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Solicitation Addendum

Addendum No.:	1
Solicitation No.:	20-R074345SAM
Solicitation Title:	Lena Road Landfill Stormwater System Revisions
Addendum Date:	June 10, 2020
Procurement Contact:	Sherri Meier

IFB No. 20-R074345SAM is amended as set forth herein. Responses to questions posed by prospective bidders are provided below. This addendum is hereby incorporated in and made a part of IFB No. 20-R074345SAM.

REPLACE:

SECTION D, EXHIBIT 2, CONTRACT DOCUMENTS, SECTION 01010/SUMMARY OF WORK PAGE NUMBER 16.

Replace Exhibit 2, Contract Documents, Section 01010/Summary of Work, Page Number 16 hereby attached to this Addendum 1.

REPLACE:

SECTION D, EXHIBIT 2, CONTRACT DOCUMENTS, SECTION 02371/GEOTEXTILES, PAGES 1 THROUGH 4.

Replace Exhibit 2, Contract Documents, Section 02371/GEOTEXTILES, Pages 1 through 4 hereby attached to this Addendum 1.

REPLACE:

SECTION D, EXHIBIT 2, CONTRACT DOCUMENTS, SECTION 02502/UNDERDRAIN SYSTEMS, PAGES 1 THROUGH 4.

Replace Exhibit 2, Contract Documents, Section 02502/Underdrain Systems, Pages 1 through 4 hereby attached to this Addendum 1.

REPLACE:

SECTION D, EXHIBIT 3, LENA ROAD LANDFILL STORMWATER SYSTEM REVISIONS CONSTRUCTION DRAWINGS, PAGE 6 & 7

Replace Exhibit 3, Lena Road Landfill Stormwater System Revisions Construction Drawings, Page 6 & 7 hereby incorporated into this IFB and available for download as a sperate attachment.

ADD TO:

SECTION D, EXHIBIT 3, WEST WALL BORING PROFILES, PAGES 1 & 2

Add to Exhibit 3, West Wall Boring Profiles, Pages 1 & 2 here by incorporated into this IFB and available for download as a sperate attachment.

QUESTIONS AND RESPONSES:

Q1. Please clarify if there is going to be Fabrifoam (fabric formed concrete) install on this project?

R1. No. The project does not include fabriform. Please find that attached, corrected specification for geotextile associated with the underdrains (not fabriform).

Q2. Please provide a search term to locate the structure locations within the plans or provide the structure locations.

R2. Existing structures are shown on Drawing 5 and proposed structures are shown on Drawing 6 within the Plans. Drawing 6 identifies three FDOT Type D Inlets to be installed (Detail #4).

Q3. Are 7 cleanouts on the plan already existing?

R3. No. The seven cleanouts will be installed with the new underdrain system.

Q4. Will there be any tipping fees associated with material excavated from the pond or how will they be handled?

R4. The vegetation and soil excavated from the pond will be hauled, by the Contractor, near the landfill working face and no tipping fees for this material will be assessed.

Q5. Will rain days be given?

R5. The County will grant rain days if it considers the frequency and/or severity of the rain to have reasonably impacted construction progress.

Q6. Liquidated damages are set at $1,200.00 a day?

R6. Yes

Q7. Is pond water leachate?

R7. No. It is storm water.

Q8. Why does Manatee County require builders risk insurance when there is no vertical risk?

R8. Builders Risk was not checked on the IFB, Attachment D, Insurance and Bond Requirements, and is not required on this project.

Q9. Confirm if slipline on sheet #5 is pre-existing.

R9. Yes. The concrete pipe was previously slip-lined and no work on this culvert is included with this project. Please note that Drawings 5 and 8 are intended to identify existing site conditions while Drawings 6 and 7 define the work. Finally, drawing 6 has been updated and attached to clarify the culvert location from which an existing grout plug must be removed.

Q10. Can the Contractor move water between the ponds for dewatering if needed?

R10. Yes.

[Remainder of this page intentionally left blank]

Q11. Location and distance contractor to take excavated material?

R11. As shown on the sketch below, the approximate haul distance from the pond to the unloading area is 7,700 feet.

