

CONSTRUCTION SPECIFICATION

468. LINED WATERWAY OR OUTLET

1. SCOPE

The work shall consist of furnishing materials and installing all components of the lined waterway or outlet, as outlined in this specification and the drawings.

Construction work covered by this specification shall not be performed between December 1 and the following March 15, unless the site conditions and/or construction methods to be used have been reviewed and approved by the Engineer.

2. MATERIALS

All materials used shall conform to the quality and grade noted on the drawings, set forth in Section 6, or as otherwise listed below:

a. ROCK shall be durable and obtained from sources listed in Penn DOT Bulletin 14 or as otherwise approved by the designer. Gradation shall be as specified in Section 6 or on the drawings. The nominal size of a rock is that dimension (middle) which passes through a square opening with the same dimension; i.e. it is not the greatest dimension. The rock shall be free from soil and trash. Rocks shall be angular or sub-angular in shape. However, the least dimension of any individual rock shall be greater than one-third the greatest dimension. Unless specified in Section 6, a gradation quality control check shall be made of the in-place riprap by the Contractor. Any dispute on the acceptability of the gradation shall be resolved by physically testing the riprap in question. The Contractor is to provide the equipment and labor necessary to perform the testing at no additional cost.

b. EARTH FILL material used in constructing the waterway shall be obtained from the waterway area or other approved sources. Fill shall contain no frozen material, rocks greater than 6 inches in diameter, roots or wood greater than 2 inches in diameter or 4 inches in length, sod, brush, or other objectionable material.

c. DRAINFILL AGGREGATE shall meet the requirements of Penn DOT Specifications, Section 703.2, Type A, Coarse Aggregate. The size and gradation shall be as specified in Section 6 or on the drawings.

d. CONCRETE, masonry, or pre-cast concrete, shall be made in conformance with the requirements of Penn DOT Specifications, Sections 704, 713, and 714, as appropriate.

e. GEOTEXTILES shall meet the requirements set forth in Section 6 and in Penn DOT Specifications, Section 735, Class 4 Type A or B. Certification from the manufacturer shall be provided by the Contractor that the geotextile meets these requirements.

f. SYNTHETIC TURF REINFORCEMENT FABRICS shall meet the requirements of Penn DOT Specifications, Section 806.2(b) and (c).

g. GRID PAVERS shall meet the requirements of Penn DOT Specifications, Section 857.

3. SITE PREPARATION

The foundation area shall be cleared of trees, stumps, roots, sod, loose rock, and other material. The waterway cross section shall be excavated to the neat lines and grades as shown on the drawings. The sub-grade surface on which the lining is to be installed shall be excavated or filled as needed. Fill shall be compacted to approximately the same density as the adjacent undisturbed material. No abrupt deviations from the design grade or horizontal alignment shall be permitted.

All material removed by the clearing and grubbing operation shall be disposed of as directed by the Owner or his/her Representative, or as set forth in Section 6.

Areas adjacent to the waterway shall be graded to allow water to drain directly into the waterway.

4. FILTER OR BEDDING

Where a geotextile fabric is required under the lining, it shall be unrolled in a direction parallel to the waterway in a loose manner permitting it to conform to the surface, without damage, when the lining is placed. The fabric shall be secured and overlapped as per the manufacturer's recommendations for waterway applications. Fabric ends shall be trenched, as necessary, to ensure that drainage from adjacent areas does not get under the fabric. Placement of fabric on mud, un-compacted fill or frozen material will not be permitted.

Prior to the placement of the lining material, the fabric shall be inspected and approved by the designated inspector. Notification shall be given far enough in advance to provide time to schedule the inspection. Any fabric which is damaged during placement of the lining material shall be replaced.

Aggregate bedding shall be placed to the thickness shown on the drawings, or as set forth in Section 6. Compaction of the bedding material is not required; however the surface of the material shall be reasonably smooth and free of mounds or windrows.

5. LINING PLACEMENT

Rock linings shall be placed by equipment to the thickness specified. The rock shall be installed to the full thickness in one operation, and in such a manner as to avoid serious displacement or damage to the underlying materials or adjacent structures. In no case shall rock be dropped from a height greater than 3 feet.

The rock shall be delivered and placed in such a manner that will ensure that the in-place lining is homogeneous with no one size dominating an area. Some hand placing may be necessary to provide a neat and uniform surface on grade. Rock shall be placed so as not to obstruct or divert drainage from areas adjacent to the waterway sides.

Concrete linings shall be placed to the thickness shown on the drawings. The surface shall be smooth and even with concrete paste worked to the surface to fill all voids. Careful screeding (striking-off) and/or wood float finishing shall be required, unless otherwise shown on the drawings, or as set forth in Section 6. Adequate precautions shall be taken to protect freshly placed concrete from freezing or extremely high temperatures, to insure proper curing.

Other pavement or linings, such as synthetic turf reinforcement fabrics, grid pavers, etc., shall be installed in accordance with Penn DOT Specifications, Sections 806 and 857, as appropriate, and/or as otherwise set forth in Section 6.

6. ADDITIONAL CONDITIONS WHICH APPLY TO THE PROJECT ARE: