an Engineering Analysis Scope in accordance with 6-4 to determine the disposition of the material.

### **120-11 Maintenance and Protection of Work.**

While construction is in progress, maintain adequate drainage for the roadbed at all times. Maintain a shoulder at least 3 feet wide adjacent to all pavement or base construction in order to provide support for the edges.

Maintain all earthwork construction throughout the life of the Contract, and take all reasonable precautions to prevent loss of material from the roadway due to the action of wind or water. Repair, at no expense to the Department except as otherwise provided herein, any slides, washouts, settlement, subsidence, or other mishap which may occur prior to final acceptance of

the work. Perform maintenance and protection of earthwork construction in accordance with Section 104.

Maintain all channels excavated as a part of the Contract work against natural shoaling or other encroachments to the lines, grades, and cross-sections shown in the Plans, until final acceptance of the project.

### **120-12 Construction.**

**120-12.1 Construction Tolerances:** Shape the surface of the earthwork to conform to the lines, grades, and cross-sections shown in the Plans. In final shaping of the surface of earthwork, maintain a tolerance of 0.3 foot above or below the cross-section with the following exceptions:

1. Shape the surface of shoulders to within 0.1 foot of the cross-section shown in the Plans.
2. Shape the earthwork to match adjacent pavement, curb, sidewalk, structures, etc.
3. Shape the bottom of conveyance ditches so that the ditch impounds no water.
4. When the work does not include construction of base or pavement, shape the entire roadbed (shoulder point to shoulder point) to within 0.1 foot above or below the Plan cross-section.
5. When the work includes permitted linear stormwater management facilities, shape the swales and ditch blocks to within 0.1 feet of the cross-section shown in the Plans.

Ensure that the shoulder lines do not vary horizontally more than 0.3 foot from the true lines shown in the Plans.

**120-12.2 Operations Adjacent to Pavement:** Carefully dress areas adjacent to pavement areas to avoid damage to such pavement. Complete grassing of shoulder areas prior to placing the final wearing course. Do not manipulate any embankment material on a pavement surface.

When shoulder dressing is underway adjacent to a pavement lane being used to maintain traffic, exercise extreme care to avoid interference with the safe movement of traffic.

### **120-13 Method of Measurement.**

**120-13.1 General:** When payment for excavation is on a volumetric basis, the quantity to be paid for will be the volume, in cubic yards, calculated by the method of average end areas, unless the Engineer determines that another method of calculation will provide a more accurate result. The material will be measured in its original position by field survey or by photogrammetric means as designated by the Engineer, unless otherwise specified under the provisions for individual items.

Where subsoil excavation extends outside the lines shown in the Plans or authorized by the Engineer including allowable tolerances, and the space is backfilled with material obtained in additional authorized roadway or borrow excavation, the net fill, plus shrinkage allowance, will be deducted from the quantity of roadway excavation or borrow excavation to be paid for, as applicable.

The quantity of all material washed, blown, or placed beyond the authorized roadway cross-section will be determined by the Engineer and will be deducted from the quantity of roadway excavation or borrow excavation to be paid for, as applicable.

Subsoil excavation that extends outside the lines shown in the Plans or authorized by the Engineer including allowable tolerances will be deducted from the quantity to be paid for as subsoil excavation.

**120-13.2 Roadway Excavation:** The measurement will include only the net volume of material excavated between the original ground surface and the surface of the completed earthwork, except that the measurement will also include all unavoidable slides which may occur in connection with excavation classified as roadway excavation.

The pay quantity will be the plan quantity provided that the excavation was accomplished in substantial compliance with the plan dimensions and subject to the provisions of 9-3.2 and 9-3.4. On designated 3-R Projects, regular excavation will be paid for at the Contract lump sum price provided that the excavation was accomplished in substantial compliance with the plan dimension.

**120-13.3 Borrow Excavation:** Measurement will be made on a loose volume basis, measured in trucks or other hauling equipment at the point of dumping on the road. If measurement is made in vehicles, level the material to facilitate accurate measurement.

Unsuitable material excavated from borrow pits where truck measurement is provided for and from any borrow pits furnished by the Contractor, will not be included in the quantity of excavation to be paid for.

**120-13.4 Lateral Ditch Excavation:** The measurement will include only material excavated within the lines and grades indicated in the Plans or as directed by the Engineer. The measurement will include the full station-to-station length shown in the Plans or directed by the Engineer and acceptably completed. Excavation included for payment under Section 125 will not be included in this measurement.

The pay quantity will be the plan quantity provided that the excavation was accomplished in substantial compliance with the plan dimensions and subject to the provisions of 9-3.2 and 9-3.4.

**120-13.5 Channel Excavation:** The measurement will include only material excavated within the lines and grades indicated in the Plans or in accordance with authorized Plan changes. The measurement will include the full station-to-station length shown in the Plans including any authorized changes thereto.

If shoaling occurs subsequent to excavation of a channel and the Engineer authorized the shoaled material to remain in place, the volume of any such material remaining within the limits of channel excavation shown in the Plans will be deducted from the measured quantity of channel excavation.

**120-13.6 Subsoil Excavation:** The measurement will include only material excavated within the lines and grades indicated in the Plans (including the tolerance permitted therefore) or as directed by the Engineer.

When no item for subsoil excavation is shown in the Contract but subsoil excavation is subsequently determined to be necessary, such unanticipated subsoil excavation will be paid for as provided in 4-4.

**120-13.7 Embankment:** The quantity will be at the plan quantity. Where payment for embankment is not to be included in the payment for the excavation, and is to be paid for on a cubic yard basis for the item of embankment, the plan quantities to be paid for will be calculated by the method of average end areas unless the Engineer determines that another method of calculation will provide a more accurate result. The measurement will include only material actually placed above the original ground line, within the lines and grades indicated in the Plans

or directed by the Engineer. The length used in the computations will be the station-to-station length actually constructed. The original ground line used in the computations will be as determined prior to placing of embankment subject to the provisions of 9-3.2, and no allowance will be made for subsidence of material below the surface of the original ground.

If there are authorized changes in plan dimensions or if errors in plan quantities are detected, plan quantity will be adjusted as provided in 9-3.2.

Where the work includes excavation of unsuitable material below the finished grading template or original ground line, whichever is lower as defined in 120-3.3, the original ground line is defined as the surface prior to beginning excavation, except that this surface is not outside the permissible tolerance of lines and grades for subsoil excavation as indicated in the Plans or as directed by the Engineer. Any overrun or underrun of plan quantity for subsoil excavation which results in a corresponding increase or decrease in embankment will be considered as an authorized plan change for adjustment purposes as defined in 9-3.2.2.

No payment will be made for embankment material used to replace unsuitable material excavated beyond the lines and grades shown in the Plans or ordered by the Engineer.

In no case will payment be made for material allowed to run out of the embankment on a flatter slope than indicated on the cross-section. The Contractor shall make his own estimate on the volume of material actually required to obtain the pay section.

#### **120-14 Basis of Payment.**

**120-14.1 General:** Prices and payments for the various work items included in this Section will be full compensation for all work described herein, including excavating, dredging, hauling, placing, and compacting; dressing the surface of the earthwork; maintaining and protecting the complete earthwork; and hauling.

The Department will not allow extra compensation for any reworking of materials. The Department will compensate for the cost of grassing or other permanent erosion control measures directed by the Engineer as provided in the Contract for similar items of roadway work.

#### **120-14.2 Excavation:**

**120-14.2.1 Items of Payment:** When no classification of material is indicated in the Plans, and bids are taken only on regular excavation, the total quantity of all excavation specified under this Section will be paid for at the Contract unit price for regular excavation.

When separate classifications of excavation are shown in the proposal, the quantities of each of the various classes of materials so shown will be paid for at the Contract unit prices per cubic yard for regular excavation, lateral ditch excavation, subsoil excavation, and channel excavation, as applicable, and any of such classifications not so shown will be included under the item of regular excavation (except that if there is a classification for lateral ditch excavation shown and there is no classification for channel excavation, any channel excavation will be included under the item of lateral ditch excavation). As an exception on designated projects, regular excavation will be paid for at the Contract lump sum price.

**120-14.2.2 Basic Work Included in Payments:** Prices and payments will be full compensation for all work described under this Section, except for any excavation, or embankment which is specified to be included for payment under other items. Such prices and payments will include hauling; any reworking that may be necessary to accomplish final disposal as shown in the Plans; the dressing of shoulders, ditches and slopes; removal of trash, vegetation, etc., from the previously graded roadway where no item for clearing and grubbing is shown in the Plans; and compacting as required.



**120-14.2.3 Additional Depth of Subsoil Excavation:** Where subsoil excavation is made to a depth of 0 to 5 feet below the depth shown in the Plans, such excavation will be paid for at the unit price bid.

Where subsoil excavation is made to a depth greater than 5 feet, and up to 15 feet, deeper than the depth shown in the Plans, such excavation will be paid for at the unit price bid plus 25% of such unit price. Additional extra depth, more than 15 feet below such plan depth, will be considered as a change in the character of the work and will be paid for as unforeseeable work.

Where no subsoil excavation is shown in a particular location on the original Plans, payment for extra depth of subsoil will begin 5 feet below the lowest elevation on the grading template.

**120-14.2.4 Borrow Excavation:** When the item of borrow excavation is included in the Contract, price and payment will also include the cost of furnishing the borrow areas and any necessary clearing and grubbing thereof, the removal of unsuitable material that it is necessary to excavate in order to obtain suitable borrow material, and also the costs incurred in complying with the provisions of 120-6.3.

**120-14.2.5 Materials Excluded from Payment for the Excavation:** No payment for excavation will be made for any excavation covered for payment under the item of embankment.

No payment will be made for the excavation of any materials which is used for purposes other than those shown in the Plans or designated by the Engineer. No payment will be made for materials excavated outside the lines and grades given by the Engineer, unless specifically authorized by the Engineer. As an exception, in operations of roadway excavation, all slides and falls of insecure masses of material beyond the regular slopes that are not due to lack of precaution on the part of the Contractor, will be paid for at the Contract unit price for the material involved. The removal of slides and falls of material classified as lateral ditch excavation or as subsoil excavation will not be paid for separately, but will be included in the Contract unit price for the pay quantity of these materials, measured as provided in 120-14.

**120-14.3 Embankment:**

**120-14.3.1 General:** Price and payment will be full compensation for all work specified in this Section, including all material for constructing the embankment, all excavating, dredging, pumping, placing and compacting of material for constructing the embankment complete, dressing of the surface of the roadway, maintenance and protection of the completed earthwork, and the removal of rubbish, vegetation, etc., from the roadway where no clearing and grubbing of the area is specified in the Plans. Also, such price and payment, in each case, will specifically include all costs of any roadway, lateral ditch, or channel excavation, unless such excavation is specifically shown to be paid for separately, regardless of whether the materials are utilized in the embankment.

**120-14.3.2 Excluded Material:** No payment will be made for the removal of muck or overburden from the dredging or borrow areas. No payment will be made for embankment material used to replace muck or other unsuitable material excavated beyond the lines and grades shown in the Plans or ordered by the Engineer.

**120-14.3.3 Clearing and Grubbing:** No payment will be made for any clearing and grubbing of the borrow or dredging areas. Where no clearing and grubbing of such areas is

specified in the Plans, the cost of any necessary clearing and grubbing will be included in the Contract unit or lump sum price for Embankment.

**120-14.3.4 Cost of Permits, Rights, and Waivers:** Where the Contractor provides borrow or dredging areas of his own choosing, the cost of securing the necessary permits, rights or waivers will be included in the Contract price for embankment.

**120-14.4 Payment Items:** Payment will be made under:

- Item No. 120- 1- Regular Excavation - per cubic yard.
- Item No. 120- 2- Borrow Excavation - per cubic yard.
- Item No. 120- 3- Lateral Ditch Excavation - per cubic yard.
- Item No. 120- 4- Subsoil Excavation - per cubic yard.
- Item No. 120- 5- Channel Excavation - per cubic yard.
- Item No. 120- 6- Embankment - per cubic yard.
- Item No. 120- 71- Regular Excavation (3-R Projects) - lump sum.

**SECTION 344**  
**LOCAL AGENCY PROGRAM**  
**CONCRETE**

**SECTION 344**  
**LOCAL AGENCY PROGRAM CONCRETE**

**344-1 Description.**

**344-1 General:** Construct Local Agency Program (LAP) Concrete based on the type of work as described in the Contract and the Concrete Work Categories as defined below.

**344-1.2 Work Categories:** Construction of LAP concrete elements will fall into one of the following Concrete Work Categories:

**344-1.2.1 Concrete Work Category 1:** Includes the construction of sidewalks, curb and gutter, ditch and slope pavement, or other non-reinforced cast-in-place or precast elements.

**344-1.2.2 Concrete Work Category 2:** Includes the construction of precast concrete including concrete barriers, traffic railing barriers, parapets, sound barriers, inlets, manholes, junction boxes, pipe culverts, storm sewers, box culverts, prestressed concrete poles, concrete bases for light poles, highway sign foundations, retaining wall systems, traffic separators or other structural precast elements.

**344-1.2.3 Concrete Work Category 3:** Includes the work associated with the placement and/or construction of structural cast-in-place concrete requiring a class of concrete specified in FDOT Section 346.

**344-2 Materials.**

**344-2.1 General:** Use concrete composed of a mixture of Portland cement, aggregates, and water, with or without chemical or mineral admixtures that meet the following requirements:

**344-2.1.1 Portland Cement:** Cement shall conform to the requirements of the AASHTO or ASTM designations. Different brands of cement, cement of the same brand from different facilities or different types of cement shall be stored separately and shall not be mixed. Portland cements meeting the requirements of AASHTO M-85 or ASTM C-150 are allowed for LAP concrete.

**344-2.1.2 Coarse and Fine Aggregates:** Aggregates shall meet current FDOT requirements except that source approval by the FDOT is not required.

**344-2.1.3 Water:** Water shall meet current FDOT requirements.

**344-2.1.4 Chemical Admixtures:** Chemical admixtures shall meet current FDOT requirements. Admixtures may be added at the dosage rates recommended by the manufacturer.

**344-2.1.5 Pozzolans and Slag:** Pozzolans and Slag shall meet the current FDOT requirements.

**344-2.2 Material Storage:** Use a concrete production facility that meets the following requirements.

**344-2.2.1 Cementitious Materials Storage:** Provide a separate and clearly labeled weatherproof facility to store each brand or type of cementitious material without mixing or contamination. Provide a suitable, safe and convenient means of collecting cementitious material samples at each storage facility.

**344-2.2.2 Aggregate Storage:** Provide suitable bins, stockpiles or silos to store and identify aggregates without mixing, segregating or contaminating different grades or types of materials. Identify aggregate type/gradation. Handle the aggregates in a manner to minimize segregation and meet the specification requirements when recovered from storage. Continuously and uniformly sprinkle coarse aggregate with water, for 24 hours preceding introduction into the

concrete mix. Timers may be used to facilitate the sprinkling of aggregate stockpiles using an alternating on/off method. However, in no event shall the top surface of the stockpile be permitted to become dry prior to batching of concrete. Moisture probes may be used to determine the moisture content of the aggregate. Ensure that the accuracy of the probe is certified annually and verified weekly. Maintain stored aggregates in a well-drained condition to minimize free water content. Provide access for the Engineer to sample the aggregates from the recovery side of the storage facility.

### **344-3 Production, Mixing and Delivery of Concrete.**

**344-3.1 Concrete Production Requirements:** Use concrete production facilities certified by the National Ready-Mixed Concrete Association (NRMCA), approved by the FDOT.

Produce concrete utilizing equipment that is in good operating condition and operated in a manner to ensure a consistent product. When moisture probes are not used, ensure that the concrete production facility determines the free moisture for the coarse and fine aggregates within two hours prior to each day's batching. On concrete placements expected to exceed three hours, perform an additional moisture test approximately half way through the batching operations and adjust batch proportions accordingly.

Ensure that the calibration of the measuring devices of the concrete production facilities meets the requirements of Chapter 531 of the Florida Statutes, and are in accordance with Chapter 9.2 of the FDOT Materials Manual. At least quarterly, ensure that all scales, meters and other weighing or measuring devices are checked for accuracy by a qualified representative of a scale company registered with the Bureau of Weights and Measures of the Florida Department of Agriculture. As an alternative, the producer may have this frequency identified in an FDOT approved QC plan. The accuracy of admixture measuring dispensers will be certified annually by the admixture supplier.

When Volumetric Mixers are used for Category I applications, deliver concrete in accordance with the requirements of Volumetric Mixer Manufacturers Bureau (VMMB) and ensure that the vehicle has a VMMB registered rating plate.

**344-3.2 Classes of Concrete:** Classes of concrete to be used on the project will be defined in the Contract Documents.

**344-3.3 Contractors Quality Control:** The Contractor will supply a Quality Control (QC) plan to identify to the Agency how quality will be ensured at the project site. During random inspections the Agency will use this document to verify that the construction of the project is in agreement with his QC plan.

**344-3.4 Concrete Mix Design:** Before producing any concrete, submit the proposed mix design to the Engineer on a form provided by the Agency. Otherwise, the agency will accept mix designs previously described in an FDOT approved QC plan. In any event, use only concrete mix designs having prior approval of the Engineer.