Q12. Reference plan sheet 6, the note to "excavate bottom 2' of pond, backfill with drainage sand per specifications", where is the specification for the drainage sand?

R12. Plan Sheet 7, Details 1 and 2 identify the drainage sand (fine aggregate) as meeting FDOT Standard Section 902-4 – Filter Material For Underdrains. This Drawing has been updated to include the sand must meet the FDOT requirement for Type V Underdrains and the reference in Specification 01010, Section 1.01 has also been revised for consistency.

Q13. Reference plan sheet 7, UNDERDRAIN POND BOTTOM DETAIL, Note 1, "FINE AGGREGATE SHALL MEET FDOT STANDARDS SECTION 902-4 – FILTER MATERIAL FOR UNDERDRAINS", is this the type of material we are to furnish at the bottom of the pond?

R13. Yes. Please see the response to question 12.

Q14. Reference plan sheet 7, UNDERDRAIN POND BOTTOM DETAIL, this detail shows the TOP OF FILTER MEDIUM EL. = 32.4, if the existing pond bottom elevation is 31.00, as shown in the note on plan sheet 6, and we are excavating 2-feet below that and placing new sand in that 2-foot depth, then the elevation of the new sand should be 31.00, why is the top of the filter medium 1.4-feet higher? We will not be able to make that material stand up like the detail is showing!

R14. The notes on Drawing 7 have been updated to clarify that the pond bottom will be 31.0' except directly over the Pond Bottom Underdrain – Detail 2.

Q15. Reference plan sheet 7, UNDERDRAIN SYSTEM – SIDESLOPE DETAIL, this detail is lacking information we need in order to determine the volume of the #3 coarse aggregate and the volume of the fine aggregate, please add elevations at the top and bottom of the coarse aggregate, an elevation at the top of the fine aggregate and the slope, ie. 4:1, 3:1, 2:1 or what.

R15. Drawing 7 has been revised to include a note to match the slope to existing pond slopes which are approximately 3:1.

Q16. Reference plan sheet 7, PIPE PERFORATION DETAIL, this detail does not show the pipe having a filter sock around it, how are we to keep fines and such from getting inside and eventually plugging up the pipe? Shouldn't the pipe have a filter sock on it?

R16. There is no filter sock on the pipe. Please note that AASHTO #3 gravel will surround the perforated pipe and filter fabric geotextile will surround the gravel to keep out fines. The perforations are sized for the gravel specified.

Q17. Can you please confirm the type of pipe required for the underdrain? Plans call for HDPE,DR-17 and Specs have contradictions referencing both HDPE, DR-17 & Corrugated HDPE Pipe. (02502;1.02) References AASHTO M252, Standard Specification for Corrugated Polyethylene Drainage Tubing. This is what we typically used for underdrain however the perforation pattern for 12" pipe would be as shown in attached not as depicted in plan details.

R17. HDPE, DR-17. The Plans are correct and the attached Specification (2502) has been updated to remove references to corrugated pipe and provide requirements specific to non-corrugated HDPE pipe.

Q18. Can you tell me if the 8" and 12" pipe (bid items 7, 8 and 10) on the above-mentioned project is Corrugated Polyethylene Drainage pipe (mentioned soil tight and snap fittings)? Or solid wall HDPE SDR 17 pipe (fused pipe and fittings)? In the specs (page 158) both are referenced, and, on the drawings, it is SDR 17 solid wall HDPE.

R18. Please refer to the response for question 17.

Q19. Spec Section 02371 Geotextiles states that geotextile is to be used at fabric-formed concrete revetment system locations. However, the plans do not appear to show any fabric-formed concrete revetment to be installed, modified, etc. Please clarify whether or not fabric-formed concrete revetment is required on this project.

R19. Please refer to the response for question 1. There will be no fabric-formed concrete on this project.

Q20. Does the installed underdrain system require any jet cleaning and video inspection?

R20. Video inspection will not be required. Cleaning will not be required provided that the Contractor maintain reasonable care to remove shavings, dirt, or other loose materials from the pipe as it is fused and installed. A County Representative will be on site to observe.

Q21. The work described in Bid Item #3 – Erosion Control (Lump Sum) of the Measurement and Payment section states that the item includes "hay bales (if needed)". Detail 5 on Drawing No. 7 shows and calls out hay bales installed adjacent to the silt fence. Note 2 of the same detail states "Engineer may accept silt fence without hay bales.". Please clarify whether or not we are to install both silt fence and hay bales along the entire route of silt fence shown on Drawing No. 6. If hay bales are not required along the entire route, please specify where they are to be installed.

R21. Hay bales will not be required for this project as long as the silt fence filter fabric meets a standard acceptable to the County such as FDOT Index 103, or AASHTO M-288-06, Class 2.

Q22. In regard to seeding the pond bottom, are we to install mulch, fertilizer, and seed over the sand protective cover layer?

R22. Yes. Seed the pond bottom (~45,800 SF) in accordance with Specification 02485.

Q23. It is unlikely that we will be able to construct sideslope underdrain as detailed in Detail 1, Drawing No. 7 due to possible shearing effects, etc. Will we be allowed to follow the angle of repose or overbuild these areas along the sideslope?

R23. Yes. The referenced detail provided is a modified FDOT Index 286, Type V. Slight modifications in the field, such as over-excavation (to achieve angle of repose) or overbuild will be accepted.

Q24. Is there a plan showing existing conditions (Topo) across pond bottom?

R24. Drawing 5 provides the best information available for existing conditions.

Q25. What finish grade is needed for final pond bottom?

R25. 31.0'. The intent is to replace 2' of pond bottom with imported drainage sand. The final grades should match existing grades with the exception of the vicinity of the underdrain (refer to question 16).

Q26. Where is BMP (Silt Fence) limits shown?

R26. Drawing 6. Silt fence will only be required in areas outside the pond where soils are disturbed and can potentially run off of the project area.

Q27. Are as builts of the inline pond bottom required?

R27. Yes. Survey will be used to verify depth of drainage sand backfill.

Q28. Will water from dewatering need to be treated?

R28. No.

Q29. What type of crushed stone aggregate (size & type aggregate) is needed for the underdrains?

R29. The gravel is specified, and additional information is provided in the addendum. AASHTO #3 refers to the coarse aggregate size, as published by the American Association of State Highway Transportation Officials. A sample chart is below.

AASHTO Number	Total Percent Passing													
	100 mm (4")	90 mm (3 1/2")	63 mm (2 1/2")	50 mm (2")	37.5 mm (1 1/2")	25.0 mm (1")	19.0 mm (3/4")	12.5 mm (1/2")	9.5 mm (3/8")	4.75 mm (No. 4)	2.36 mm (No. 8)	1.18 mm (No. 16)	150 µm (No. 100)	75 µm (No. 200) ***
1	100	90-100	25-60		0-15		0-5							
3			100	90-100	35-70	0-15		0-5						
467				100	95-100		35-70		10-30	0-5				
5					100	90-100	20-55	0-10	0-5					
57					100	95-100		25-60		0-10	0-5			
67						100	90-100		20-55	0-10	0-5			
7							100	90-100	40-70	0-15	0-5			
8								100	85-100	10-30	0-10	0-5		
10									100	85-100			10-30	
2A**				100			52-100		36-70	24-50	16-38*	10-30		
OGS**				100			52-100		36-65	8-40		0-12		

Q30. Is the unit price for drainage sand (Bid form item 3%) measured per CY by cross section measure or by truck tickets?

R30. The quantity for this item will be based on material in place, as measured by survey and cross section.

Q31. Will Off road end dumps be allowed to haul the pond bottom excavation materials to the active landfill site area?

R31. Yes. Please refer to question 11.

Q32. Is a notice or appointment needed for a site visit?

R32. Yes, keep in mind final day for questions was June 5, 2020. Contact Bob Bennett at 941-704-7855. Only individuals calling ahead and making appointment will be admitted to the site.

Q33. Reference specifications Exhibit 2, SCOPE OF WORK, page 2, par. 1.04, COMPLETION OF WORK, forty-five (45) days is not enough time, these are calendar days and most contractors do not work on weekends and besides we would not have access to the site on Sundays. Shop drawing preparation, submittal review and fabrication, especially for precast structures could take 6– 8 weeks, the precast structures are custom made and not just sitting in a vendor's inventory. Please revise completion time to 120-days.

R33. The project will remain at 45 days duration. During the precon and shop drawing submittals for precast structures, delivery lead times will be addressed for substantial completion after county verification with the vendors for the precast structures.

Q34. Reference specifications Section 02502, page 02502-1, par. 2.01 PERFORATED UNDERDRAIN PIPING, one of our vendors is telling us this HDPE, DR-17 pipe will not come from the manufacturer with the required perforations and we are not in the business of perforating pipe for this application, please consider using ADS, dual wall perforated pipe with sock.

R34. Pipe perforations can be made by the manufacturer, a supplier, or in the field. The Engineer confirmed with a supplier that this is common practice.

Q35. Reference specifications Section 02221A, page 02221-2, par. 1.04-C, in lieu of the "river run rock", will a granite material be allowed? Granite is readily available.

R35. Washed granite is acceptable.

Q36. Reference specifications Section 01150, page 34, BID ITEM #3 – EROSION CONTROL, second sentence, are we seed the pond bottom? If so, please provide a bid item for seeding.

R36. Yes. Payment for seeding of the pond bottom (45,800 SF) is included in the lump sum for Pay item #3, Erosion Control.

Q37. Reference specifications Section 02221, page 85, par. B –Dewatering, Drainage and Flotation, sub-par 1, second sentence, the requirement to drop the water level 18-inches below the bottom of the 2-foot excavation at the pond reinforces our reasoning for extending the contract time as pumping time will be needed in advance of over excavating the bottom 2-feet of material, please add more time to the contract.

R37. Please refer to the response for question 33.

Q38. Please provide soil borings for the job.

R38. Please find the logs attached. No recent borings have been found for the pond. Stations 74 through 77 on the attachment are north of the pond.

Q39. What is the existing slope of the banks at the pond, 4:1, 3:1 or 2:1? Need to know in order to get pricing for the mitered end section.

R39. The pond slopes vary slightly but are generally 3:1.

Q40. Reference plan sheet 7, SILT FENCE BARRIER DETAIL, Note 2, are we bidding this detail with hay bales or not?

R40. Please refer to the response for question 21.

Q41. Reference plan sheet 7, SILT FENCE BARRIER DETAIL, if we are to bid this detail with hay bales, what is the height of the hay bales above ground supposed to be?

R41. Please refer to the response for question 21.

Q42. Reference specifications Section 01150, page 35, BID ITEM #4, INLET AND PIPE MODIFICATIONS, the breakdown of what this item is to include, the last item "Miscellaneous Earthwork" what is this supposed to entail, can you be more specific?

R42. This item simply refers to earthwork made necessary by the Contractor's means and methods to achieve the work described in the Plans and Specifications. An example could be construction of a ramp on which trucks would traverse into and out of the pond.

Q43. Reference specifications Section 01150, page 35, BID ITEM #5, will our trucks have to go over the scale to be weighed when we are disposing of the material?

R43. No.

Q44. Reference specifications Section 01150, page 35, BID ITEM #4, INLET AND PIPE MODIFICATIONS, the breakdown of what this item is to include, "Modify existing drop inlet to install pond discharge" cannot find this on the plans, where is it?

R44. On the east side of the pond, north of Cleanout 1 and 2, installation of the 15’ RCP drain to the west (East INV 31.6; MES INV EL 31.0) will require modification of the existing drop inlet.

NOTE: Items that are ~~struck through~~ are deleted. Items that are <u>underlined</u> have been added or changed. All other terms and conditions remain as stated in the IFB.

END OF ADDENDUM

INSTRUCTIONS:

Receipt of this addendum must be acknowledged as instructed in the solicitation document. Failure to acknowledge receipt of this Addendum may result in the response being deemed non-responsive.

AUTHORIZED FOR RELEASE Jacob Erickson, MBA Digitally signed by Jacob Erickson, MBA Date: 2020.06.10 12:55:53 -04'00'

SECTION 01010 SUMMARY OF WORK

PART 1 GENERAL

1.01 WORK COVERED BY CONTRACT DOCUMENTS/REQUIREMENTS INCLUDED

A. The work included in this contract consists of the construction of modifications of the stormwater management system as shown in the Plans. The major work items are generally described as:

- Installation of erosion control silt fencing as shown in the Plans.
- Clearing and removal of the bottom two feet of soil from the existing pond bottom. Excavated material will be hauled and unloaded, by the Contractor, in the onsite landfill as directed by the County.
- Underdrains and cleanouts will be installed as shown in the Plans including perforated, 12-inch, HDPE pipe, gravel pack, geotextile, as well as pipes, fittings, plugs and frame/cover needed to construct cleanouts.
- The underdrains and pond bottom will be covered with two feet of sand ~~with hydraulic conductivity of 10^{-3} cm/s or higher~~meeting FDOT Standard Section 902-4 for Type V Underdrains. Elevations will be surveyed to ensure two feet of sand.
- Grout plug a 36-inch RCP culvert in two locations.
- Grout plug a 18-inch RCP in two locations.
- Complete removal of existing grout plug.
- Remove two existing mitered end sections, headwall and swing gate.
- Install three modified FDOT Type D Ditch bottom inlets (Pond Control Structures) with skimmers and grates. Installations must be completed by connecting new structures to culverts, underdrains and/or bleeder devices as shown in the plans.
- Modify existing drop inlet to provide a 36-inch RCP discharge pipe and mitered end section.
- Install sod in areas where pre-existing grass was disturbed by construction excluding areas covered by drainage sand.
- Provide record documentation

B. The Contractor shall furnish all shop drawings, working drawings, labor, materials, equipment, tools, services and incidentals necessary to complete all work required by these Specifications and as shown on the Contract Drawings.

C. The Contractor shall perform the work complete, in place and ready for continuous service and shall include any repairs, replacements, and/or restoration required as a result of damages caused prior to acceptance by the County.

D. The Contractor shall furnish and install all materials, equipment and labor which is reasonably and properly inferable and necessary for the proper completion of the work, whether specifically indicated in the Contract Documents or not.

1.02 CONTRACTS

Construct all the Work under a single contract.

1.03 WORK SEQUENCE

A. All work done under this Contract shall be done with a minimum of inconvenience to the

SECTION 02371
GEOTEXTILES

PART 1 - GENERAL

1.01 SCOPE OF WORK

Furnish all labor, materials, equipment and incidentals required to install filter fabric geotextile complete as shown on the Drawings and as specified herein. Filter fabric ~~G~~geotextile shall be used for soil retention outside of and around underdrain system – sideslope and underdrain pond bottom.~~side slope transition drain and swale underdrain river rock. Filter fabric is also used at fabric-formed concrete revetment system locations.~~

1.02 RELATED WORK (NOT USED)

1.03 SUBMITTALS

A. Within 30 calendar days following the Effective Date of the Agreement, submit the following information.

1. Manufacturer's background information.
2. List of material properties and samples of filter fabric with attached certified test results.
3. Manufacturer's quality control program and manual including description and results of laboratory testing.
4. Manufacturer's Certification that the material meets the requirements of the specifications.
5. Shop Drawing, including details of overlap and seaming.
6. A manual that specifically defines the installation procedures and quality assurance program during installation including manufacturer's installation instructions for the Contractor to follow.
7. Copy of quality control certificate.

1.04 REFERENCE STANDARDS

A. American Society for Testing and Materials (ASTM)

1. ASTM D1777 – Standard Test Method for Measuring Thickness of Textile Materials.
2. ASTM D5261 – Standard Test Method for Mass per Unit Area (Weight) of Geotextiles.
3. ASTM D3786 – Standard Test Method for Hydraulic bursting Strength of Knitted Goods and Nonwoven Fabrics – Diaphragm Bursting Strength Tester Method.

