SP-151108
(New)

SPECIAL PROVISIONS
FOR
IN-RIVER HDPE UNDERDRAIN SYSTEM

Polk County
EDP-PA26(001)--7Y-77

Effective Date
December 21, 2021

THE STANDARD SPECIFICATIONS, SERIES 2015, ARE AMENDED BY THE FOLLOWING MODIFICATIONS AND ADDITIONS. THESE ARE SPECIAL PROVISIONS AND THEY SHALL PREVAIL OVER THOSE PUBLISHED IN THE STANDARD SPECIFICATIONS.

151108.01 DESCRIPTION.

The work of this section consists of installation of underdrain piping under structures and miscellaneous appurtenant items as indicated herein and on the Plans.

151108.02 SUBMITTALS AND TESTING.

A. General: Submittals shall be prepared and submitted in accordance with Article 1105.03 of the Standard Specifications.

B. Submittals shall include as a minimum the following:

1. HDPE Pipe and Fittings (including perforation pattern).

2. Rock gradation results.

151108.03 MATERIALS.

A. HDPE Pipe:

1. Manufacturer:
- **a.** Experienced in the design, manufacture, and commercial supplying of the specific material for a minimum period of 5 years.
- **b.** Experienced in the design, manufacture, and commercial supplying of the specific size of pipe for a period of 1 year.
- **c.** Certify to above minimum experience requirements.

2. All HDPE pipe and fittings shall be from a single manufacturer. All HDPE pipe to be installed may be inspected at the factory for compliance with these Specifications by an independent testing laboratory provided by the Contracting Authority. The Contractor shall require the

manufacturer's cooperation in these inspections. The cost of these plant inspections of all pipe approved, plus the cost of inspection of a reasonable amount of disapproved pipe, will be borne by the Contracting Authority.

3. Inspection of the pipe will also be made by the Engineer or other representatives of the Contracting Authority after delivery. The pipe shall be subject to rejection at any time on account of failure to meet any of the Specification requirements, even though pipes may have been accepted as satisfactory at the place of manufacture. Pipe rejected after delivery shall be marked for identification and shall immediately be removed from the job.

4. General: HDPE pipe, which does not conform to ASTM D3035, ASTM D3350 and ASTM D 4976 or to any other requirement specified herein, shall not be approved for underdrain installations.

5. Allowable ASTM Specifications: All material, manufacturing operations, testing, inspection, and making of HDPE pipe shall conform to the requirements of the appropriate allowable ASTM Standard Specifications, latest revision thereof, listed in Article References.

6. **Marking:**
   The following shall be clearly marked on the exterior surface of the pipe.
   - Class and size.
   - Date of manufacture.
   - Name and trademark of manufacturer.
   - Deflection angle for bends.

7. Diameter of Pipe: The diameter indicated on the Plans shall mean the nominal diameter of the pipe. The outside diameter of the pipe shall conform to the IPS or DIPS sizing system.

8. **Wall Thickness and Class of Pipe:**
   a. The wall thickness shall comply with the appropriate ASTM Specification and the class of pipe designated on the Plans.
   b. HDPE pipe and fittings shall have a smooth interior and exterior and have a solid wall.

B. Porous Backfill Material:
The gravel filter material shown on the plans shall meet the requirements of Section 4131 of the Standard Specifications.

C. Engineering Fabric (Geotextile Fabric):
Geotextile fabric shall meet the requirements of engineering fabric in subsurface drains per Section 4196 of the Standard Specifications.

D. Testing Equipment:
Comply with requirements for Video Inspection materials found in Article 2504.02, B and C, of the Standard Specifications.

151108.04 CONSTRUCTION.
Install the size and type of underdrains shown in the contract documents. Install them at the locations and to the grades and elevations shown in the contract documents.

A. General: Precautions shall be taken to prevent foreign material from entering the pipe before or while it is being placed in the line. During laying operations, no debris, tools, clothing, or other materials shall be placed in the pipe. The open ends of pipe shall be closed with a watertight plug, or with other devices approved by Engineer, at times when pipe laying is not in progress.

B. Pipe:

1. Pipe perforations can be made by the manufacturer or completed by the Contractor. Location, size, and orientation of perforations shall be in accordance with the Plans. Perforations shall be smooth and clear without burrs.