Materials may be adjusted provided that the theoretical yield requirement of the approved mix design is met. Show all required original approved design mix data and batch adjustments and substituted material on an Agency approved concrete delivery ticket. The Engineer may disqualify any concrete production facility for non-compliance with specification requirements.

**344-3.5 Delivery:** For cast-in-place applications, the maximum allowable mixing and agitation time of concrete is 90 minutes.

Furnish a delivery ticket on a form approved by the Agency with each batch of concrete before unloading at the placement site. The delivery ticket shall be printed. Record

material quantities incorporated into the mix on the delivery ticket. Ensure that the Batcher responsible for producing the concrete certifies that the batch was produced in accordance with these Specifications and signs the delivery ticket. The Contractor shall sign the delivery ticket certifying that the concrete was batched, delivered and placed in accordance with these Specifications.

The Contractor shall be responsible for rejecting loads of concrete that do not meet the plastic properties of the approved mix design or the minimum compressive strength requirements.

At the sole option of the Agency, the Engineer may accept concrete at a reduced pay when it is determined that the concrete will serve its intended function.

#### **344-3.6 Placing Concrete:**

**344-3.6.1 Concreting in Cold Weather:** Do not place concrete when the temperature of the concrete at placement is below 45°F.

Meet the air temperature requirements for mixing and placing concrete in cold weather as specified in Section 346. During the curing period, if NOAA predicts the ambient temperature to fall below 35°F for 12 hours or more or to fall below 30°F for more than 4 hours, enclose the structure in such a way that the concrete and air within the enclosure can be kept above 60°F for a period of 3 days after placing the concrete or until the concrete reaches a minimum compressive strength of 1,500 psi.

Assume all risks connected with the placing and curing of concrete. Although the Engineer may give permission to place concrete, the Contractor is responsible for satisfactory results. If the placed concrete is determined to be unsatisfactory, remove, dispose of, and replace the concrete at no expense to the Agency.

**344-3.6.2 Concreting in Hot Weather:** Meet the temperature requirements and special measures for mixing and placing concrete in hot weather as specified in Section 346.

When the temperature of the concrete as placed exceeds 75°F, incorporate in the concrete mix a water-reducing retarder or water reducer if allowed by Section 346.

Spray reinforcing steel and metal forms with cool fresh water just prior to placing the concrete in a method approved by the Engineer.

Assume all risks connected with the placing and curing of concrete. Although the Engineer may give permission to place concrete, the Contractor is responsible for satisfactory results. If the placed concrete is determined to be unsatisfactory, remove, dispose of, and replace the concrete at no expense to the Agency.

**344-3.7 Mixers:** Ensure that mixers are capable of combining the components of concrete into thoroughly mixed and uniform mass, free from balls or lumps of cementitious materials, and capable of discharging the concrete uniformly. Operate concrete mixers at speeds per the manufacturer's design. Do not exceed the manufacturer's rated capacity for the volume of mixed concrete in the mixer, mixing drum, or container.

**344-3.8 Small Quantities of Concrete:** With approval of the Engineer, small quantities of concrete, less than 3 yd<sup>3</sup> placed in one day and less than 0.5 yd<sup>3</sup> placed in a single placement may be accepted using a pre-bagged mixture. The Agency may verify that the pre-bagged mixture is prepared in accordance with the manufacturer's recommendations and will meet the requirements of this Specification.

### **344-3.9 Sampling and Testing:**

**344-3.9.1 Category 1:** The Engineer may sample and test the concrete at his discretion to verify its quality. The minimum 28 day compressive strength requirement for this concrete is 2,500 psi.

**344-3.9.2: Category 2:** Provide a statement of certification from the manufacturer of the precast element that the element meets the quality control and inspection testing requirements of the Contract Documents.

**344-3.9.3 Category 3:** The Agency will randomly select a sample from each 200 yd<sup>3</sup> or one day's production to determine plastic properties and to make three 4 x 8 inch cylinders for testing by the Agency at 28 days to ensure that the design compressive strength has been met. The Agency may, at its discretion, test additional concrete samples to ensure compliance with the specifications.

**344-3.10 Records:** Maintain the following records for review for at least 3 years after final acceptance of the project:

1. Approved concrete mix designs.
2. Materials source (delivery tickets, certifications, certified mill test reports).
3. A copy of the scale company or testing agency report showing the observed deviations from quantities checked during calibration of the scales and meters.
4. A copy of the documentation certifying the admixture weighing/measuring devices.
5. For Non Structural LAP concrete the Agency will accept recent NRMCA, VMMB or FDOT inspection records certifying the plant or truck can produce concrete. In addition, documentation will be available at the plant or in the truck showing that action has been taken to correct deficiencies noted during the inspections.

### **344-4 Acceptance of the Work.**

**344-4.1 Category 1 Work:** Category 1 work will be accepted based upon compliance with Production, Mixing and Delivery Requirements specified in 334-3.

**344-4.2 Category 2 Work:** Precast elements will be accepted based upon certification from the Contractor that the elements were produced by a production facility on the FDOT's current approved plant list. In addition, the producers QC stamp will be displayed on the element.

**344-4.3 Category 3 Work:** Category 3 work shall be in full compliance with this Specification, and with current FDOT Specifications, Section 346 and associated Contractor Quality Control (QC) specifications governing cast-in-place concrete. In addition, a Delivery Ticket as described in 344-3.5 will be required for acceptance of the material at the project site.

### **344-5 Method of Measurement.**

The quantities to be paid for will be the items shown in the plans, completed and accepted.

### **344-6 Basis of Payment.**

Prices and payments will be full compensation for all work and materials specified in this Section.

## **APPENDICES**




**APPENDIX A**


**PAVEMENT EVALUATION REPORT  
FOR THE WILLOWS DEVELOPMENT – WINDERMERE  
FEBRUARY 2017**

**PREPARED BY:**

**GEC**



Pavement Evaluation Report  
**TOWN OF WINDERMERE**  
**WILLOWS DEVELOPMENT**  
Windermere, Florida  
GEC Project No. 3981G





**Geotechnical  
and  
Environmental  
Consultants, Inc.**

*At the very foundation of our community*

February 1, 2017

Michael Galura Engineering Consultants, LLC  
3222 Corrine Drive, Suite H  
Orlando, FL 32803

Attention: Mr. Michael B. Galura, P.E.

Subject: Pavement Evaluation Report  
**TOWN OF WINDERMERE  
WILLOWS DEVELOPMENT**  
Windermere, Florida  
GEC Project No. 3981G

Dear Mr. Galura:

Geotechnical and Environmental Consultants, Inc. (GEC) is pleased to present this Pavement Evaluation Report for the above-referenced project. This investigation was performed in general accordance with the scope of work described in our Proposal No. 8782G dated September 8, 2016.

The purpose of this investigation was to explore pavement conditions at the site and to provide this information for your use in pavement rehabilitation design. This report presents the results of our field and laboratory investigations and presents our conclusions and recommendations.

GEC appreciates the opportunity to work with you on this project. If you should have any questions regarding the contents of this report, or if we may be of further assistance, please contact us.

Very truly yours,

GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS, INC.

*Certificate of Authorization No. 5882*

Ryan Petersen  
Engineering Intern

RJP/CPM/dbj



## TABLE OF CONTENTS

<b>1.0 SITE LOCATION AND PROJECT DESCRIPTION.....</b>	<b>1</b>
<b>2.0 NRCS SOIL SURVEY REVIEW.....</b>	<b>1</b>
<b>3.0 FIELD INVESTIGATION PROGRAM.....</b>	<b>2</b>
3.1 Pavement Cores.....	2
<b>4.0 PAVEMENT .....</b>	<b>2</b>
4.1 Asphalt Surface Course and Base Thickness.....	2
4.2 Pavement Surface Condition and Cracking .....	3
<b>5.0 CONCLUSIONS AND RECOMMENDATIONS.....</b>	<b>3</b>
<b>6.0 QUALITY ASSURANCE.....</b>	<b>4</b>
<b>7.0 USE OF THIS REPORT .....</b>	<b>4</b>

### APPENDIX

Figure 1:	USGS Quadrangle and NRCS Soil Survey Maps
Figure 2:	Pavement Core Location Plan
Table 2:	Pavement Evaluation and Condition Data Sheet

Pavement Core Photographic Logs

**1.0 SITE LOCATION AND PROJECT DESCRIPTION**

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The site is located north of Windermere Road and west of Maguire Road in the Willows Development in the Town of Windermere, Florida as shown on **Figure 1** and **2** in the **Appendix**. The general vicinity of the approximately 8,000 lineal foot of alignment of 2-lane roadways in this development is characterized by residential land uses. We understand that project plans include the milling and resurfacing of the asphalt-paved streets throughout this development. GEC also understands, based on conversations with you, that the pavement in the vicinity of Cores PC-5, PC-9, and PC-13 have some of the worst visible distress.

**2.0 NRCS SOIL SURVEY REVIEW**

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The Natural Resources Conservation Service (NRCS) Soil Survey of Orange County, Florida was reviewed for near-surface soil and groundwater information within the vicinity of the project alignment. The NRCS Soil Survey map of the project areas are shown on **Figure 1** in the **Appendix**. The NRCS soils are summarized on the following table:

**Table 1  
Orange County NRCS Soil Survey Classifications**

Unit No.	Soil Name	Depth (inches)	Soil Description	Unified Classification Symbol	Depth to Seasonal High Groundwater (feet)
20	Immokalee fine sand	0 – 5 5 – 35 35 – 67 67 – 80	Fine sand Fine sand, sand Fine sand, sand Fine sand, sand	SP, SP-SM SP, SP-SM SM, SP-SM SP, SP-SM	0.5 – 1.5
44	Smyrna-Smyrna wet, fine sand, 0 to 2 percent slopes	0 – 4 4 – 17 17 – 27 27 – 80	Fine sand Fine sand Loamy fine sand, fine sand Fine sand	SP, SM, SP-SM SP, SP-SM SP-SM, SM SP, SP-SM	0.5 – 1.5
46	Tavares fine sand, 0 to 5 percent slopes	0 – 5 5 – 80	Fine sand Fine sand, sand	SP, SP-SM SP, SP-SM, SM	0.0 – 1.0

The soils depicted on the NRCS Soil Survey in the project vicinity are denoted as Immokalee fine sand (Soil Unit No. 20), Smyrna-Smyrna wet, fine sand, 0 to 2 percent slopes (Soil Unit No. 44), and Tavares fine sand, 0 to 5 percent slopes (Soil Unit No. 46). These soil types are generally classified as fine sands with varying silt content (SP, SP-SM) and are poorly drained, nearly level in low ridges and broad flats. The NRCS predicts seasonal high groundwater levels to range from natural ground surface to 1.5 feet below the natural ground surface within the project vicinity.

...the NRCS Soil Survey is very general and may be outdated.

*Information contained in the NRCS Soil Survey is very general and may be outdated.* Therefore, it may not be reflective of actual soil and groundwater conditions, particularly if recent development in the site vicinity has modified soil conditions or surface/subsurface drainage.

### **3.0 FIELD INVESTIGATION PROGRAM**

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Pavement conditions along the project alignment were evaluated by performing a total of 16 pavement cores (PC-1 to PC-16) at locations requested by Michael Galura Consultants, LLC. Exact core locations were selected based on the distress observed while staking.

The approximate locations of the pavement cores are shown on **Figure 2** in the **Appendix**. The pavement core locations were not surveyed, but established by measuring distances from project plans and existing site features. Although these locations are given only approximately, the methods used to locate them are, in GEC's opinion, sufficient to meet the intent of our study. If greater accuracy is desired, a registered Professional Land Surveyor should be retained to survey these locations.

#### **3.1 Pavement Cores**

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Pavement cores were conducted using a 6-inch diameter core barrel and were cored through the pavement to the bottom of the base material. After the pavement cores were completed, the hole was backfilled with cuttings and patched with cold patch asphalt to the pavement surface.

### **4.0 PAVEMENT**

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GEC visually surveyed the condition of the existing pavement surface at the areas of study and obtained pavement cores at locations representative of the existing pavement conditions to aid in the evaluation of the existing pavement section. Pictures of the pavement cores, site reconnaissance, and individual core data detailed on the attached Pavement Evaluation Coring and Condition Data Sheet are included in the **Appendix**. The pavement data and evaluation described in the following sections of this report was performed on January 25, 2017. The following report sections summarize the collected pavement data and include our pavement recommendations.

#### **4.1 Asphalt Surface Course and Base Thickness**

---

The measured pavement and base course thicknesses are noted on the attached Pavement Evaluation and Condition Data table.

Generally, pavement core thicknesses ranged from 1.8 to 3.0 inches...

Generally, pavement core thicknesses ranged from 1.8 to 3.0 inches with an average thickness of 2.1 inches. Limestone and soil-cement base course were used throughout the project. In general, limerock was used at the front of the development and soil-cement was used at the rear of the development. The base thicknesses ranged from 4.5 to 11.5 inches thick with an average thickness of 7 inches. The subgrade soils encountered at the pavement core locations generally consisted of fine sand with silt (SP-SM).

#### **4.2 Pavement Surface Condition and Cracking**

...the pavement...appears to generally be in poor condition...

As of January 25, 2017, the pavement within the Willows Development appeared to generally be in poor condition. Cracking was generally classified as moderate (M) to severe (S), with mainly Class II Single (S), and Branch (BR) cracking. A total of 14 of the 16 pavement cores obtained encountered full depth cracks. Two pavement cores (PC-2 and PC-16) did not have full depth cracks, but these cores exhibited crack depths ranging from 0 to 1.5 inches. Individual crack details and pavement conditions for each location cored are detailed on the attached Pavement Evaluation and Condition Data Sheet in the **Appendix**.

#### **5.0 CONCLUSIONS AND RECOMMENDATIONS**

...pavement was found to ...be in poor condition ...Full depth cracking was ...at the majority of the core locations.

Our conclusions and recommendations are based on our experience on similar roadway projects and the pavement data summarized in the previous sections of this report. The pavement was found to generally be in poor condition at all but 1 of the 16 core locations. Full depth cracking was observed at the majority of the core locations.

...GEC recommends complete reconstruction of the pavement section.

Based on the extent of cracking and the number of cores with full depth cracks, GEC recommends complete reconstruction of the pavement section. Without performing full depth reconstruction, it is likely that milling and resurfacing will result in cracks propagating up from the remaining unmilled asphalt and similar pavement distress will be experienced likely within several years.

...re-constructed pavement section should be designed to provide an adequate structural number...

The new re-constructed pavement section should be designed to provide an adequate structural number to support the anticipated traffic for the chosen design life of the pavement. Typically, asphalt thicknesses of 1.5 to 2 inches and limerock base thicknesses of 6 to 8 inches are required to meet this type

of traffic loading while the average asphalt thickness (2.1 inches) and average base thickness (7.0 inches) are within the expected ranges, numerous individual cores exhibited thicknesses less than these expected ranges. This alternative is more expensive than milling and resurfacing. If this alternative is selected, we recommend placing the asphalt in one or as few courses as possible. This would help reduce the potential for the pavement to exhibit the observed distress.

If complete reconstruction is not economically feasible, we recommend milling and resurfacing. The milling and resurfacing can help remediate the cracking distress also observed. Milling should be conducted to the maximum milling depth possible without scabbing the base (e.g.; leaving at least ½ inch of asphalt above the base). The Town should be aware that new cracks will likely propagate up through the new asphalt over a milled section with full depth cracks where the full crack depth is not removed.

## **6.0 QUALITY ASSURANCE**

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We recommend establishing a comprehensive quality assurance program to verify that all site preparation and pavement construction is conducted in accordance with the appropriate plans and specifications. Materials testing and inspection services should be provided by Geotechnical and Environmental Consultants, Inc. due to our familiarity with the site conditions and the intent of our recommendations. As a minimum, we recommend inspecting and testing the new pavement thickness with pavement cores to ensure the required pavement thicknesses are met.

## **7.0 USE OF THIS REPORT**

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GEC has prepared this report for the exclusive use of our client, Michael Galura Engineering Consultants, Inc., for specific application to our client's project. GEC will not be held responsible for any other party's interpretation or use of this report pavement and subsurface data without our written authorization.

The sole purpose of the cores performed by GEC at this site was to obtain indications of pavement conditions as part of a geotechnical exploration program. GEC has not evaluated the site for the potential presence of contaminated soil or groundwater, nor have we subjected any soil samples to analysis for contaminants.