4. ASTM D4491 – Standard Test Methods for Water Permeability of Geotextiles by Permittivity.

5. ASTM D4533 – Standard Test Method for trapezoid Tearing Strength of Geotextiles.

6. ASTM D4632 – Standard Test Method for Breaking Load and Elongation of Geotextiles (Grab Method)

7. ASTM D4751 – Standard Test Method for Determining Apparent Opening Size of a Geotextile.

8. ASTM D4833 – Standard Test Method for Index Puncture Resistance of Geotextiles, Geomembranes and Related Products.

B. Where reference is made to one of the above standards, the revision in effect at the time of bid opening shall apply.

1.05 FABRIC APPLICATIONS

The filter fabric is to be used for underdrain construction.

1.06 DELIVERY, STORAGE, AND HANDLING

A. The filter fabric shall be shipped, stored and handled in accordance with manufacturer's recommendations and as specified herein.

B. The fabric shall be stored with a cover so that it is protected from exposure to sunlight and shall be elevated from the ground (a minimum of 3 inches) to protect the fabric from stones and other sharp objects.

1.07 REQUIREMENTS PRIOR TO INSTALLATION

The subgrade shall be inspected and approved by the Engineer prior to installation of the filter fabric.

1.08 MATERIAL WARRANTY

The manufacturer shall warrant the material, against manufacturing defects and material degradation for a period of twenty (20) years from the date of installation. The manufacturer shall replace any material which fails within the warranty covering the requirements at no cost to the Owner.

1.09 GUARANTEE

The Contractor shall guarantee the filter fabric against defects in installation and workmanship for the period of one (1) year commencing with the date of Final Completion and acceptance by Owner. The guarantee shall include the services of qualified service technicians and all materials required for the repairs at no expense to the Owner.

PART 2 - PRODUCTS

2.01 GENERAL

The use of a manufacturer's name and model or catalog number is for the purpose of establishing the standard of quality and general configuration.

2.02 MATERIALS

A. Nonwoven Fabric

1. All fabric shall be a nonwoven needle punched polypropylene fabric consisting of filaments formed into a stable network.

2. A nominal 10 oz/yd^2 unit weight fabric shall be used for encasement of gravel around the underdrains.

3. The fabric shall be non-biodegradable, nonreactive within a pH range of three to eleven, resistant to ultraviolet light exposure, and resistant to insects and rodents. Test results from any sampled roll in the lot, when tested in accordance with ASTM D4759, shall meet or exceed the values listed in Table 1 below.

Properties	**Test Method**	**Minimum Average Roll Values**	
		Unit	**Value**
Fabric Weight	ASTM D3776	oz./yd2	10
Grab Strength	ASTM D4632	lbs.	160
Grab Elongation	ASTM D4632	% Min	50
Puncture Resistance	ASTM D4833	Lbs.	90
Trapezoidal Tear Strength	ASTM D4533	Lb, Min ARV	75
Ultraviolet Radiation Resistance	ASTM D4355	70% strength retention Min, ARV after 500 hrs.	
Permittivity	ASTM D4491	SEC-1	1.0
Apparent Opening Size	ASTM D4751	Std. sieve	70-100

2.03 QUALITY CONTROL DOCUMENTATION

Prior to installation, the Contractor shall provide to the Owner the following information certified by the manufacturer for the delivered fabric.

1. Each roll delivered to the Project site shall have the following identification information.

   a. Manufacturer's name

   b. Product identification

   c. Thickness

   d. Roll number

   e. Roll dimensions

2. Quality control certificates, signed by the manufacturer's quality assurance manager. Each certificate shall have roll identification number, sampling procedures, and frequency and test results. At a minimum the following test results shall be provided every 50,000 square feet of

manufactured fabric in accordance with test requirements specified in Paragraph 2.02.

a. Thickness

b. Trapezoid Tear

c. Puncture Resistance

d. Mullen Burst Strength

e. Grab Tensile

PART 3 - EXECUTION

3.01 INSTALLATION

A. Fabric Placement

1. The subgrade shall be maintained in a smooth, uniform and compacted condition during installation of the filter fabric beneath the drainage stone.