   Pipe perforations shall be four 3/16 inch diameter holes on 6 inch centers at the quarter points of the pipe. No perforations shall be made within 6 inches of either end of the pipe.

2. Pipe shall be installed in accordance with the manufacturer's recommendations for installing the type of pipe used, unless otherwise shown on the Plans.

3. All joints shall be butt fused in accordance with manufacturer's recommendations.

4. Pipelines shall be laid to the grades and alignment shown on the Plans or staked by the Engineer. Variation from the prescribed grade shall not exceed 0.10 foot, and the rate of departure from, or return to, the established grade shall be not more than 1 inch in 10 feet, unless approved by Engineer. Alignments shall be as generally shown on the plan unless otherwise approved by the Engineer. Any pipe which is not in true alignment, or which shows undue settlement after laying shall be taken up and re-laid at Contractor's expense.

5. Lift or roll pipe to protect. Do not drag over gravel or rock. Avoid striking rocks or hard objects when lowering into trench. Pipe on which coatings have been damaged may be rejected at the site of the Work regardless of previous approvals.

6. Maximum allowable deflection of the pipe is 5%.

7. Allow Engineer to inspect pipes before covering.

8. Use or remove excess excavated project material as directed by the Engineer.

C. Bedding and Backfill:

1. Pipe shall be bedded in gravel filter material. Do not place sand or boulders directly against pie.

2. Bedding material shall be placed under and around all pipes as shown on the Plans. Bedding shall be placed in a manner that will minimize separation or change in its uniform gradation. Bedding shall be distributed in 6 inch maximum layers over the full width of the trench and simultaneously on both sides of the pipe. Special care shall be taken to ensure full compaction under the haunches and joints of the pipe. Minimum cover around drainpipes shall be 1 foot in all directions, or to the dimensions shown on the plans.

3. To prevent intrusion of grout into porous backfill material, engineering fabric shall be installed over the porous material, as shown on the Plans.

4. When work is complete, ensure cleanouts and outlets are open and free of debris.

D. Cleaning and Inspection:

1. Clean all in-river underdrains by flushing with high pressure water and removing debris by vacuum extraction, and by removing sheeting, bracing, shoring, forms, soil sediment, concrete, or other debris.

2. **Video Inspection.**
   a. **General.**
      1) Conduct video inspection of all new in-river manifold piping after all backfill and compaction operations are completed, and rock and rip rap are placed above, but prior to construction of any structures over the piping. If grouted rock is placed above the manifold piping the grout may be placed prior to video inspection, but if found defective or damaged during the subsequent video inspection, the pipe manifold and all disturbed grouted rock will be replaced at the Contractors expense and to the satisfaction of the Engineer.
      2) Notify the Engineer the day prior to inspection so the Engineer may be present during the inspection.
      3) Notify Engineer of any deficiencies discovered during the inspection.
      4) Re-inspect lines after corrective action has been completed.
   b. **Inspection Procedure.**
      1) Inspect each pipe segment between cleanouts in a single, continuous run. Progress through the entire project in a uniform direction.
      2) Inspect all lateral connections and other observations at right angles utilizing the pan and tilt capabilities of the camera.
      3) Center the video camera in the pipe during the inspection
      4) Do not exceed 30 feet of inspection per minute.
   c. **Inspection Reporting.**
      1) Provide a copy of the video inspection in the recording media specified by the Engineer. Include on screen continuous footage, pipe diameter, direction of viewing, and under drain location references in the recording. Attach the name of the project, the date, and the location of the inspection to each file submitted to the Engineer.
      2) Provide a written report of the inspection. Include true to scale drawings of all defects and observation locations. Reference the time stamp on each line-item entry on the written report.

151108.05 METHOD OF MEASUREMENT.
HDPE Underdrain System will not be measured for payment.

151108.06 BASIS OF PAYMENT.

A. HDPE Underdrain System: Payment will be a lump sum at the contract price.

B. Payments are full compensation for all work, including:

1. Excavation of the trench, removal, and disposal of excess trench material from the project,

2. Furnishing and placing subdrain pipe, laterals, elbows, tees, special connections, coupling, adaptors, and cleanouts according to the manufacturer's recommendations,

3. Furnishing and placing porous backfill material,

4. Drilling holes in sheet pile,

5. Furnishing and placing engineering fabric as required, and

6. Cleaning, video inspection, and any corrective actions.