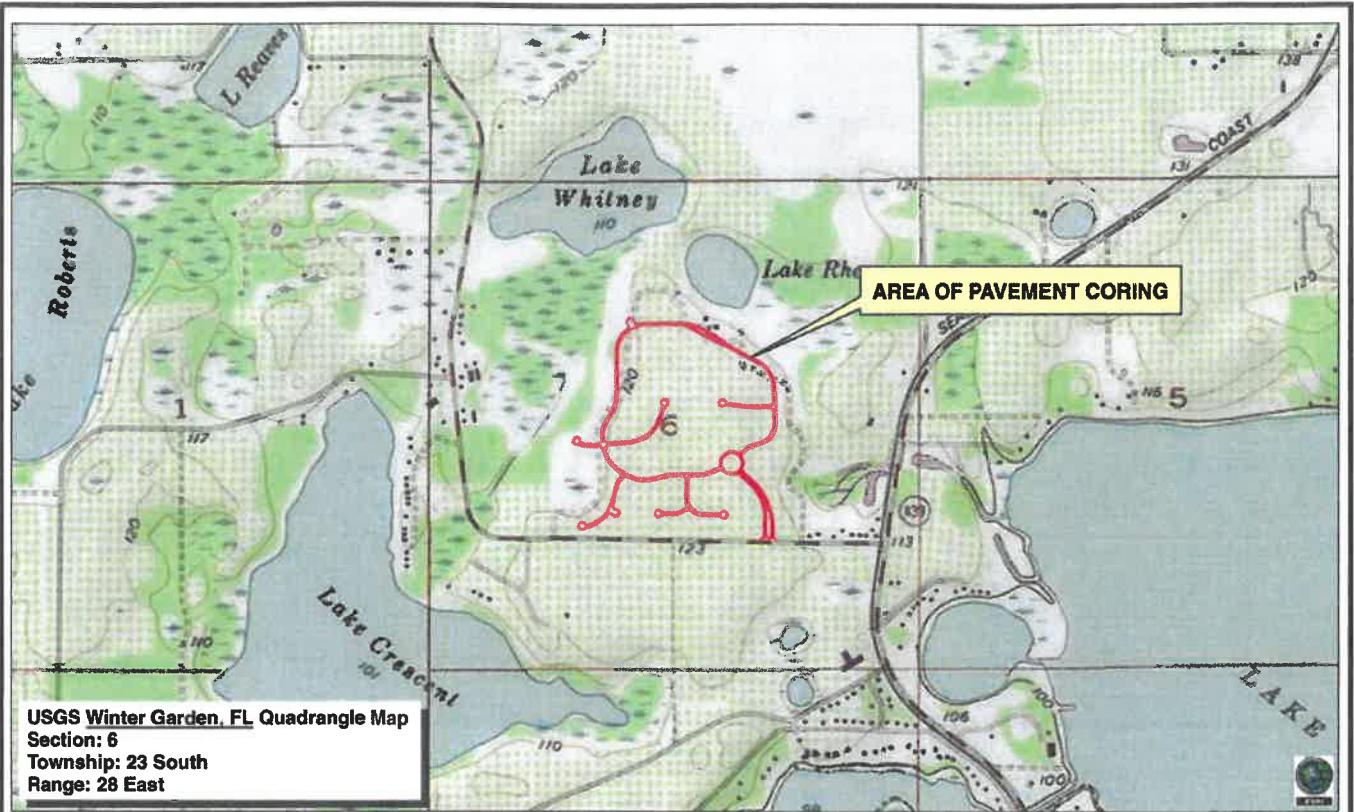
GEC has strived to provide the services described in this report in a manner consistent with that level of care and skill ordinarily exercised by members of our profession currently practicing in Central Florida. No other representation is made or implied in this document.

The conclusions or recommendations of this report should be disregarded if the nature, design, or location of the facilities is changed. If such changes are contemplated, GEC should be retained to review the new plans to assess the applicability of this report in light of proposed changes.



## **APPENDIX**

**USGS QUADRANGLE  
AND NRCS SOIL SURVEY MAPS**



**Geotechnical and Environmental Consultants, Inc.**  
 919 Lake Baldwin Lane  
 Orlando, FL 32814  
 PH (407) 898-1818 FAX (407) 898-1837  
 Certificate of Authorization No. 00005882  
**CHRISTOPHER P. MEYER P.E. NO. 49328**



PROJECT NO.  
3981G  
 DATE  
2/1/2017  
 DRAWN BY  
SKR  
 CHECKED BY  
RJP  
 CHECKED BY  
CPM 49328

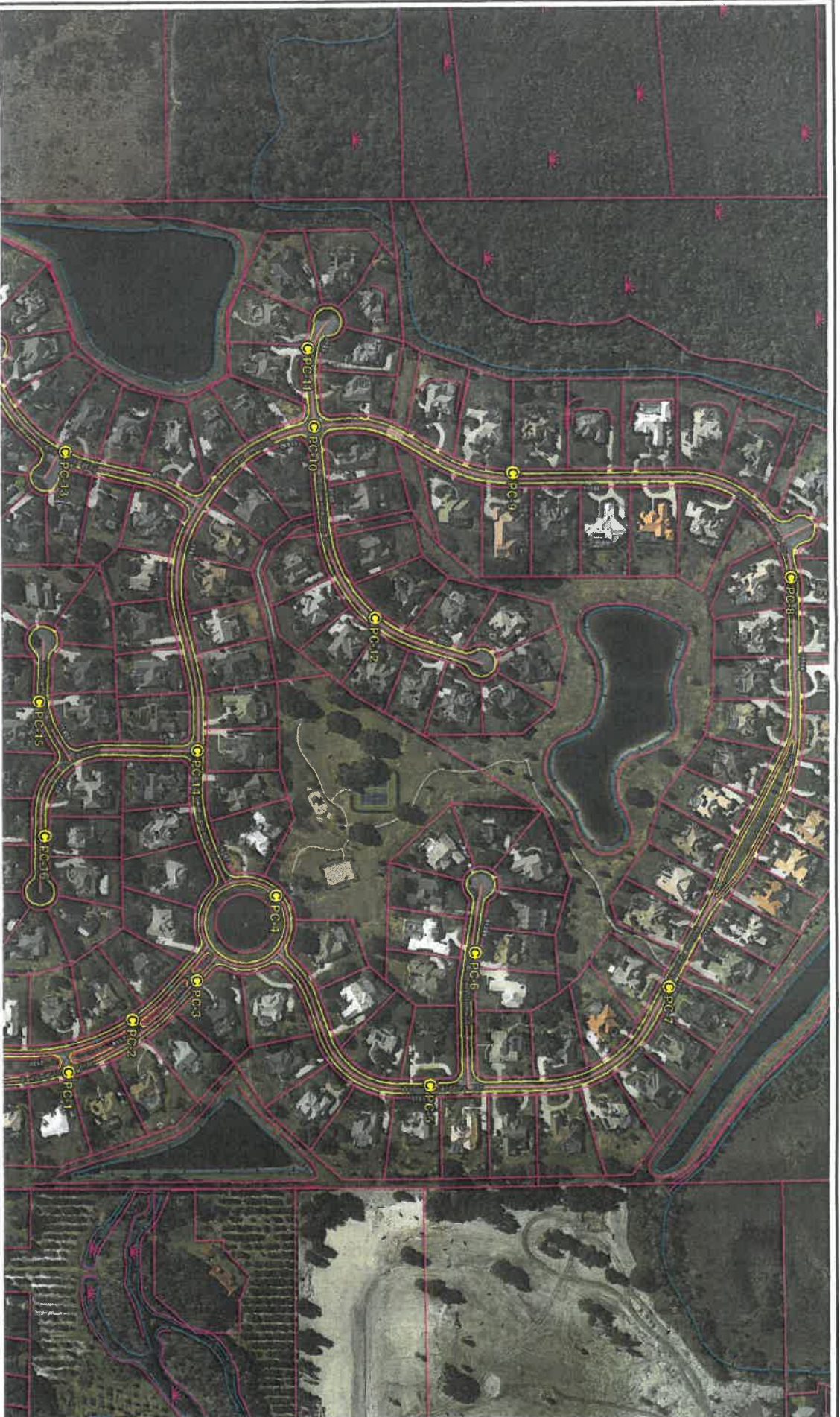
**USGS QUADRANGLE AND NRCS SOIL SURVEY MAPS**  
**WILLOWS DEVELOPMENT**

**FIGURE NO.**

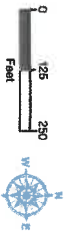
**1**

# **PAVEMENT CORE LOCATION PLAN**






**APPROXIMATE PAVEMENT CORE LOCATION**



**Geotechnical and Environmental Consultants, Inc.**  
 610 Lake Avenue, Suite 100  
 91407-0001, San Diego, CA  
 CHRISTOPHER P. MENEN, P.E., No. 46228

**GEC**  
 GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS, INC.  
 CIVIL ENGINEERING

PROJECT NO.	1102017
DATE	08/11/17
SCALE	AS SHOWN
DESIGNER	GEC
CHECKED BY	CPM
DATE	8/11/17
<b>PAVEMENT CORE LOCATION PLAN</b>	
<b>WILLOWS DEVELOPMENT</b>	
<b>FIGURE NO.</b>	<b>2</b>

J:\D124\9881G Willows Development\9881G.dwg 1/10/2017

**PAVEMENT EVALUATION  
AND CONDITION DATA SHEET**

**Table 2**  
Pavement Evaluation and Condition Data  
**Willows Development**  
Town of Windermere, Florida  
GEC Project No. 3981G  
January 2017

Core No.	Lane ID	Wheel Path	Asphalt Layer		Base		Subgrade	Pavement Cracking			Pavement Condition	Rut Depth (in)	Cross Slope (%)	Notes
			Core Length (in)	Type	Approximate Thickness (in)	Depth (in)		Type	Class	Extent				
PC-1	O	R	1.8	LR	7.0	SP-SM	Full	AL, BR	II	S	P	0.4	1.4	
PC-2	I	R	3.0	LR	6.5	SP-SM	1.5	BL, BR	II	S	P	0.4	2.3	
PC-3	O	R	3.0	LR	6.5	SP-SM	Full	S, BR	II	M	P	0.4	1.4	
PC-4	C	R	2.4	LR	7.0	SP-SM	Full	S, BR	II	M	P	0.2	1.4	
PC-5	I	C	3.0	LR	5.5	SP-SM	Full	BL, BR	II	M	P	0.1	7	
PC-6	O	C	2.4	LR	8.0	SP-SM	Full	S, BR	II	M	P	0.3	0.8	
PC-7	O	R	1.8	SC	7.5	SP-SM	Full	S, BR	II	M	P	0.2	0.8	
PC-8	I	R	1.8	SC	4.5	SP-SM	Full	S, BL	II	M	P	0.2	1	
PC-9	O	C	1.8	SC	5.5	SP-SM	Full	S, BL	II	M	P	0.3	1	
PC-10	C	C	1.8	SC	5.5	SP-SM	Full	S, BR	II	M	P	0.3	0.1	
PC-11	O	L	1.8	SC	7.0	SP-SM	Full	S, BR	II	M	P	0.3	0.7	
PC-12	I	R	1.8	SC	6.5	SP-SM	Full	S, BL	II	M	P	0.3	0.9	
PC-13	I	R	1.8	SC	11.5	SP-SM	Full	S, BR	II	M	P	0.3	0.8	
PC-14	C	C	1.8	LR	5.5	SP-SM	Full	S, BR	II	M	P	0.4	0.5	
PC-15	O	R	2.4	LR	9.0	SP-SM	Full	S, BR	II	M	P	0.2	0.9	
PC-16	I	R	2.4	LR	8.0	SP-SM	---	---	I	L	F	0.2	0.7	

Notes: 1. O: outside lane, I: inside lane, C: center of travel lanes

2. OL: outside of left wheel path, L: left wheel path, C: centerline of lane, R: right wheel path, OR: outside of right wheel path

3. LR: Limerock, S,C = Soil Cement

4. Subgrade soil type described using the Unified Soil Classification System (USCS)

5. S: Single cracks, BR: Branch cracks, BL: Block Cracks, AL: Alligator cracks

6. I: crack width less than 1/8", II: S, BR and BL cracks width between 1/8" and/or AL crack width less than 1", III: S, BR and BL cracks greater than 1/4" wide and AL cracks wider than 1"

7. L: Light cracking, M: Moderate cracking, S: Severe cracking

8. G: Good; indicated no cracking with minor rutting or distortion, F: Fair; indicates Class I cracking with minor rutting or distortion, P: Poor; indicated class II or III cracking with rutting of 1/2" or greater

# **PAVEMENT CORE PHOTOGRAPHIC LOGS**



# Pavement Core Photographic Log

<b>Client Name:</b> Michael Galura Engineering Consultants	<b>Project Name:</b> Willows Development Pavement Evaluation	<b>Project Location:</b> Town of Windermere, Florida	<b>GEC Project No.:</b> 3981G
--	--	--	----------------------------------

Photo: 1	Date: 1/2017
Description:  Location of PC-1	



Photo: 2	Date: 1/2017
Description:  Core PC-1	



# Pavement Core Photographic Log

<b>Client Name:</b> Michael Galura Engineering Consultants	<b>Project Name:</b> Willows Development Pavement Evaluation	<b>Project Location:</b> Town of Windermere, Florida	<b>GEC Project No.:</b> 3981G
--	--	--	----------------------------------

Photo: 3 Date: 1/2017

Description:  
  
Location of PC-2



Photo: 4 Date: 1/2017

Description:  
  
Core PC-2





# Pavement Core Photographic Log

<b>Client Name:</b> Michael Galura Engineering Consultants	<b>Project Name:</b> Willows Development Pavement Evaluation	<b>Project Location:</b> Town of Windermere, Florida	<b>GEC Project No.:</b> 3981G
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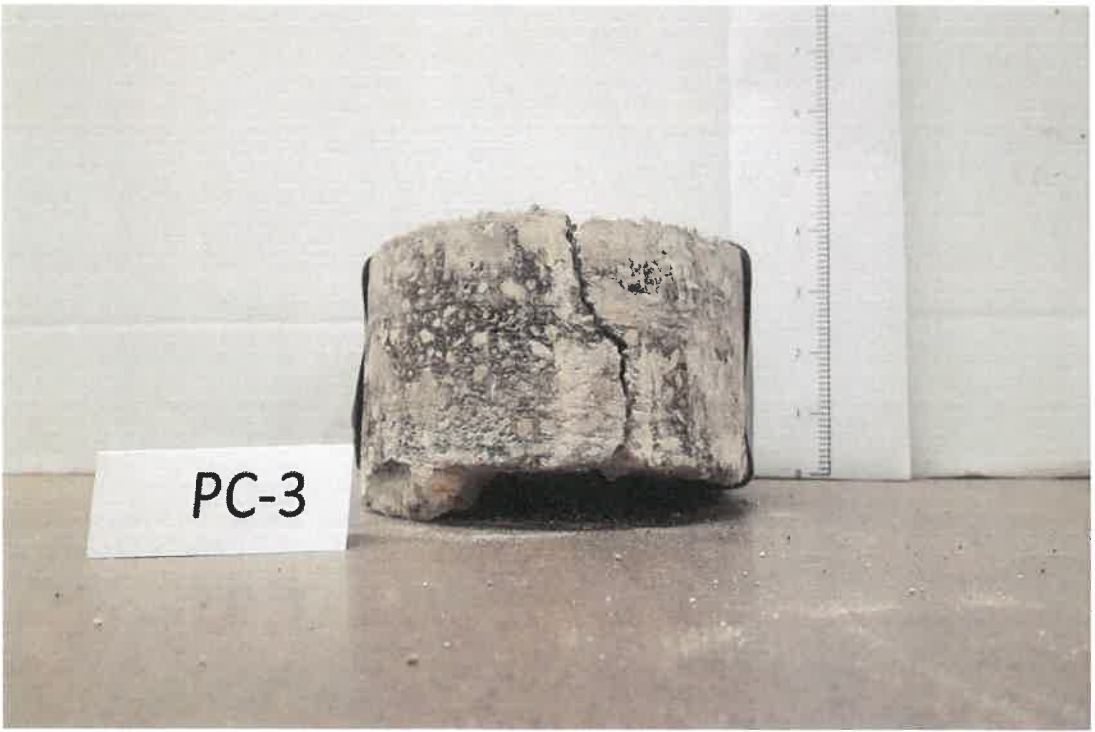
Photo: 5      Date: 1/2017

Description:  
  
Location of PC-3



Photo: 6      Date: 1/2017

Description:  
  
Core PC-3



# Pavement Core Photographic Log

<b>Client Name:</b> Michael Galura Engineering Consultants	<b>Project Name:</b> Willows Development Pavement Evaluation	<b>Project Location:</b> Town of Windermere, Florida	<b>GEC Project No.:</b> 3981G
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<b>Photo:</b> 7	<b>Date:</b> 1/2017
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**Description:**

Location of PC-4



<b>Photo:</b> 8	<b>Date:</b> 1/2017
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**Description:**

Core PC-4







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# Pavement Core Photographic Log