2. No mechanical equipment shall be driven directly on top of the filter fabric.

3. Granular fill materials shall be installed in accordance with Section 02221A.

4. HDPE underdrain pipe shall be installed in accordance with Section 02502.

5. Drainage rock and protective cover shall be placed with mechanical equipment; however, no mechanical equipment shall be allowed directly on top of the filter fabric. Equipment shall be driven on pre-deposited material.

6. Damage to the filter fabric occurring during the placement of protective cover shall be repaired immediately at no additional expense to the Owner.

B. Field Overlap

1. The fabric shall be overlapped a minimum of 24 inches. Overlaps shall be field-stitched or heat bonded.

***** END OF SECTION *****

SECTION 02502
UNDERDRAIN SYSTEMS

PART 1 - GENERAL

1.01 SUMMARY

A. This section describes the material and work necessary for installation of the underdrain.

1.02 REFERENCES

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

~~1. American Association of Highway and Traffic Organizations (AASHTO):~~

~~1. AASHTO M252, Standard Specification for Corrugated Polyethylene Drainage Tubing.~~

~~1. 2. American Society for Testing and Materials (ASTM):~~

~~1. F449, Recommended Practice for Subsurface Installation of Corrugated Thermoplastic Tubing and Agricultural Drainage of Water Table Control.~~

~~2. b. F405, Specification for Corrugated Polyethylene Tubing and Fittings~~

1. ~~1.03~~ ASTM D 1248 Polyethylene Plastics Molding and Extrusion Materials
2. ASTM D 3350 Polyethylene Plastics Pipe and Fittings Material
3. ASTM F 714 Polyethylene (PE) Plastic Pipe (SDR-PR) Based on Outside Diameter

DEFINITIONS

A. Standard Specifications: Where the term “Standard Specifications” is used, such reference shall mean the current edition, including all supplements, of the Florida Department of Transportation Standard Specifications for Road and Bridge Construction. Where reference is made to a specific part of the Standard Specifications, such applicable part shall be considered as part of this section of the Specifications. In case of a conflict in the requirements of the Standard Specifications and the requirements stated herein, the requirements herein shall prevail.

1.04 SUBMITTALS

A. The following shall be submitted to the Engineer for approval.

1. Certificate of compliance of underdrain line with the requirements specified, prior to delivery.

2. Certificate of compliance of underdrain line fittings with the requirements specified, prior to delivery.

PART 2 - PRODUCTS

2.01 PERFORATED UNDERDRAIN PIPING

A. The perforated underdrain pipe will be 12-inch diameter perforated HDPE, DR-17 pipe as shown on the plans, or approval equal. All HDPE pipe and fittings shall be Standard Dimension Ratio (SDR) 17 high density polyethylene pipe using a 3608 type resin or approved equal.

B. Pipe shall be extruded from a Type III, Class C, Category 5, Grade P36 compound as described in ASTM D 1248. It shall be classified as cell 345464C according to ASTM D 3350 and have the material designation of PE 3408. The pipe shall be manufactured to meet the requirements of ASTM D 2513. Manufacturer's literature shall be adhered to when "manufacturer's recommendations" are specified. All pipe and fittings shall be provided by one manufacturer.

~~A. The underdrain piping shall meet USDA Soil Conservation's Service Engineering Standard Code Material Specification 606 for subsurface drains and conform to ANSI/ASTM F405.~~

2.02 HDPE ~~PERFORATED UNDERDRAIN LINE~~ FITTINGS

A. Fittings shall be manufactured from polyethylene compound having cell classification equal to or exceeding the compound used in the pipe.

~~All underdrain line fittings, including elbows, tees, branch connections, snap end caps, and reducing couplers, shall be polyethylene drainage fittings conforming to ANSI/ASTM F405.~~

B. All fittings shall be molded, unless approved by the ENGINEER. ~~Within the gravel and geotextile envelope, pipe shall be perforated and joints shall be soil tight. Outside the envelope, connecting to cleanouts, pipe will not be perforated and joints will be water tight.~~

2.03 NON-PERFORATED HDPE PIPE AND FITTINGS

A. ~~A.~~ The solid wall portion of the underdrain piping (for cleanouts) shall be 8-inch diameter HDPE, DR-17 pipe as shown on the Plans or approval equal. All HDPE pipe and fittings shall be Standard Dimension Ratio (SDR) 17 high density polyethylene pipe using a 3608 type resin or approved equal.

B. Pipe shall be extruded from a Type III, Class C, Category 5, Grade P36 compound as described in ASTM D 1248. It shall be classified as cell 345464C according to ASTM D 3350 and have the material designation of PE 3408. The pipe shall be manufactured to meet the requirements of ASTM D 2513. Manufacturer's literature shall be adhered to when "manufacturer's

recommendations" are specified. All pipe and fittings shall be provided by one manufacturer.

~~Contractor is required to provide all fittings and make all field adjustments as required for installation as recommended by the pipe manufacturer.~~

2.04 FILTRATION GEOTEXTILE

A. Filtration geotextile as specified in Section 02371 shall be used to wrap the required crushed material for the underdrain system in accordance with the plans. Overlap edges of filtration geotextile a minimum of twenty-four inches.

2.05 DRAINAGE LAYER MATERIAL

A. Drainage layer material shall be AASHTO #3 stone (non-limestone) having a 1-inch minimum diameter size with no overburden and spoil.

PART 3 - EXECUTION

3.01 GENERAL

A. Pipe shall be stored or stacked so as to prevent damage by marring, crushing, or piercing. Maximum stacking height shall be limited to 6 feet.

B. Pipe and pipe fittings shall be handled carefully in loading and unloading. They shall be lifted by hoists and lowered on skidways in such a manner as to avoid shock. Pipe and pipe fittings shall not be dropped or dumped.

~~**UNDERDRAIN LINE FITTING INSTALLATION**~~

3.02 FIELD QUALITY CONTROL

A. Pipe may be rejected for failure to conform to the Specifications or for the following reasons:

1. Fractures or cracks passing through pipe wall, except single crack not exceeding 2 inches in length at either end of the pipe which could be cut off and discarded. Pipes within one shipment shall be rejected if defects exist in more than 5 percent of shipment or delivery.

2. Cracks sufficient to impair strength, durability or serviceability of pipe.

3. Defects indicating improper proportioning, mixing, or molding.

4. Damaged ends, where such damage prevents making a satisfactory joint.

5. Scratches or gouges of depth greater than 10 percent of pipe wall thickness.

B. Acceptance of fittings, stubs, or other specially fabricated pipe sections shall be based on visual inspection at job site and documentation of conformance to these Specifications.

C. The ENGINEER shall be notified by CONTRACTOR prior to burial of pipe.

D. The PROJECT MANAGER and ENGINEER reserve the right to require destructive testing of any fusion weld on HDPE pipe.

3.03 HDPE PIPE HANDLING

A. HDPE pipe shall not be bent more than the minimum radius recommended by the manufacturer for type, grade, and SDR. Care shall be taken to avoid imposing strains that will overstress or buckle the HDPE piping or impose excessive stress on the joints.

B. Heat Fusion joints shall be made in accordance with manufacturer's step-by-step procedures and recommendations.

1. Fusion equipment and a trained operator shall be provided by the CONTRACTOR. Pipe fusion equipment shall be of the size and nature to adequately weld all pipe sizes and fittings necessary to complete the project.

2. Before heat fusing pipe, each length shall be inspected for the presence of dirt, sand, mud, shavings, and other debris, and any foreign material shall be completely removed.

3. At the end of each day, all open ends of fused pipe shall be capped or otherwise covered.

4. As per the manufacturer's instructions, no fusion shall be performed in precipitation unless a shelter is provided.

~~A. Use standard fitting specified under Paragraph 2.01 Perforated Underdrain Line Fittings, to complete connections where required and in conformance with ANSI/ASTM F449. For nonstandard connections, join underdrain lines using manufacturer's recommended methods to complete the connection.~~

***** END OF SECTION *****