<b>Client Name:</b> Michael Galura Engineering Consultants	<b>Project Name:</b> Willows Development Pavement Evaluation	<b>Project Location:</b> Town of Windermere, Florida	<b>GEC Project No.:</b> 3981G
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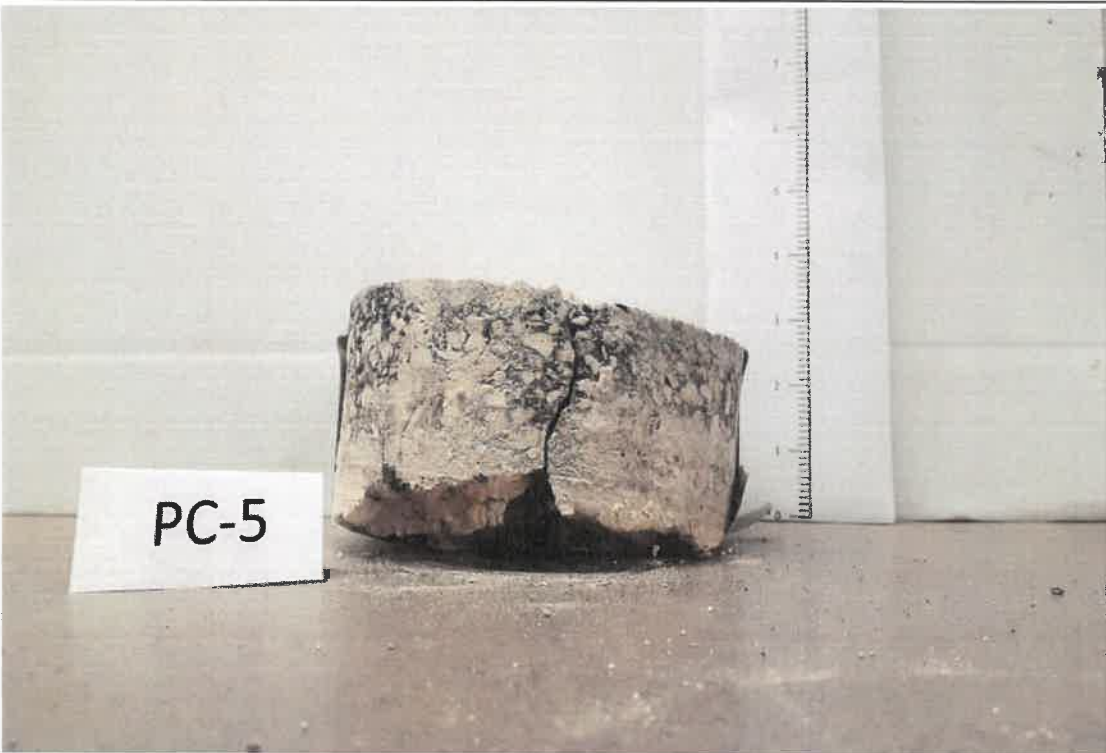
<b>Photo:</b> 9	<b>Date:</b> 1/2017
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**Description:**  
  
Location of PC-5



<b>Photo:</b> 10	<b>Date:</b> 1/2017
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**Description:**  
  
Core PC-5





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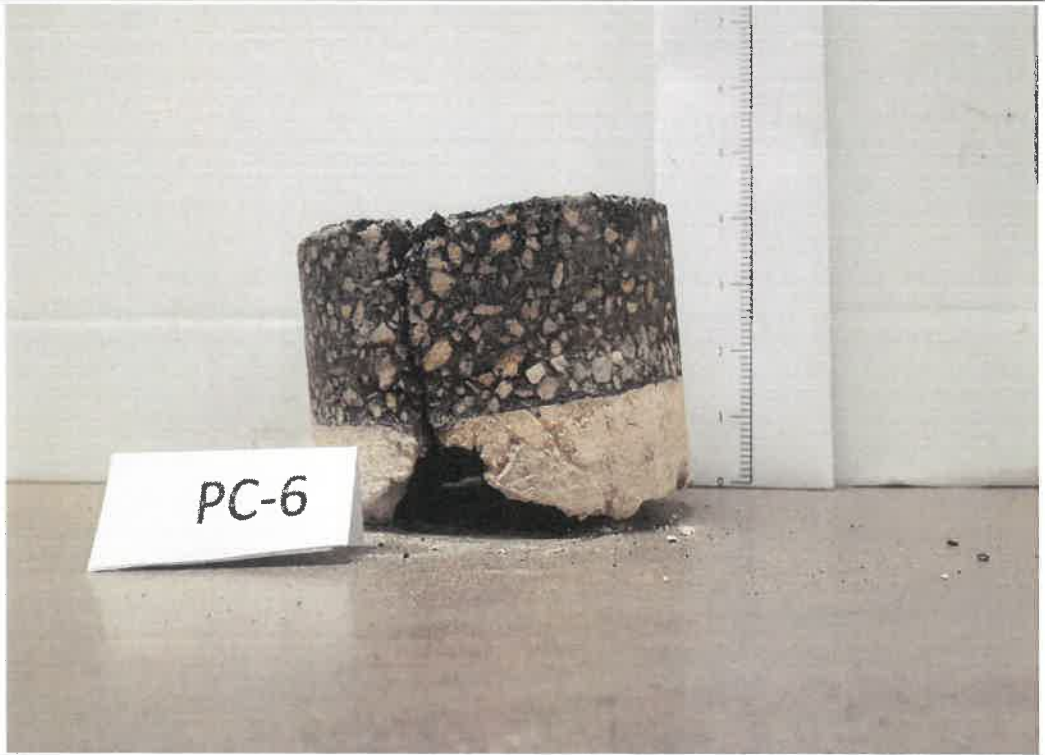
# Pavement Core Photographic Log

<b>Client Name:</b> Michael Galura Engineering Consultants	<b>Project Name:</b> Willows Development Pavement Evaluation	<b>Project Location:</b> Town of Windermere, Florida	<b>GEC Project No.:</b> 3981G
--	--	--	----------------------------------

Photo: 11	Date: 1/2017
Description:  Location of PC-6	



Photo: 12	Date: 1/2017
Description:  Core PC-6	





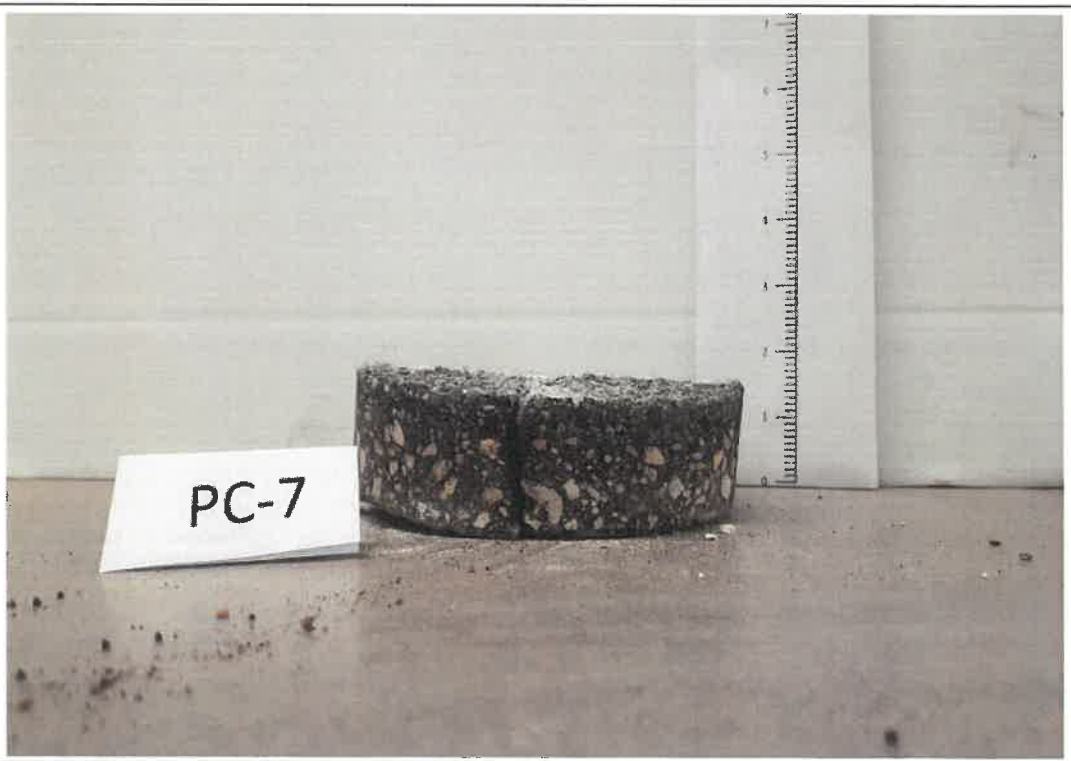
# Pavement Core Photographic Log

<b>Client Name:</b> Michael Galura Engineering Consultants	<b>Project Name:</b> Willows Development Pavement Evaluation	<b>Project Location:</b> Town of Windermere, Florida	<b>GEC Project No.:</b> 3981G
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Photo: 13      Date: 1/2017  
 Description:  
 Location of PC-7



Photo: 14      Date: 1/2017  
 Description:  
 Core PC-7





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# Pavement Core Photographic Log

<b>Client Name:</b> Michael Galura Engineering Consultants	<b>Project Name:</b> Willows Development Pavement Evaluation	<b>Project Location:</b> Town of Windermere, Florida	<b>GEC Project No.:</b> 3981G
--	--	--	----------------------------------

Photo: 15	Date: 1/2017
Description:  Location of PC-8	



Photo: 16	Date: 1/2017
Description:  Core PC-8	







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# Pavement Core Photographic Log

<b>Client Name:</b> Michael Galura Engineering Consultants	<b>Project Name:</b> Willows Development Pavement Evaluation	<b>Project Location:</b> Town of Windermere, Florida	<b>GEC Project No.:</b> 3981G
--	--	--	----------------------------------

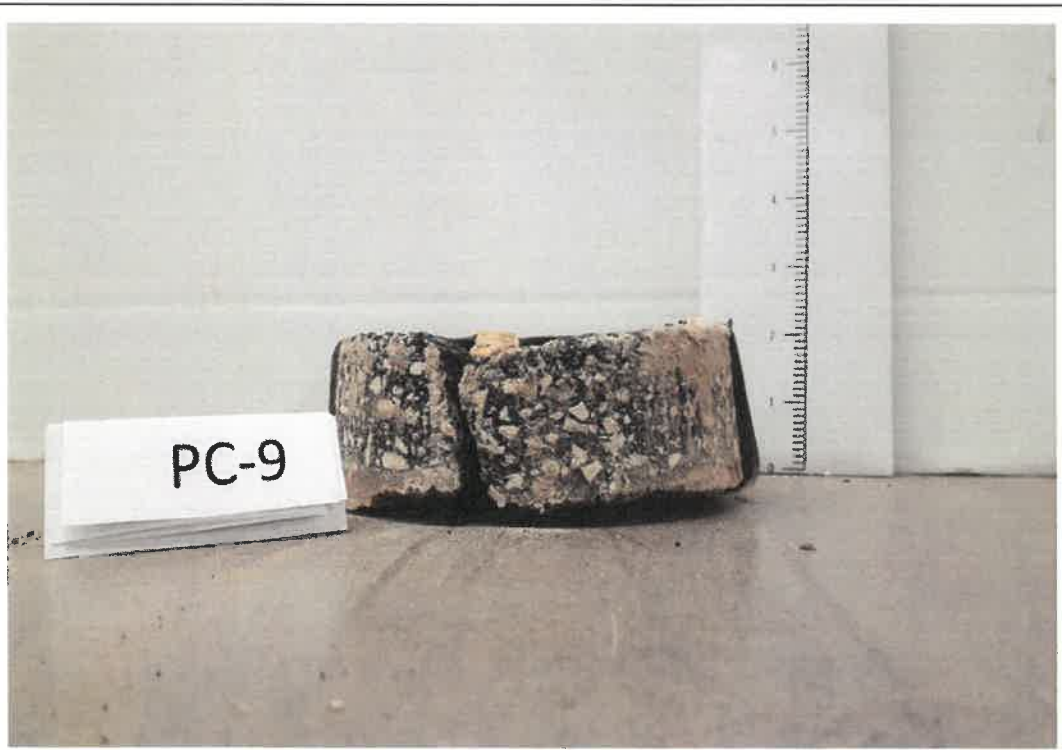
Photo: 17	Date: 1/2017
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Description:  
  
Location of PC-9



Photo: 18	Date: 1/2017
--------------	-----------------

Description:  
  
Core PC-9





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# Pavement Core Photographic Log

<b>Client Name:</b> Michael Galura Engineering Consultants	<b>Project Name:</b> Willows Development Pavement Evaluation	<b>Project Location:</b> Town of Windermere, Florida	<b>GEC Project No.:</b> 3981G
--	--	--	----------------------------------

Photo: 19	Date: 1/2017
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Description:  
  
Location of PC-10



Photo: 20	Date: 1/2017
--------------	-----------------

Description:  
  
Core PC-10







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# Pavement Core Photographic Log

<b>Client Name:</b> Michael Galura Engineering Consultants	<b>Project Name:</b> Willows Development Pavement Evaluation	<b>Project Location:</b> Town of Windermere, Florida	<b>GEC Project No.:</b> 3981G
--	--	--	----------------------------------

<b>Photo:</b> 21	<b>Date:</b> 1/2017
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**Description:**  
  
Location of PC-11



<b>Photo:</b> 22	<b>Date:</b> 1/2017
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**Description:**  
  
Core PC-11





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# Pavement Core Photographic Log

<b>Client Name:</b> Michael Galura Engineering Consultants	<b>Project Name:</b> Willows Development Pavement Evaluation	<b>Project Location:</b> Town of Windermere, Florida	<b>GEC Project No.:</b> 3981G
--	--	--	----------------------------------

<b>Photo:</b> 23	<b>Date:</b> 1/2017
<b>Description:</b>  Location of PC-12	



<b>Photo:</b> 24	<b>Date:</b> 1/2017
<b>Description:</b>  Core PC-12	







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# Pavement Core Photographic Log

<b>Client Name:</b> Michael Galura Engineering Consultants	<b>Project Name:</b> Willows Development Pavement Evaluation	<b>Project Location:</b> Town of Windermere, Florida	<b>GEC Project No.:</b> 3981G
--	--	--	----------------------------------

Photo: 25      Date: 1/2017

Description:

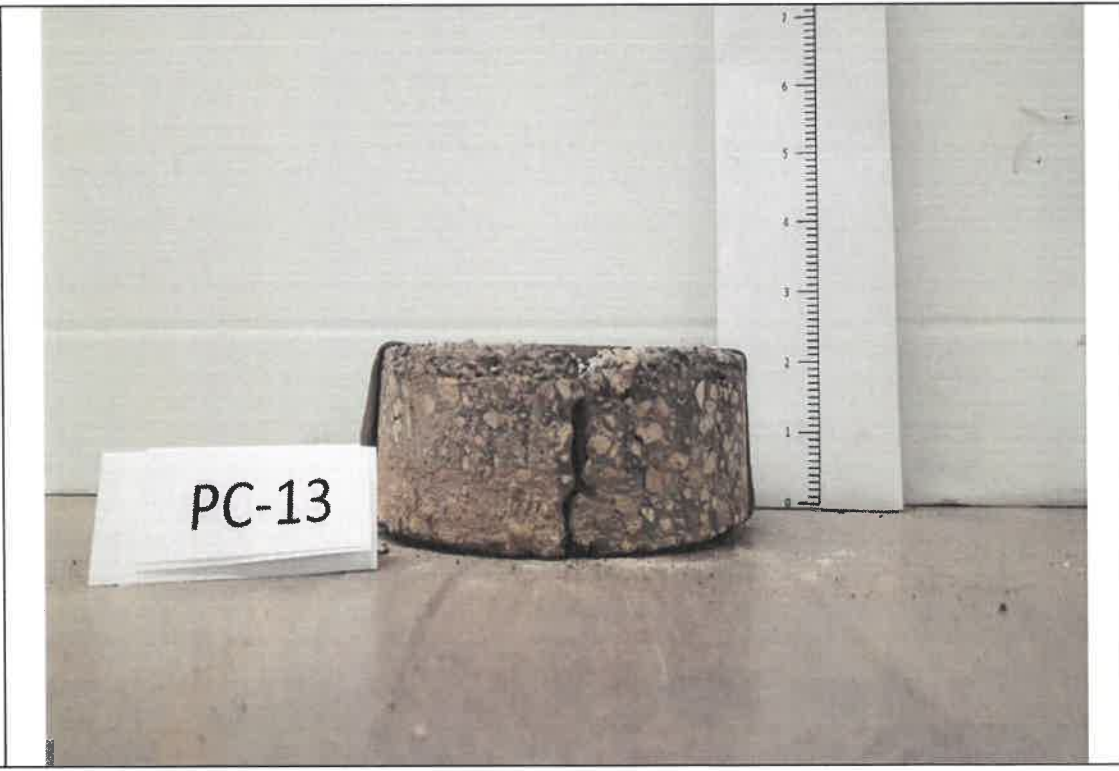
Location of PC-13



Photo: 26      Date: 1/2017

Description:

Core PC-13





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# Pavement Core Photographic Log

<b>Client Name:</b> Michael Galura Engineering Consultants	<b>Project Name:</b> Willows Development Pavement Evaluation	<b>Project Location:</b> Town of Windermere, Florida	<b>GEC Project No.:</b> 3981G
--	--	--	----------------------------------

<b>Photo:</b> 27	<b>Date:</b> 1/2017
---------------------	------------------------

**Description:**

Location of PC-14



<b>Photo:</b> 28	<b>Date:</b> 1/2017
---------------------	------------------------

**Description:**

Core PC-14







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# Pavement Core Photographic Log

**Client Name:**  
Michael Galura  
Engineering Consultants

**Project Name:**  
Willows Development  
Pavement Evaluation

**Project Location:**  
Town of Windermere,  
Florida

**GEC Project No.:**  
3981G

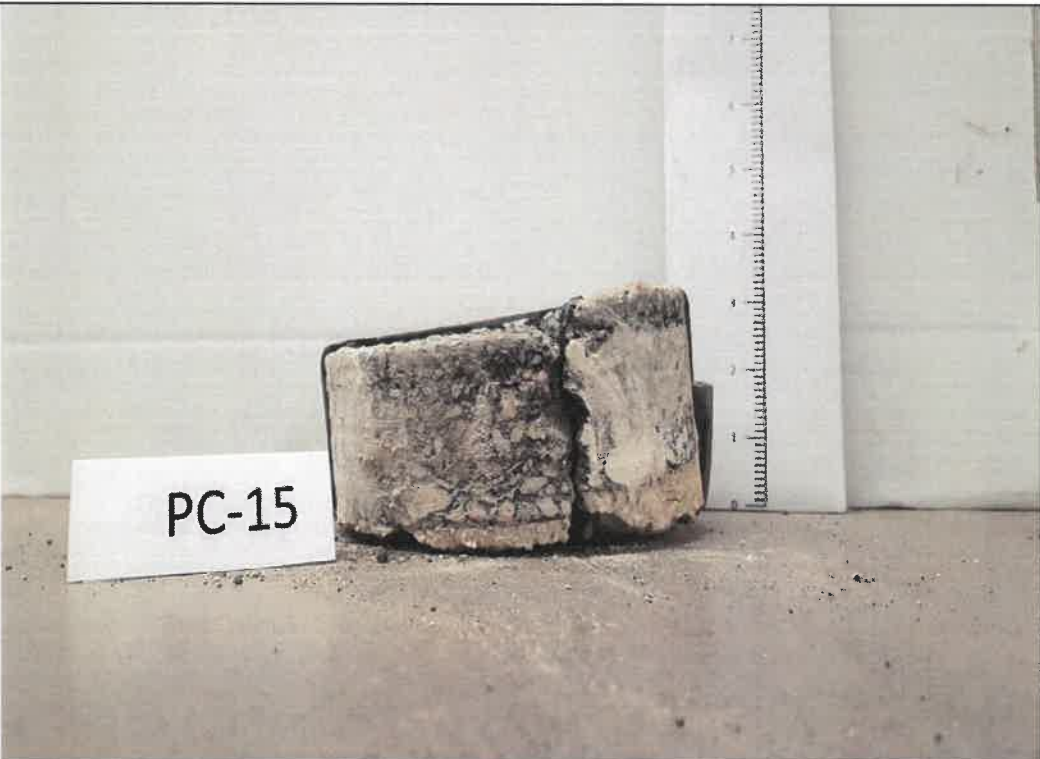
Photo: 29      Date: 1/2017

Description:  
  
Location of PC-15



Photo: 30      Date: 1/2017

Description:  
  
Core PC-15





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# Pavement Core Photographic Log

**Client Name:**  
Michael Galura  
Engineering Consultants

**Project Name:**  
Willows Development  
Pavement Evaluation

**Project Location:**  
Town of Windermere,  
Florida

**GEC Project No.:**  
3981G

**Photo:** 31  
**Date:** 1/2017

**Description:**  
Location of PC-16



**Photo:** 32  
**Date:** 1/2017

**Description:**  
Core PC-16





**APPENDIX B**

**SFWMD EXEMPTION FOR  
THE WILLOWS MILLING AND RESURFACING/  
SIDEWALK IMPROVEMENTS  
JUNE 2019**



## SOUTH FLORIDA WATER MANAGEMENT DISTRICT

June 27, 2019

*\* Delivered via email*

Robert Smith \*  
614 Main Street  
Windermere, FL 34786

**Subject: Exemption for The Willows Milling And Resurfacing/Sidewalk Improvements  
Application No. 190610-1497  
Exemption No. 48-101570-P  
Orange County**

Dear Mr. Smith:

The South Florida Water Management District (District) reviewed the information submitted for the proposed milling and resurfacing project and has determined that this activity is exempt from the requirement to obtain an Environmental Resource Permit, pursuant to rule 62-330.051(4)(d), Florida Administrative Code (F.A.C.).

This exemption authorizes the milling and resurfacing of approximately 10,330 linear feet of roadway within The Willows development. In addition, portions of the sidewalk and ramps will be altered to meet the standards of the American Disabilities Act (ADA). The project is in compliance with subsection 62-330.050(9), F.A.C.

Activities that qualify for this exemption must be conducted and operated using appropriate best management practices and in a manner which does not cause or contribute to a water quality violation. Pursuant to Chapters 62-302 or 62-4, Florida Administrative Code.

This letter does not relieve you from the responsibility of obtaining other permits (federal, state or local) which may be required for the project.

The determination that this project qualifies as an exempt activity may be revoked if the installation is substantially modified, if the basis of the exemption is determined to be materially incorrect, or if the installation results in violation to state water quality standards. Any changes made in the construction plans or location of the project may necessitate a permit from the District. Therefore you are advised to contact the District before beginning any work in wetlands which is not specifically described in the submittal.

The notice of determination that the project qualifies as an exempt activity constitutes final agency action by the District unless a petition for administrative hearing is filed. Upon timely filing of a petition, this Notice will not be effective until further Order of the District.

Robert Smith  
The Willows Milling And Resurfacing/Sidewalk Improvements, Application No.190610-1497  
June 27, 2019  
Page 2

If you have any questions concerning this matter, please contact Brennan Hagan, Environmental Analyst 1 at 407-858-6100 x3820 or bhagan@sfwmd.gov, and Richard Lott, at 407-858-6100 x3812 or rlott@sfwmd.gov.

Sincerely,



Ricardo A. Valera, P.E.  
Bureau Chief, Environmental Resource Bureau

c: Michael Galura, Michael Galura Engineering Consultants \*

## **Exhibits**

The following exhibits to this permit are incorporated by reference. The exhibits can be viewed by clicking on the links below or by visiting the District's ePermitting website (<http://my.sfwmd.gov/ePermitting>) and searching under this application number 190610-1497.

[Exhibit No. 1 Location Map](#)

[Exhibit No. 2 SWM Plans](#)

## **NOTICE OF RIGHTS**

As required by Sections 120.569 and 120.60(3), Fla. Stat., the following is notice of the opportunities which may be available for administrative hearing or judicial review when the substantial interests of a party are determined by an agency. Please note that this Notice of Rights is not intended to provide legal advice. Not all of the legal proceedings detailed below may be an applicable or appropriate remedy. You may wish to consult an attorney regarding your legal rights.

### **RIGHT TO REQUEST ADMINISTRATIVE HEARING**

A person whose substantial interests are or may be affected by the South Florida Water Management District's (SFWMD or District) action has the right to request an administrative hearing on that action pursuant to Sections 120.569 and 120.57, Fla. Stat. Persons seeking a hearing on a SFWMD decision which affects or may affect their substantial interests shall file a petition for hearing with the Office of the District Clerk of the SFWMD, in accordance with the filing instructions set forth herein, within 21 days of receipt of written notice of the decision, unless one of the following shorter time periods apply: (1) within 14 days of the notice of consolidated intent to grant or deny concurrently reviewed applications for environmental resource permits and use of sovereign submerged lands pursuant to Section 373.427, Fla. Stat.; or (2) within 14 days of service of an Administrative Order pursuant to Section 373.119(1), Fla. Stat. "Receipt of written notice of agency decision" means receipt of written notice through mail, electronic mail, or posting that the SFWMD has or intends to take final agency action, or publication of notice that the SFWMD has or intends to take final agency action. Any person who receives written notice of a SFWMD decision and fails to file a written request for hearing within the timeframe described above waives the right to request a hearing on that decision.

If the District takes final agency action which materially differs from the noticed intended agency decision, persons who may be substantially affected shall, unless otherwise provided by law, have an additional Rule 28-106.111, Fla. Admin. Code, point of entry.

Any person to whom an emergency order is directed pursuant to Section 373.119(2), Fla. Stat., shall comply therewith immediately, but on petition to the board shall be afforded a hearing as soon as possible.

A person may file a request for an extension of time for filing a petition. The SFWMD may, for good cause, grant the request. Requests for extension of time must be filed with the SFWMD prior to the deadline for filing a petition for hearing. Such requests for extension shall contain a certificate that the moving party has consulted with all other parties concerning the extension and that the SFWMD and any other parties agree to or oppose the extension. A timely request for an extension of time shall toll the running of the time period for filing a petition until the request is acted upon.

### **FILING INSTRUCTIONS**

A petition for administrative hearing must be filed with the Office of the District Clerk of the SFWMD. Filings with the Office of the District Clerk may be made by mail, hand-delivery, or e-mail. Filings by facsimile will not be accepted. A petition for administrative hearing or other document is deemed filed upon receipt during normal business hours by the Office of the District Clerk at SFWMD headquarters in West Palm Beach, Florida. The District's normal business hours are 8:00 a.m. – 5:00 p.m., excluding weekends and District holidays. Any document received by the Office of the District Clerk after 5:00 p.m. shall be deemed filed as of 8:00 a.m. on the next regular business day.

Additional filing instructions are as follows:

- Filings by mail must be addressed to the Office of the District Clerk, 3301 Gun Club Road, West Palm Beach, Florida 33406.
- Filings by hand-delivery must be delivered to the Office of the District Clerk. Delivery of a petition to the SFWMD's security desk does not constitute filing. It will be necessary to request that the SFWMD's security officer contact the Office of the District Clerk. An employee of the SFWMD's Clerk's office will receive and file the petition.
- Filings by e-mail must be transmitted to the Office of the District Clerk at [clerk@sfwmd.gov](mailto:clerk@sfwmd.gov). The filing date for a document transmitted by electronic mail shall be the date the Office of the District Clerk receives the complete document. A party who files a document by e-mail shall (1) represent that the original physically signed document will be retained by that party for the duration of the proceeding and of any subsequent appeal or subsequent proceeding in that cause and that the party shall produce it upon the request of other parties; and (2) be responsible for any delay, disruption, or interruption of the electronic signals and accepts the full risk that the document may not be properly filed.

### **INITIATION OF ADMINISTRATIVE HEARING**

Pursuant to Sections 120.54(5)(b)4. and 120.569(2)(c), Fla. Stat., and Rules 28-106.201 and 28-106.301, Fla. Admin. Code, initiation of an administrative hearing shall be made by written petition to the SFWMD in legible form and on 8 1/2 by 11 inch white paper. All petitions shall contain:

1. Identification of the action being contested, including the permit number, application number, SFWMD file number or any other SFWMD identification number, if known.
2. The name, address, any email address, any facsimile number, and telephone number of the petitioner and petitioner's representative, if any.
3. An explanation of how the petitioner's substantial interests will be affected by the agency determination.
4. A statement of when and how the petitioner received notice of the SFWMD's decision.
5. A statement of all disputed issues of material fact. If there are none, the petition must so indicate.
6. A concise statement of the ultimate facts alleged, including the specific facts the petitioner contends warrant reversal or modification of the SFWMD's proposed action.
7. A statement of the specific rules or statutes the petitioner contends require reversal or modification of the SFWMD's proposed action.
8. If disputed issues of material fact exist, the statement must also include an explanation of how the alleged facts relate to the specific rules or statutes.
9. A statement of the relief sought by the petitioner, stating precisely the action the petitioner wishes the SFWMD to take with respect to the SFWMD's proposed action.

### **MEDIATION**

The procedures for pursuing mediation are set forth in Section 120.573, Fla. Stat., and Rules 28-106.111 and 28-106.401-.405, Fla. Admin. Code. The SFWMD is not proposing mediation for this agency action under Section 120.573, Fla. Stat., at this time.

### **RIGHT TO SEEK JUDICIAL REVIEW**

Pursuant to Section 120.68, Fla. Stat., and in accordance with Florida Rule of Appellate Procedure 9.110, a party who is adversely affected by final SFWMD action may seek judicial review of the SFWMD's final decision by filing a notice of appeal with the Office of the District Clerk of the SFWMD in accordance with the filing instructions set forth herein within 30 days of rendition of the order to be reviewed, and by filing a copy of the notice with the clerk of the appropriate district court of appeal.



Wade Trim, Inc.  
One Tampa City Center • 201 North Franklin Street, Suite 1350 • Tampa, FL 33602  
813.882.4373 • [www.wadetrim.com](http://www.wadetrim.com)

August 6, 2019

Robert Smith, Town Manager  
Town of Windermere  
614 Main Street  
Windermere, FL 34786

Re: Request for Renewal of On Call Land Planning Services Contract

Dear Robert:

Our current contract with the Town of Windermere for on call land planning services expires on September 30, 2019. This was the last of our 2-one year extensions under the original contract from 2014. I have greatly appreciated the opportunity to work with the Town Council, Development Review Board, you and your staff, and the residents of the Town over the past 5-years and wish to continue to serve the Town. I am willing to sign an extension to our current contract with the Town. If it is acceptable, I respectfully request a slight change to our billing rate schedule that has been in effect without change since 2014. The new billing rate schedule slightly increases the hourly rate for the Principal Planner from \$150/hour to \$175/hour and for the Project Planner from \$95/hour to \$115/hour. All other classifications stay the same as the rate schedule that has been in effect for the previous 5-years. See table:

Wade Trim Proposed Rates FY 2020

Position	Current	Proposed FY 2020	Change	% Change
Principal Planner	\$150	\$175	\$25	17%
Project Planner	\$95	\$115	\$20	21%
Planning Technician	\$75	\$75	\$0	0%
Senior Engineer	\$160	\$160	\$0	0%
Senior Project Engineer	\$135	\$135	\$0	0%
Project Engineer	\$95	\$95	\$0	0%
CAD Technician	\$85	\$85	\$0	0%
Administrative	\$65	\$65	\$0	0%

Sincerely,

Wade Trim, Inc.

Bradley Cornelius, AICP  
Vice President

BTC:jjc  
AAA8140.19D

## **FY 2020 RENEWAL OF AGREEMENT FOR ON CALL LAND PLANNING SERVICES**

This FY 2020 Renewal of Agreement, made this \_\_\_ day of \_\_\_\_\_, 2019, between the **Town of Windermere, Florida ("TOWN")** and **Wade Trim, Inc. ("CONSULTANT")**, a Florida corporation authorized to do business in the State of Florida, whose principal office address is 201 N. Franklin Street, Suite 1350, Tampa, FL 33602.

### **ARTICLE 1. Extension of Term**

The original Agreement between the Town and the Consultant for On Call Land Planning Services, was approved by the Town on August 14, 2014. The Town and the Consultant mutually agree it is in both party's best interest to extend the termination date of the original agreement to 11:59 p.m. on September 30, 2020.

### **ARTICLE 2. Scope of Services and Requirements**

The scope of services and all contractual requirements of the original Agreement, dated August 14, 2014, shall remain in full force and effect during the additional one (1) year term provided herein. The fee schedule provided in the original Agreement is amended as shown in the following table for FY 2020.

Wade Trim Proposed Rates FY 2020

Position	Current	Proposed FY 2020	Change	% Change
Principal Planner	\$150	\$175	\$25	17%
Project Planner	\$95	\$115	\$20	21%
Planning Technician	\$75	\$75	\$0	0%
Senior Engineer	\$160	\$160	\$0	0%
Senior Project Engineer	\$135	\$135	\$0	0%
Project Engineer	\$95	\$95	\$0	0%
CAD Technician	\$85	\$85	\$0	0%
Administrative	\$65	\$65	\$0	0%

**IN WITNESS WHEREOF**, the parties hereto have hereunto caused these presents to be executed as of the day and year first above written.

**TOWN OF WINDERMERE, FLORIDA**

**WADE TRIM, INC.**

By: \_\_\_\_\_

By: \_\_\_\_\_

Title: \_\_\_\_\_

Title: Vice President

Printed Name: \_\_\_\_\_

Printed Name: Bradley Cornelius

Attest: \_\_\_\_\_

Attest: \_\_\_\_\_

Printed Name: \_\_\_\_\_

Printed Name: Amanda Warner



THE TOWN OF  
**Windermere**



**EXECUTIVE SUMMARY**

**SUBJECT:** Town Facilities Concept Approval

**REQUESTED ACTION:** Board Option LRP, DBC & HPB Recommend Concept 1

Work Session (Report Only)

**DATE OF MEETING:** 8/13/19

Regular Meeting

Special Meeting

**CONTRACT:**  N/A

Vendor/Entity: \_\_\_\_\_

Effective Date: \_\_\_\_\_

Termination Date: \_\_\_\_\_

Managing Division / Dept: \_\_\_\_\_

**BUDGET IMPACT:** \_\_\_\_\_

Annual

**FUNDING SOURCE:** \_\_\_\_\_

Capital

**EXPENDITURE ACCOUNT:** \_\_\_\_\_

N/A

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**HISTORY/FACTS/ISSUES:**

Mayor & Council,

Staff have conducted numerous workshops relative to which design concept should be adopted and the base for the engineering of the new Town Facilities. The super majority of those who attended the meetings favor Concept 1 which is attached. LRP, DBC and HPB all recommend Concept 1 as well. Comments were minor relative to aesthetics or layout which will be worked thru the design process. At the July 23<sup>rd</sup> Town Council Workshop there was unanimous consent for Concept 1.

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**LEGEND**  
 EXISTING  
 PROPOSED



**POLICE DEPARTMENT - WINDERMERE, FL.**  
 ARCHITECTS DESIGN GROUP

EXISTING PLAN OVERLAY - OPTION 1



**PARKING INFORMATION**

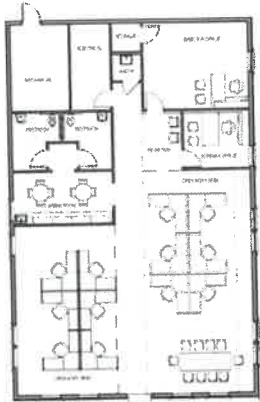
SECURED	7
PUBLIC	38
TOTAL	45
EXISTING AVAILABLE	YES



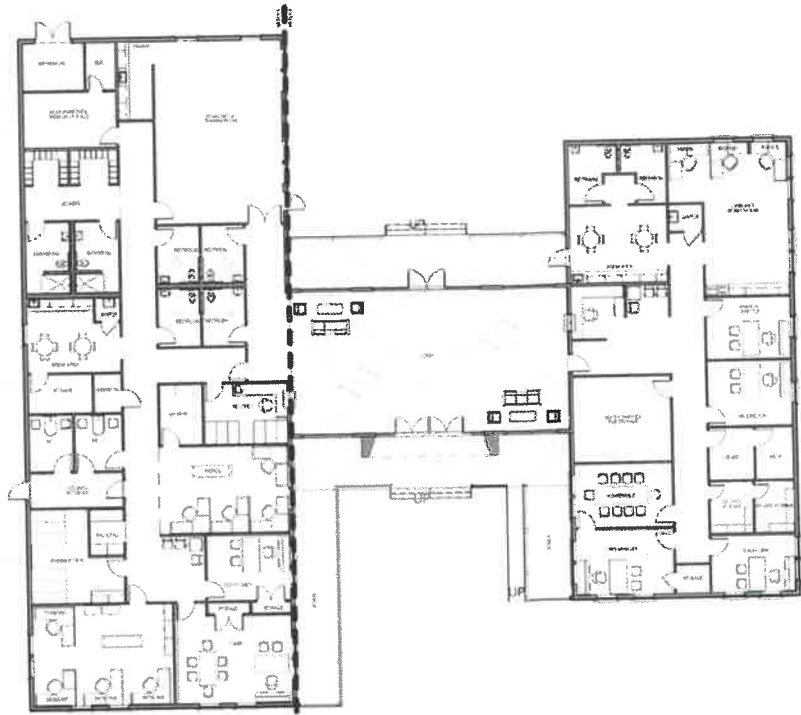
**POLICE DEPARTMENT - WINDERMERE, FL.**  
 ARCHITECTS DESIGN GROUP

MASTERPLAN - OPTION 1





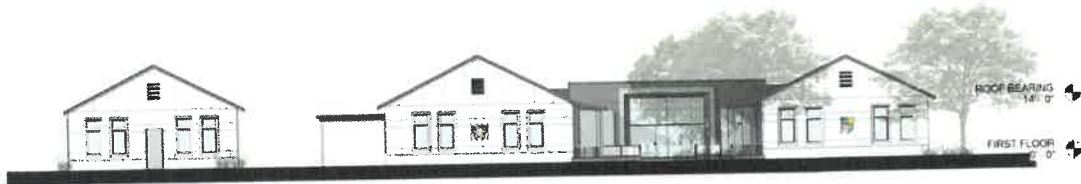
**Public Works**



**Police Department**

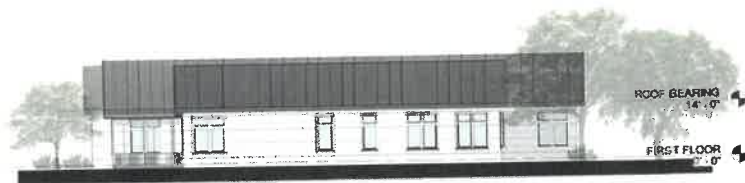
**Connector Lobby**

**Town Administration**



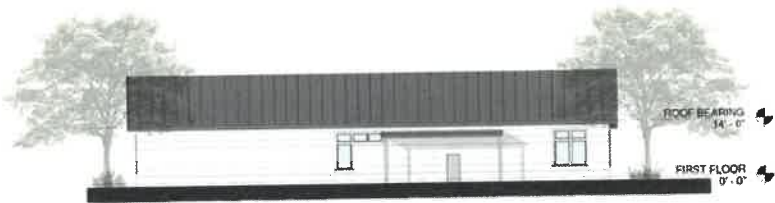
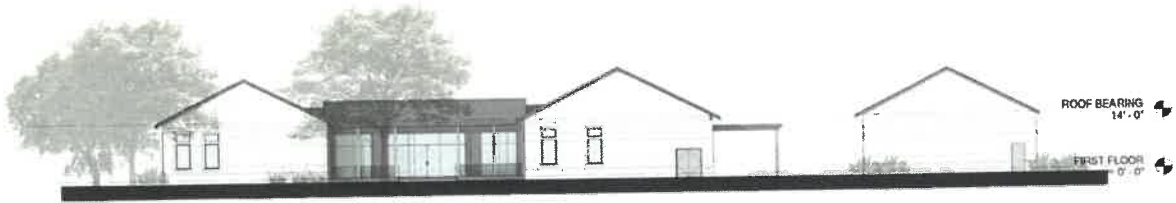
ROOF BEARING 14'-0"

FIRST FLOOR 12'-0"



ROOF BEARING 14'-0"

FIRST FLOOR 12'-0"







## PROJECTS UPDATE MEETING AUGUST 2019

*For previous updates on each item please refer to July 2019 minutes*

### **Attendees:**

- Robert Smith, Town Manager
- Scott Brown, Public Works Director
- Chris Sapp, Councilman Liaison
- Nora White, Finance Director
- Hao Chau, Kimley-Horn, Town Engineering Consultant
- Mike Galura, Town Engineering Consultant

### • Stormwater Projects:

- NPDES (National Pollutant Discharge Elimination System): *The NPDES permit program addresses water pollution by regulating point sources that discharge pollutants to waters of the United States.* Since the Town discharges into the lakes we are required to maintain this permit. 10/18: MBG addressed additional comments for NOI and Annual Report. Per conversation with Jason Maron, response to audit is complete. Awaiting completeness and acceptance letter. Issuance of NOI, Cycle 4 pending. MBG will distribute forms to be used for compliance (i.e., fleet maintenance, erosion/sedimentation control, etc.). Community project scheduled for Saturday, November 3<sup>rd</sup> (clean-up on lakefront, etc.) per Scott Brown. Final reading for ordinance scheduled for November 13<sup>th</sup> TC meeting. TM to coordinate with Da'Shanta and Diane on distributing Stormwater pamphlets with Boat Ramp Keys. TM reached out to BC and PDCS as well. Town received additional comments for NOI from Jason Maron. MG to address and resubmit. Comments are minor – MG to try to have responses by next week. MG to work on additional stormwater related brochures for rack in front of receptionist desk. MG coordinate with Diane on Gazette articles and number of Gazettes' issued. MG to provide Town with public education brochures for front magazine rack. Mike had DEP public notice published in February 10, Sunday edition of Orlando Sentinel. Inquiries to be made to Jason Maron, FDEP. Expecting NOI to be issued this month. MG contacted Jason Maron, DEP, for status of pending NOI. Received violation by residential builder. Coordinate with Dianne on Gazette on stormwater related articles. Awaiting Notice of Public Petition to be published in Orlando Sentinel (to be published this Saturday). Once published, need to forward proof of publication to Jason Maron, FDEP. Proof of Publication for Public Petition from Orlando Sentinel forwarded to Jason Maron, FDEP. Issuance of NOI Cycle 4 pending (permit issued May 3, 2019). KH to pick up NPDES tasks from MG based on KHA being selected as Town Continuing Consultant. KHA will prepare NPDES brochure and in-house training schedule. 8/5 **MG to send SOP's to HC for NPDES compliance. HC to prepare brochure for stormwater related subjects. Articles to also be published in quarterly Gazette. Violations being documented. HC to work with SB on training.**
- Orange County LMS: Orange County Local Mitigation Strategy (LMS) is comprised of the County and other governmental jurisdiction within it to plan and prepare for natural disasters. These projects are funded by FEMA. FEMA has dedicated \$15 million to the County to fund various projects. TOW has submitted 7 projects for funding including W Second Ave. This is a 25% match program. The process takes about 2 years. 10/18: MBG ask Jason Taylor for status. MG to review comments for 5 HMGP projects from DEM (Douglas Galvan) and address within 15-days for 5 projects. MG to resubmit by DEM timeline. MG resubmitted revised Pre-Disaster

application for funding of Preliminary Engineering for West Second Avenue. Geotechnical and Surveying services were not eligible because the services were performed before the Hurricane Irma disaster declaration. Awaiting word on technical review of HMGP applications. Update on Hurricane Irma HMGP applications (contact Douglas Galvan on status update). LMS Working Group Meeting scheduled for later in May (May 22<sup>nd</sup>). Jason Taylor encouraged the submittal of applications for Tier 3 projects under Hurricane Michael disaster declaration. JT feels that there will be substantial money available due to rural and smaller communities in the Panhandle not being able to provide matching funding sources for HMGP applications. MG to notify JT of budget change for West Second Avenue for Preliminary Engineering. KHA to work on Hurricane Michael applications (due August). MG to continue on Hurricane Irma tasks. MG to address comments from Mitchell Plummer, Engineering Specialist, Mitigation Bureau, Florida Division of Emergency Management by 07/12/2019. These projects are:

- 4337-693: 3<sup>rd</sup> Avenue and Magnolia Street Drainage Improvements;
- 4337-694: 6<sup>th</sup> Avenue and Butler Street Drainage Improvements; and
- 4337-695: 9<sup>th</sup> Avenue/10<sup>th</sup> Avenue and Oakdale Street Drainage Improvements

DEM is reviewing the technical/engineering aspects of these projects for eligibility, feasibility and cost-effectiveness.

**8/5 MG to attend LMS meeting on August 28<sup>th</sup> at Orange County OEC. MG mentioned money may be available under Tier 3 funding for Hurricane Michael. Town to consider projects.**

- **SFWMD Cooperative Funding Grant (FIRST/FOREST):** Grant awarded to TOW to address flooding within the Basin. 10/18: MBG awaiting all cancelled checks to prepare reimbursement form to SFWMD (Nestor Garrido). No further complaints on the project. Town is monitoring system for condition and adjust as needed per TC directive. Vacuuming service RFP sent out by SB. Bid opening November 8<sup>th</sup> at 3:00 pm at Town Hall. MG to still look at possibility of covering grates on roadway. MG submitted initial request for reimbursement. SFWMD responded and needs unique Town invoice number to process request. Debbie Wilson provided MG with unique Town invoice number. MG resubmitted invoice to Nestor Garrido. Town received \$175,000 reimbursement from the SFWMD. Project Complete. MG to review alternatives to grates in lieu of Mack Concrete's recommendation to cut inlet top and precast top with manhole frame and cover. Potential filter per JF – test site. Further evaluate grates on First Avenue on whether to cap or maintain. MG to apply for DAC Recovery funding from DEM. \$31,564.07 is requested for DAC funding. MG to work to submit next week. DAC application submitted to Amanda Campen, Florida DEM, Bureau Chief of Recovery, 2555 Shumard Oak Boulevard, Tallahassee, Florida 32301 on July 1<sup>st</sup>, 2019. MG to follow up on submittal. KHA to review drainage system and provide Induvial Project Order (IPO) for recommendations and possible upgrades. **8/5 Data collection for project fix. MG provided topographic information to SB per resident request. KHA to work on IPO and submit findings to TC**
- **RR ROW (Sidewalks, Multi Modal Path, RR ROW):** Town Council approved the purchase of the Ward/DP Lynn interests in the Railroad ROW. Once acquired the Town would be able to use the property for various projects: multi modal, stormwater, and landscaping) This would also allow for possible property swaps with those that own the RR Row so the TOW would have a continuous corridor from 12<sup>th</sup>/chase to Windermere Rd. 10/18 November 1<sup>st</sup> advertising period. TM working on negotiations for property swap. Conceptual design will commence once

the property agreement is finalized. SB is coordinating with the Rubio's on property donation adjacent to Lake Down-Lake Butler canal. Still waiting on Wards. Awaiting on closing on property swap with the Town. Expect closing in April. Next agenda for resolution to vacate 20' on Dirt Main and provide it for the property owner (Ward). TM negotiating with property owner adjacent to Lake Down canal. The closing is next week. TM providing information to closing agent. Workshop held Monday night. TC approved property swap. TM to talk to residents on Lake Butler Boulevard for swap/purchase of RR property. SB still talking to Rubio's, updating TM on status. TM looking for funding sources for project (FRDAP, etc.). Rubio's agreed to donate land pursuant to conditions to be addressed by the Town. To be on July TC meeting. 8/5 **TM sent documents to Sorenson. SB to discuss contract with Rubio's. Heather to draft agreement for Rubio's. TM – after property acquisition, review multi-modal concept plan with Wade-Trim or KHA. SB working on funding opportunities to design project. To be named Windermere-Ward trail (prototype name – provisional).**

- ~~• **Dirt Road Issues:** With the dirt roads come perpetual maintenance issues. Staff try to identify and repair areas of concern or create liability. 10/18 **Projects by priority: (1) Park Avenue, (2) Butler Street, (3) Bessie Street, and (4) Bayshore Drive. November TC approval for construction. Proposal for easement agreement for Bayshore Drive improvement (MBG to solicit surveyor). These will be broken out per project below. Public forum needed for project with selective pavement included. All paving projects will require Town Council approval. TM to coordinate with staff on determining strategic funding of projects. Park Avenue project has been approved to proceed with design (KHA). Need to develop long term plan to address pedestrian traffic. KHA to talk to Town about cut thru traffic this month. Nothing further. General maintenance. Ongoing. Washouts during afternoon rain events, crews continue to repair as needed. On-going.**~~
- **Second Ave:** Town Council approved the widening and stormwater projects for West Second Ave. Staff met with public and have a conceptual design. Staff waiting on Orange County LMS response for funding before design can be brought back to residents and TC for Approval. 10/18. No change. Awaiting Notice of Funding from FEMA/DEM from Hurricane Irma. MG to address comments from DEM (Douglas Galvin) regarding project costs. MG addressed with Douglas Galvan. MG to coordinate with Douglas Galvan, DEM, on project status. No Change. MG e-mailed Douglas Galvan – no response to date. Applications under technical review – fiscal review complete. Continue to fill in edge of pavement. None. 8/5 **MG addressed RFI's from DEM Environmental Reviewer regarding project limits (project limits in latitude/longitude format).**
- **Downtown Lighting Project:** The Town of Windermere recently changed from halogen to LED lights. We are now working on getting additional lights in areas but looking to work with Duke on process/need/cost. In addition, we are working with various companies looking to co-located small cell towers on our existing lighting. 10/18 Crown Castle considering 5G cell towers in Windermere. No applications received by Brad Cornelius (BC) as of yet. Working on application process. SB talked to Mike Smith, Duke Energy, for light/pole installation and permitting. TM needs application, cost estimate and clarification on policy. Major corridors (Biscayne – 12<sup>th</sup> Avenue to Windermere Road) and residential areas (Top Hats) for lighting envelope. No response from Mike Smith on SB's e-mails. Continue to follow-up with Duke Energy on street lighting. Send e-mail to Debbie Clements. SB met with Mike Smith last week.



Look at photo metrics for area north of canal where it is currently not lighted. Still waiting on Duke Energy on photo metrics. 8/5 **SB waiting on Mike Smith.**

- **Signage:** TOW looking for consistent signage within Town. Part of Branding Revitalization. Street signs have been installed along major roadways. Now focusing on interior signage to make sure they are correct type, meet specs and are justified and enforceable. 10/18: SB to look into Parking Directional Signage when 5<sup>th</sup>/Forest is complete. Town Entrance Signage placed on hold. SB to look at parking directional signage. Parking directional sign ordered by SB. SB to meet with contractor on parking signs and public parking signs. Keep 10-ton weight limit for bridge over canal. SB to order sign for 10-ton limit. Parking signs are expected to be received this week. New speed limit signs installed by SB. Look at installing DO NOT BLOCK INTERSECTION signs at intersections. SB to look to add in next round of regulatory signs. Most signs have been maintained by PW. Some signs may need to be replaced due to age. SB to monitor. SB awaiting quotes for flashing beacons. DO NOT BLOCK INTERSECTION signage to be included in next FY budget. Re-visit event signage – coordinate with LRP. No change – Advanced warning “Stop Ahead” beacons have been ordered and will be installed at approach to Windermere Road on Maguire Road. 8/5 **Beacons on hold due to backorder at manufacturer. PW to continue to maintain sidewalks.**
- **Town Facility Update:** TC approved new facilities and to work on building in existing location. The funding would require a vote which should happen in March 2019. 10/18: ADG and Steven Withers working on the facility. Final drafts in November and public outreach in January in preparation for March 2019. Conceptual plans ready by November 27<sup>th</sup> TC workshop. Stephen Withers working with ADG on conceptual plan. TM to meet with public on Tuesday's and Thursdays in January. Public forums scheduled for February. TC to review wording on referendum. Workshops continuing. Location seem to be getting a consensus from various committees. Referendum to be conducted in March. Next presentation on Tuesday at Rotary Club. Referendum for Town Facility passed. TM to meet regarding logistics of the implementation of the Town Facilities. Selection of Architect/review of concepts. RFQ for consultant selection and RFP for construction (sealed bids). Meetings with ADG and stakeholders. Working on RFQ for Construction Management At-Risk. To be advertised for responses from consultants with Construction Management capabilities (particularly for vertical construction). TM still negotiating with ADG. Awaiting on schedule for TM to issue Gantt chart. TM to prepare RFQ for Third Party Construction Management At-Risk. ADG contract to next TC meeting. Construction Management At-Risk services to likely be approved in July/August TC meeting. CMAR submittals being reviewed by selection committee (Stephen Withers, John Fitzgibbons, Scott Brown) for short list. ADG to go to July TC. 8/5 **Last public hearing completed. Concept plan to be adopted at August 13<sup>th</sup> TC meeting (Option 1). Once accepted, project will proceed with final design. CMAR shortlisted (three firms) and oral presentation this week. Once firm is selected, will be approved at September TC meeting.**
- **Fernwood Park FRDAP Grant: \$50,000 Awarded for Fernwood Park improvements. 10/18 SB working on RFP for Park Improvements for Fernwood. Project will match IDG approved plans. All contracts have been signed and waiting work from Andy Easton. All contracts signed. SB getting surveys done for site. Have not received Notice to Proceed. Awaiting boundary survey which is required per FRDAP. All commitment documents submitted to FDEP. Title search kicked back by FDRP (prepared by Gray-Robinson). Awaiting Notice to Proceed from FDEP. Notice of Commencement received from FDEP. 5-year CIP list to be built (SB to**

coordinate). TM requested items to be put on March/April TC agenda. Got Notice of Commencement. Come up with priority list for capital projects. PR to have a CIP list for SB. Central and Fernwood to be priority for FRDAP. SB has received cost estimates for drinking water fountains and butterfly garden. Dock quotes to be solicited by SB. Shoreline clearing will be in next FY budget. SB awaiting prices to remove invasive species from vendors. Dobson has removed invasive species in upland areas. Trees will also need to be removed. Aquatics company will continue to treat vegetation in waters. FWC and Orange County EPD permits have been amended. **8/5 Invasive species being removed. Boardwalk concept pending based on removal of additional vegetation along projected alignment. SB stated approximate ETA for design is 6-months.**

- **Central Park FRDAP Grant:** \$50,000 Awarded for Central Park improvements. 10/18 SB working on RFP for Park Improvements for Central Park. Project will match IDG approved plans. All contracts have been signed and waiting work from Andy Easton. SB getting surveys for site. Title search kicked back by FDRP (prepared by Gray-Robinson). Awaiting Notice to Proceed from FDEP. SB getting quotes on drinking fountain and Frisbee golf baskets. SB expects quotes this month. Also getting quotes on exercise stations and drinking water fountain. **8/5 SB waiting on final quotes for exercise stations. Will need to coordinate with OCU on connection for water fountains. PR recommended wood as opposed to metal exercise equipment.**
- **Cross Walk Improvements:** W&D has funded two cross walk improvements. First one on Second/Main and the next on 6<sup>th</sup>/Magnolia. 10/18 Two additional locations – 6<sup>th</sup> Avenue east of Ridgewood, and Main Street near Estancia. Funded one cross-walk. Location to be determined. Consideration for cross-walk locations: 1) 6<sup>th</sup> Avenue near Ridgewood Drive; 2) Main Street near Estancia. LRP to make recommendation and present to TC for approval. LRP has reviewed and approved Johnson Park crossing (east of Ridgewood), to be presented to TC for approval. More usage and higher volume of traffic. Cross-walk improvements completed. Look at an additional cross-walk based on availability of funding. LRP made 2 recommendations – 1) Estancia; 2) First Avenue and Main Street. Retrofit existing cross-walks. LRP recommendations made. Awaiting funding. No change. **8/5 Waiting on Windermere W&D funds.**
- **1887 Schoolhouse:** HPB and Tree Board have worked on the planning and implementation of repairing and improving the grounds and structures. Currently HPB is looking at making sure the building is sound prior to making additional improvements. SB sent out various requests for contractors and engineers to look at to no avail. In addition, SB was able to get a vendor to take care of the grove area to make sure it is well maintained and healthy. 10/18. Approved to replace citrus trees that have died and contract with maintenance firm. HPB to make decision on structure analysis. Working with Amanda Black on search for architect. HPB still searching for tree/grove maintenance. Architectural evaluation approved by TC. Based on architectural evaluation, HPB will generate a CIP. Architectural evaluation awaiting. The architect has conducted initial condition of schoolhouse. **8/5 Architect to return to review the condition of the schoolhouse this week.**
- **The Willows Roadway:** The HOA Roadway Milling and Resurfacing was approved in FY 18/19 Budget. Will begin process once we receive FEMA money (Condition of TC). Design will include apron on Windermere Rd as well as sidewalk extension to Windermere Rd/Main with cross walk at that location. 10/18 Awaiting on FEMA money. MG and TM to meet to see where we

are at with design and added scope for sidewalk, apron and crosswalks. Awaiting reimbursement from FEMA for debris cleanup. MG submitted supplementary proposal for crosswalk and sidewalk improvements to be included with the Willows milling and resurfacing improvements. Comments received from FEMA regarding waste disposal reimbursement request. State has approved, awaiting checks. MG to send Willows plans to SB and JF. MG to send IPO for external sidewalks. TM met with FEMA. Project is now in State's hand as far as releasing the reimbursement funding. MG received comments from SB and JF on plans to be addressed as part of final bid documents. MG expects survey from PEC this week to begin design of sidewalk ramps at the Willows and at the intersection of Maguire Road and Windermere Road. TM still awaiting FEMA reimbursements from Hurricane Irma. PAC/DAC – administrative costs for Hurricane Irma (\$31,000). PRELIMINARY sidewalk plan issued to SB and JF for review. Schedule date for Invitation to Bid (ITB) per TM. MG to finalize plans and Project Manual. SB to look at advanced warning beacons on Maguire Road at Windermere Road (to be done separate from Willows construction contract). SB working on cost for debris removal and coordinating with DEM (FEMA). RRFB on Maguire and Windermere Road. Pre-Bid – use certified arborist on tree assessment (included in summary of quantities list). MG working on comments by SB and JF on plan review. MG to update summary of quantities and Bid Form in Project Manual. Pre-Bid July 10, 2019 at 10:00 am (Town Hall). Bid opening on July 26<sup>th</sup>. On August/September TC meeting. Addendum No. 1 issued – clarify that Pre-Bid meeting is non-mandatory. 8/5 **On August 13<sup>th</sup> TC agenda for recommendation for awarding of bid. Prepare memorandum for funding options. MG to attend TC meeting.**

- **Street Sweeping:** Best Management Practice (BMP) under the stormwater NPDES program. 10/18 Ongoing. MG has article to send to TM, SB and JF. Ongoing. 8/5 **HC to consider street sweeping article for Gazette.**
- **Vacuum-Truck Services** – Cleaning of stormwater structures and storm pipes. Bid awarded by Town to Waste Services Group at January TC meeting. Started on 8<sup>th</sup> and Bessie Street to Magnolia. Log of linear footage of pipe cleaning and volume of debris collected. Completed in 1-1/2 days. Scheduled for 12<sup>th</sup> Avenue and Oakdale Street stormwater project. MG to provide SB with copy of recorded drainage easements for the storm sewer system in the back of the homes. Next project is west 8<sup>th</sup> and Forest Street. Plan is to initially clean the entire system with a future target of bi-annual cleaning of systems. SB to receive cleaning logs from WSG for documentation for NPDES measurable goals. Provide measurable goals for NPDES reporting. Done with cleaning 12<sup>th</sup> and Oakdale Street. Moving next to west 8<sup>th</sup> Avenue drainage system for cleaning. TM to coordinate with SB on availability of funding for continuing work. Working on funding. Continuing the cleaning of stormwater/drainage structures. Plan to conduct bi-annually. 8/5 **SB to provide budget amount to TM. Now included**
- **Lakefront Maintenance:** TOW to control invasive species along lakefront that is under Town jurisdiction. 10/18: Awaiting Orange County for permits. Once received, invasive plants to be removed by selected contractor. Awaiting Orange County permits. To start in January. Received OC permits. All permits now received. Start herbicide spraying. Pond by Windermere Elementary also maintained. Aquatic Systems has been onsite for a couple of months. SB coordinating with David Hansen, Orange County Environmental Protection Division, regarding limits of herbicide application. Information on cleaning Town's social media pages. Ongoing. Monthly treatment (15 locations). Vegetation cleared at Windermere Rec Center pond. Ongoing. SB to assess Windermere Rec Center pond on water recovery – check lake levels for

comparison. Spraying is on a monthly basis on lakeshore and in the parks. 8/5 **Continuing on monthly basis.**

- **Town Hall:** PW to inventory entire Town hall for improvements and repairs. 10/18: TM asking for long term needs of Town Hall – full assessment (i.e., lighting, kitchen, audio-video, etc.). SB contacted Landmark Construction for proposal. SB spoke with Landmark for numbers for quote. SB to contact Landmark Construction. SB talking to other contractors regarding quotes. SB requested proposal from Edmundson. SB has meeting with general contractor to give him some prices. Ongoing for quotes. Need all fixed assets identified and provided to NW (for insurance purposes). 8/5 **W&D to consider helping with Town Hall fix. FY 19/20 budgeted money to fund. Looking at Spring 2020**
- **Water Utility Master Plan:** TC approved master plan for water utilities for entire TOW. 10/18 - TM to issue RFQ for water master plan (entire Town). TM spoke with Wade-Trim on structure of RFQ. WT to meet with Orange County Utilities (OCU) regarding what OCU will need for RFQ. RFQ to be issued today on Town Website and DemandStar. Wade-Trim, KHA and CPH are the three consultants short listed for study. SB, JF and MG to review their proposals and select consultant for study. Oral presentations conducted on 3/17/19 (Wade-Trim, KHA). Consultant selection pending. Selection of consultant will be on TC agenda for approval. SB to issue ranking of consultants. Scheduled for April TC meeting. Awarded to Wade-Trim at April 9<sup>th</sup> TC meeting. WT to schedule kick-off meeting (SB, JF, MG to attend). Tentative schedule of 12-months to complete study. TM to consider lobbyist (2020-2021 FY, approximately \$60,000 for lobbyist) to assist in securing funding for implementing plan. June Technical Advisory Committee (TAC) meeting for project. Awaiting follow up schedule from Wade-Trim. TAC meeting with Wade-Trim (meeting in July). 8/5 **Presentation at September TC workshop.**
- **Cut-Through traffic:** Town Council approved KHA to do study on cut thru traffic and determine where traffic originates. 10/18 Town Council Workshop on 10/30 Schedule follow-up meeting with KHA. KHA to conduct TC Workshop scheduled on 1/22/19. Includes evaluation of continuous right turn southbound from Main Street to Chase Road. Await recommendations. Presentation by KHA at February TC meeting Tuesday night. Work with OC on county level on Windermere Road/Main Street roundabout and Main Street northbound to Chase Road with exclusive right-turn lane to relieve traffic congestion. Brought to TC Tuesday night. Police to continue with 90-day study – compile data and further evaluate with KHA study. TM asked Brad Cornelius for an urban planning study – possibly RFQ. Workshop in May, included in budget analysis by TM. Workshop planned this month. CS – Update from PD. Number of travel counts received from KHA. Data evaluated and will be discussed again at July TC meeting. 8/5 **TM had meeting for ideas for cut-thru traffic. TM has meeting with County Administrator. 8-27 Workshop to discuss additional ideas and planning initiatives**
- **Park Ave Stormwater Project:** TOW received complaints about standing water and flooding on south Park Ave across from School. Town put on notice of possible legal action. KHA, PW, and Staff working on solutions. 10/18: SB met with KHA to review and provide answers. MG and JF to review with SB (possible French Drain system). TM to approve KHA IPO for Design and Survey. Project 1 on list of CIP projects for FY 18/19 KHA (Mike Woodward) to proceed on design for project. SB and JF reviewed KHA plans and provide comments. Once completed, TC will issue project for bid. Notifications to be done by JF and SB for residents to be affected by construction. Coordinating with Orange County Utilities. OCU (Christina Crosby) has approved



scope and fee for the relocation of their utility relocation as part of the drainage improvements. KHA to conduct design for utility relocation. Target Bid in April, construction in June. 90% design complete. OCU water main to be relocated. OCU will work with KHA to design relocate within the prescribed Town timeline. SB to upload the bid set plans on DemandStar and Town website. OCU has hired KHA for water main relocation improvements. Need agreement between Town and OCU on reimbursement for water main labor and materials for project. No bids received. SB to look at options for constructing the project. Quote received from Barracuda (lowest quote received). HC to request qualifications. Additional quotes received and to be evaluated. Project to be presented to August TC. HC to discuss with contractor lane closures. 8/5 **On TC agenda for approval. Contract with OCU to be signed by TC.**

- **Bayshore Drive:** Flooding issues identified by residents. PW and Staff working to correct. Priority 4 on CIP for FY 18/19. 10/18: MG to provide quote for survey of easement. Staff to work on design. MG solicited proposal from PEC (\$650 for each easement, 2-easements). TM approved. MG will initiate go-ahead for legal description and sketches. MG to forward PEC approval page to TM for execution. SB to coordinate on easement agreements with two property owners. MG to check on easement with PEC. Legal descriptions and sketches completed and submitted to Town. Easement agreements being prepared by Gray-Robinson (TM to execute). MG to complete plans (comments provided by SB) and submit exemption request to SFWMD. MG completing plans – will apply for SFWMD exemption upon completion of plans. One of two easement agreements signed. MG to submit permit exemption once drainage easements are recorded. Once received, project will be solicited for bid. Exemption request has been submitted to SFWMD. Plans completed. Easement agreements received and recorded. Exemption granted by SFWMD. SB solicited the project for bid. Bids due June 22<sup>nd</sup>. Five (5) bidders submitted bids. Lowest bidder was Gregori Construction. MG to tabulate and evaluate bids and prepare recommendation for Awarding of Bid for August TC. 8/5 **MG provided SB with recommendation for awarding of bid (Gregori Construction). On TC August agenda for approval.**
- **Multi-Modal bridge over Lake Down/Lake Butler canal:** 10/18: TC approved design and 3-year construction costs. Awaiting general funds for design and construction. Estimate design in April 2019. On hold, address in April. On hold. Working with Rubio's. Rubio's agree to donate property with conditions with Town. Sorenson and Rubio property to be presented and discussed at TC. 8/5 **Project pending as part of multi-modal path project.**
- **Sidewalk improvements/repairs (maintenance budget) outside of multi-modal project.** 10/18: TC approved budget. PW to inventory sidewalks and prioritize for repairs. SB to inventory after first of the New Year. Await till February for inventory, work to be done after school is out for summer. No change. SB to inventory existing sidewalks, which will establish the funding needs to improve sidewalks. SB met with sidewalk contractor on project in front of Johnson Park. Contractor to begin sidewalk improvements on Summit and Highland. SB working on sidewalk list. Work in the Manors. Priorities to be established by next month. Sidewalk Repair Inventory prepared and completed by JF/SB. Based on sidewalks that need corrective action to be compliant with ADA. Survey presented in 8 sections with linear footage for each section for sidewalk repair/improvement. Planned for 2-year capital improvement plan. 8/5 **TM to update CIP based on JF inventory. Awaiting QES update on pavement management plan.**

- 6<sup>th</sup> Ave Sidewalk: 10/18: Design to be brought to TC in November for approval. Design was approved for KHA. TM to await on when to start the project. On hold.
- Bessie Street Stormwater Improvements: #2 priority on Stormwater improvements. Continuous maintenance issues and flooding. 10/18: MG to provide scopes. SB provide scopes to TM. On Hold. Awaiting HMGP application review. IPO to be presented at August TC. **8/5 To be on August 27<sup>th</sup> special meeting agenda.**
- Butler Street Stormwater Improvements: #3 Priority on Stormwater improvements: Continuous maintenance issues and flooding. 10/18: MG to provide scopes. SB provide scopes to TM. On Hold. Awaiting HMGP application review. IPO to be presented at August TC. **8/5 To be on August 27<sup>th</sup> special meeting agenda.**
- Marina Bay Stormwater Pond: 10/18: Standing Water. MG to investigate standing water issue, provide recommendation to Staff and determine any repairs needed. MG to investigate methods and permitability of pond modifications. MG and JF observed constant flow of water into the pond from the Marina Bay drainage systems. The constant flow of water is causing the pond bottom to be wet. There is an existing weep hole in the downstream control structure that does drain, but is overwhelmed by the amount of water entering pond. MG to prepare a report to TM to document observations. TM to schedule a meeting with HOA once report is received. Andi Reyes no longer with SFWMD. MG to contact Mark Daron, Regulatory Professional, to get a decision to partially restore under drain system that was removed for the project. Once Mark Daron provides a decision, then MG will coordinate with TM, SB and JF on the next step for rectifying pond system. Town would pay for cost, not under MSBU. MG to have design and exemption request to SFWMD by end of the month. Per MG conversation with Mark Daron, the underdrain can be reconstructed under a maintenance exemption. He would issue the maintenance. MG completing plans and will submit PRELIMINARY to SB and JF for final review. MG to prepare cost estimate for improvements. MG to coordinate with Mark Ady of SFWMD on permit exemption (maintenance) for underdrain improvements. Exemption request submitted to SFWMD. Exemption request granted by SFWMD. To be bid today. Bid opening July 11, 2019. **8/5 One bid received (Cathcart Construction). Second bid received after bid opening (Gregori Construction). Third contractor did not respond. MG to draft recommendation for awarding of bid for August 13<sup>th</sup> TC agenda.**
- ~~Town Hall Landscaping. Evaluate Town landscaping to determine where improvements could be done. SB to get minimum 3 bids for landscaping services. Bids have been received — Bid received from Dobson — slated for April TC meeting (pending approval by DBC). Approved Tuesday night by TC (not to exceed \$27,500 — DBC project). Demo scheduled for the week of the 26<sup>th</sup> of April. Demo has commenced. Completed.~~
- ~~Event Signage. SB getting quotes. SB received quotes — continue to monitor (only for major events). Completed.~~
- ~~Cal Palmer Building. SB/ building — working with Andy Williams and Molly Rose (Windermere Wine and Dine). Completed.~~
- Event Stage. Windermere Pavilion — JF coordinating with DBC on site plan. Received two proposals for outdoor pavilion preliminary design (site plan and concept drawing). Presented

to TC at April meeting. Meeting on Thursday. JF to follow up with Hunton-Brady. Review rough draft of rendering. 8/5 **To be continued.**

- Website. TM getting quotes. Payment issue resolved. TM to add additional items to website. Beta test completed. Work out final details. Beta test to be sent out. 8/5 **TM to ask Diane for update. Beta test to be sent out (CS).**
- Windermere Rec Center Retention Pond. SB and JF reviewed pond for function and aesthetics. SB and JF reviewed pond function – working fine from their observations. 8/5 **No change.**
- Signage Request: No Blocking Intersection. 8/5 **No change to be discussed at 8/27 mtg**
- W. First Avenue/Forest Avenue: Residence concern that the newly installed system is not working as it should. SB asked KHA to review for solutions. MG provide CD's of project data to SB. 8/5 **KHA to address.**
- E. Fifth Avenue @ Magnolia: Washout Wash-out repair – caused by heavy rainfall. 8/5 **Addressed by PW.**
- E. Fourth Avenue @ Magnolia: Washout Wash-out repaired – caused by heavy rainfall. 8/5 **Addressed by PW.**
- Chase Rd. Holding water at the curve during heavy rain event. SB to review existing drainage structures. 8/5 **Addressed by PW.**
- E. Ninth Ave. Washout, re-occurring. Looking into solution with KHA. 8/5 **KHA to review. Part of 8/27 Meeting**
- East Blvd. Washout. Re-occurring. Looking into solution with KHA. 8/5 **KHA to review. Part of 8/27 Meeting**
- Butler St @ Sixth. Washout. Re-occurring. Part of HMGP project. Looking at permanent solution. 8/5 **KHA to review. Part of 8/27 Meeting**
- 14 Dirt Main. Road water not flowing Between North Avenue and Lake Down canal – water ponding on dirt road and over existing concrete sidewalk. Working on permanent solution contingent on Rubio property donation (July TC). 8/5 **SB to address.**
- Dirt Main (Rose Property). Road water not flowing. Stormwater solutions pending (contingent on railroad right-of-way property swap). 8/5 **PW to address. Possible use of Town-owned property north of 10<sup>th</sup> Avenue for stormwater use.**
- W. Second Ave @ Forest Ave. (North of intersection). Standing water during heavy rain events. Stormwater solutions pending – HMGP application has been submitted for West Second Avenue Roadway and Drainage Improvements. 8/5 **KHA to review.**
- Windermere Baptist Church (WBC) Retention Area between Fourth and Fifth Ave. Water coming out of the top of bank of pond. SB observed pond recedes. Stormwater solutions pending on linear park from Fourth Avenue to Lake Down canal. 8/5 **To potentially be addressed as part of multi-modal future improvements.**

## **Acronyms**

**ADG: Architect Design Group**

**BC: Brad Cornelius, Wade-Trim**

**CIP: Capital Improvement Project**

**CE: Code Enforcement**

**CS: Chris Sapp, TC Liaison**

**DAC: Direct Administrative Cost**

**DBC: Downtown Business Committee**

**DEM: Division of Emergency Management (State of Florida)**

**EPA: Environmental Protection Agency (Federal)**

**FEMA: Federal Emergency Management Agency (Federal)**

**FDEP: Florida Department of Environmental Protection (State of Florida)**

**FDOT: Florida Department of Transportation (State of Florida)**

**FRDAP: Florida Recreation Development Assistance Program (FDEP)**

**HC: Hao Chau (Kimley-Horn and Associates)**

**HMGP: Hazard Mitigation Grant Program (FEMA/Florida DEM)**

**IDG: Innovative Design Group**

**JF: John Fitzgibbon**

**KHA: Kimley Horn and Associates**

**LMS: Local Mitigation Strategy (Orange County Office of Emergency Management)**

**MG: Mike Galura (Michael Galura Engineering Consultants)**

**NOI: Notice of Intent**

**NPDES: National Pollutant Discharge Elimination System (EPA/FDEP)**

**NW: Nora White**

**PA: Public Assistance**

**PW: Public Works Department**

**PDCS: Town permitting company**



**RFP: Request for Proposals**

**RFQ: Request for Qualifications**

**RR: Railroad**

**ROW: Right-of-Way**

**SB: Scott Brown**

**SFWMD: South Florida Water Management District**

**SW: Stormwater**

**TC: Town Council**

**TM: Town Manager (Robert Smith)**

**TOW: Town of Windermere**

**WBC – Windermere Baptist Church**

**WT – Wade-Trim**

# Liaison Projects Reports

## Historic Preservation Board

4/24 Update from Scott Brown from the Engineering firm, is that they should begin their work sometime by the end of the month or beginning of June. (They had some vacation scheduled which has delayed them getting started. Board voted to Restore the 1887 School House to the earliest version. The current siding does not represent earliest photographs of the building and IF the siding is deemed unsalvageable then they would like to change its orientation to a Horizontal Slat Siding that was on the building in the original class pictures. 5/29 . SB advised that the engineer will be starting their assessment within the next week. Members of the board asked for a notice of when they will be here to come and observe and ask a view questions once started. Also, the topic of taking another look at a fundraiser by selling engraved bricks for the path between the School House and the privy. Board agreed to start research and to possibly start this fundraiser out next spring. 6/26 Did Not Meet 7/31: Approved minutes. Andrew McGhee spoke during "public comment"/ open forum to discuss and answer questions about the upcoming public hearing. Board approved May's minutes 5-0. Board discussed getting a timeline together to keep the Oral History subcommittee on schedule. Possible changing the meeting time for the OHSC.

### Oral History Subcommittee:

Subcommittee, Has met 2x this past month. They have defining their focus groups and getting organized. Hopefully we will have a budget proposal soon. They are already doing research for alternative funding sources, including the National Oral History Association. Plus there was a recent article in the Windermere observer briefly discussing the project and also request for volunteers to help conduct the interviewers. They would like to formalize this part soon, so they can start training them soon. Myers has identified a grant through the Florida Humanities Council that the Oral History Project qualifies for and members voted unanimously in favor of applying for Grant at the next possible deadline. Board asked subcommittee for the proposed budget ASAP. 8/1: Meeting canceled. Lack of members. George Poelker and Councilman Williams only in attendance.

## PARKS & RECREATION COMMITTEE

### Notes

#### Members:

Nora Brophy – Chair  
Leshia Miller – Vice Chair  
Doug Bowman – Secretary/Treasurer  
Donna Steele  
Sherry Cassidy  
Frank Krens  
Tracy Mitchell

Committee met on Thursday, July 11<sup>th</sup>, 2019, at 5:00 PM at Town Hall.

1. Windermere Pet Fest – Pet Fest is scheduled for Saturday, March 7, 2020.
- 2, 18<sup>th</sup> Annual UMC Run Among the Lakes – Race is scheduled for Saturday, April 4, 2020.
3. Halloween Costume Parade and Hayride – Event is scheduled for Saturday, October 26, 2019.
4. Central Park – Scott Brown is obtaining quotes for water fountain and exercise equipment.
5. Fernwood Park – Underbrush cleared from uplands and treatment started to clear wetland underbrush. Walk through will be conducted with Public Works on July 17<sup>th</sup> to determine which trees need to be removed.
6. Park Among The Lakes – Public Works has ordered 2 picnic tables and a trash can.
7. Lake Down – Clearing out of lakefront and around dock completed. Dock has been lowered. Scott Brown is obtaining reflective material to post on lake side of dock. Add split rail fence at end of 4<sup>th</sup> Avenue with railroad ties to mark parking spots. Removal of invasive trees is in process. Clear out east side of 5<sup>th</sup> street dock to enlarge usable area.
8. Researching for appropriate material for paths along Lake Bessie Park and Lake Down Park.
9. Lakefront cleanup of all parks is in process.
10. New by-laws were reviewed and approved.
11. Annual walk through/inspection of parks was tentatively set for Saturday, August 24, 2019.

Next meeting is set for Thursday, August 8, 2019, at 5:00 pm at Town Hall.

**Tree Board Notes**  
(New Noted in RED/ Previous Notes in BLACK)

Members

Chair: Susan Carter

Secretary: Frank Krens

Treasurer: Admin/Liaison as needed

Leslie Brabec

Debra Neill

Misc

4/10/19: Members to discuss at the next meeting goals, projects, and fundraising that they would like to accomplish over the next year. 4/18/19: Board approved 3/0 to pay \$145 for Frank to attend an ISA weekend class. Funds to come from WTB account. 4/16/19: Frank completed class and brought back some education links and materials. Recommend that all tree board members complete the Tree Board University class online at no cost.

Town Hall Landscape Plan

4/10/19: Formally recommend a tree/bush/shrub that has color and is suitable for placement near the SE corner of the Town Hall and minimum one location of a mature oak. 4/18/19: Recommended replacing Golden Shower Trees with Hong Kong Orchids (non-pod producing) due to the toxicity of the Golden Shower Tree pods. Voted 3/0 to approve to spend up to \$200 from WTB account on a Fringe Tree for replacing Laurel Oak (same location) at the SE corner of Town Hall. 5/16/19: Almost complete. Fringe or Hong Kong Orchid Trees have not been planted. 6/19/19: Fringe Tree only remaining left (on backorder) **7/18/19: Planted**

5th/Forest Parking Lot

4/18/19: Recommended 3/0 to purchase, plant, and irrigate TWO 7-8" Live Oaks (1 on each of the west and east sides of the entry) totalling \$7,000. This will come from the Tree Mitigation Fund and must include a 1 year warranty from installer/nursery. Susan to price shop before moving forward (please allow 3 business days prior to moving forward with Dobsons). 5/16/19: Oaks are installed.

1887 School House

4/18/19: In need of replanting and treatment of grove. Susan speaking with arborist from Davey for recommendations. Frank to reach out to Rotary and Windermere grove contacts. 5/16/19: TB to recommend any removal or trimming needed on site by next meeting. Jason Arnold (potential vendor) stopped by the grove and will have a proposal/quote together by the week of the 20th (updated 05/17/19). 5/19/19: Board approved contract for repair, replacement, and 12 month maintenance of grove to Jason Arnold for up to \$4,000. Funds to be paid from WTB account. **7/18/19: Work has commenced (started pruning, small tree removal)**

### Arbor Day Trees

4/18/19: 2 weeks of advertising has been given to the Town Residents for remaining trees. Jackie and Susan will coordinate with Marina Bay about acceptable species and placement. Marina Bay to coordinate volunteers/hired help for planting at no expense to WTB or Town. Next meeting: decision on remaining trees. PW and WTB to think of needed locations. 5/16/19: All remaining Arbor Day trees have been inventoried by species and mature size. Marina Bay to have utilities marked for final placement. Susan to give them a deadline. 6/19/19: Utility companies had not marked area prior to meeting. 7/18/19: No update. HOA president out of Town.

### Tree Ordinance (including Master Forestry Plan/Grants related to)

4/18/19: Reestablish a new sub-committee or special meeting once new members obtained. 5/16/19: May have a 3rd party review the current ordinance in conjunction with a Master Forestry Plan. Susan Carter to get an estimate on cost. No new sub-committee set up at this time. 5/19/19: Ordinance review will be part of a master plan if performed and therefore, a combined agenda item with an Urban Forest Master Plan moving forward. Tabled until next meeting until a scope of work is drawn up for an RFP. The scope for the *request for proposal* to be decided on at the next meeting. 7/18/19: Frank to work with Scott to tighten up a scope for RFQ which may include just a revision of the 2006 inventory. Scott will distribute draft to TB members to comment directly to him.

### Urban Forest Master Plan (combined w/ Tree Ordinance on Agenda)

4/18/19: Used to provide goals, strategies, recommendations and proactive management and growth of the Town Canopy. Frank will start the process. Possibly look at a 3rd party to assist in the process. 5/16/19: Susan to get a quote on the approximate costs of a 5-10 year Master Plan including line items of tree inventory/survey and review and recommendations of the current tree ordinance. Frank to start gathering information on grants available and their processes to cover the costs if TB recommends to move forward with some or all of the Master Plan. 6/19/19: See: *Tree Ordinance*.

### Community Outreach

4/18/19: Susan to bring a couple articles for WTB approval for the Summer addition of the Windermere Gazette. The board will provide an article for each edition. Susan also exploring content for brochures. These will be used to hand out at events, Town Admin and to new residents (via admin and Realtors). WTB would like to set up at events for educating/recruiting. Chris to ask DBC if the Tree Board can set up at the Windermere Farmers Market. Look into promotional items that can be handed out. Leslie Brabec will be putting together an article for the Gazette by May 24th deadline. 6/19/19: Article completed and submitted for the Summer edition of the Gazette. Board to work on an article for the Fall edition. 7/18/19: Scott Brown discussed the new Florida Statute that preempts local government enforcement of the trimming or removal of trees if the property owner obtains a certification from a licensed arborist or landscape architect that the tree is a danger to people or property. The law (163.045, FS) took

effect on July 1, 2019. Leslie will be putting together an article for the next Gazette that will educate residents between native, invasive and exotic trees.

#### Treebute/Events

4/18/19: Board to think of new ideas to expand Treebute and possibly a different approach to the tree giveaway (eg less trees and stick with more popular trees). Continue to discuss other events to raise money to be self-supporting. 6/19/19: Due to the amount of planning involved, the Board will meet at different times than the regular WTB meeting for sole discussion/planning of Treebute. The first meeting is scheduled for Town Hall on July 10th @ 11am. **7/18/19: May add an education segment prior to the event which would allow participants first priority of trees on the day of the event. Scheduled Treebute sub-committee meetings are July 30 and Aug 6 at 11am. 1) A Resolution for proclaiming Jan 16th 2019 Arbor Day needs to be scheduled (needed for Tree City USA qualification). 2) Treebute needs to be added to the TC consent agenda in August.**

#### Fernwood Park:

5/16/19: Nora Brophy from Parks and Rec presented to the TB about removal of invasive trees and vegetation from the Fernwood shorelines in preparation of FRDAP funded project. TB wants to explore that and the cost effectiveness of removal of invasives near the Main St bridge at the same time. Robert Smith to get an estimate for clearing of Fernwood and also an estimate of clearing both Fernwood and Main St Bridge/ north path area on RR ROW. Provide TB and Tree Mit account balances and projections at the next meeting. 6/19/19: The Board agreed to split the cost of removal of shoreline invasives with Parks and Rec with the opinion that much of the quote for removal of invasive vegetation were not trees and therefore, did not fall within the scope of the Tree Mitigation Fund. The Board advises the Town to pay up to \$4,500 from the Tree Mit funds for the removal of invasive vegetation at Fernwood and Lake Down Parks. **7/18/19: Underbrush removed. Waiting on herbicide to be sprayed on the shoreline and removal of larger invasive trees.**

#### Central Park:

5/16/19: Tree board to identify species and planting locations. Goal would be to obtain trees at the same time as the Arbor Day trees and plant once FDAP project is complete or no further risk to newly planted trees. 6/19/19: Tabled until the project is nearer to completion.

**Windermere Pavilion Committee Notes**  
(New Noted in RED/ Previous Notes in BLACK)

Approved program and intent for an outdoor event pavilion:

- Functional “stage” space for events.
- Fits with the Town Masterplan for Town Hall site
- Replace existing “Community” Room’s toilets. (Community Building needs to be replaced,)
- Pavilion with three sides to project sound away from houses to west.
- Possible enclosed fourth side.
- Concession stand to serve Town events.
- Storage to accompany building.
- Restroom facilities
- This will be a capital improvement project but will rely on donated funds and not rely on Town public funds not associated with Town Committees or Boards.

Schedule (meetings updated, presented and/or future dates):

March 21 Receive HuntonBrady (HB) written Proposal

March 21 Windermere Tree Board- made aware of project and that tree protection is part of scope

March 25 Rotary Meeting

March 26 Town Council – updated process. No action

March 27 Historical Preservation Board

March 28 Long Range Planning

April 3 Downtown Business Committee- updated process

April 3 Due date for Town Council agenda items

April 5 Rotary Meeting

April 9 Town Council Meeting- approved HB proposal for \$0

May 8: Windermere Pavilion Committee (WPC)- Kick-off meeting w/ HB. Discussed “program”, walked the site for idea of placement, look of existing buildings and tree preservation. HB took feedback and will develop a site plan, floor plan and exterior rendering (conceptual only) for committee review and feedback by next meeting (TBD). Stephen Withers will send to HB: the facilities program, Minutes of previous committee meetings and the presentation by ADG for the Town Offices. He will also forward the dwg surveys for the town square.

**July 22: Made recommendations for reduction of footprint, which included the removal of large storage areas, bathroom modifications, reduction concession stand area and the addition of ADA compliant ramps. Next meeting TBD after floor plan changes are made.**