

WISCONSIN CONSTRUCTION SPECIFICATION

44. CORRUGATED POLYETHYLENE TUBING

1. SCOPE

The work shall consist of furnishing and installing corrugated polyethylene tubing with the necessary fittings and appurtenances as shown on the drawings and as outlined in this specification.

2. MATERIALS

Corrugated polyethylene tubing and fittings shall conform to the material requirements for the appropriate tubing size as shown in the following specifications:

- ASTM F 405: 3 to 6 inch diameter pipe
- ASTM F 667: 8, 10, 12, 15, 18, and 24 inch diameter pipe
- ASTM F 894: 18 to 120 inch diameter profile wall pipe
- AASHTO M 252: 3 to 10 inch diameter
- AASHTO M 294: 12 to 36 inch diameter

The tubing shall be appropriately marked with the ASTM or AASHTO designation.

When perforations are specified, the water inlet area shall be a minimum of 1 square inch per lineal foot of tubing. The inlets shall either be circular perforations or slots equally spaced along the length and circumference of the tubing. Unless otherwise specified, circular perforations shall not exceed 3/16 inch in diameter, and slot perforations shall not be more than 1/8 inch wide.

Geotextile filter socks, when required, shall meet the material requirements specified by the manufacturer for the intended use of the tubing.

Granular bedding material, when specified, shall conform to the requirements specified on the drawings.

3. HANDLING AND STORAGE

Tubing shall be delivered to the job site and handled by means that provide adequate support to the tubing and do not subject it to undue stresses or damage. When handling and placing corrugated polyethylene tubing, care shall be taken to prevent impact blows, abrasion damage, and gouging or cutting (by metal edges and/or surface or rocks). The manufacturer's special handling requirements shall be strictly observed. Special care shall be taken to avoid impact when the pipe must be handled at a temperature of 40 degrees Fahrenheit or less.

4. EXCAVATION

Unless otherwise specified or approved, excavation for and subsequent installation of each tubing line shall begin at the outlet end and progress upgrade. The trench or excavation for the tubing shall be constructed to the lines, depths, cross sections, and grade shown on the drawings.

Trench shields, shoring and bracing, or other suitable methods necessary to safeguard the workers shall be furnished, placed, and subsequently removed by the contractor.

5. BEDDING THE TUBING

Tubing shall not be laid on a rock foundation. In the event that boulders, rock or ledge rock, or other cemented materials that prevent satisfactory bedding are encountered at the required grade, the trench shall be excavated to a depth of at least 6 inches below the grade and backfilled to the required grade with a sand-gravel mixture or other approved material.

If the bottom of the trench does not provide a sufficiently stable or firm foundation for the tubing, a sand-gravel mixture or other approved materials shall be used to stabilize the bottom of the trench.

When a granular filter or envelope is specified, the filter or envelope material shall be placed in the bottom of the trench just before the tubing is laid. The tubing shall then be laid and the filter and envelope material placed to a depth over the top of the tubing of not less than that shown on the drawings.

When a granular filter or envelope is not specified, the bottom of the earthen trench shall be shaped to form a semicircular, trapezoidal, or 90-degree "V" groove in its center. This groove shall provide support for not less than a fourth of the outside circumference of the tubing. After the tubing is placed in the excavated groove, it shall be capped with friable material from the sides of the trench. The friable material shall be placed around the tubing, completely filling the trench to a depth of at least 3 inches over the top of the tubing. For material to be suitable, it must not contain hard clods, rocks, frozen soil, or fine material that will cause a silting hazard to the drain. Tubing placed during any day shall be blinded (place required soil material around and over pipe) and temporarily capped before construction activities are completed for that day.

6. PLACEMENT AND JOINT CONNECTIONS

All tubing shall be installed to the grade shown on the drawings. After the tubing is placed in the trench and blinded, sufficient time shall be allowed for the tubing to adapt to the soil temperature before backfilling.

Maximum allowable stretch of the tubing is 5 percent. Special precautions must be implemented on hot, bright days to ensure that the stretch limit is not exceeded and excessive deflection does not occur as a result of installation procedures, including backfill operations.

Perforated pipe shall be laid with the perforations down and oriented symmetrically about the vertical centerline. Perforations shall be clear of any obstructions when the tubing is laid.

Lateral connections shall be made with manufactured junctions comparable in strength with the specified tubing.

The pipe ends and the couplings shall be free of foreign material when assembled. During the placement of the tubing, each open end shall be closed off with a suitable cover or plug at the end of the workday until work resumes.

All split fittings shall be securely fastened with nylon cord or plastic zip ties before any backfill is placed.

All buried ends of the tubing shall be supplied with end caps unless otherwise shown on the drawings.

7. BACKFILLING

The backfilling of the trench shall be as shown on the drawings and completed as rapidly as is consistent with the soil conditions. Automatic backfilling machines may be used. Backfill shall be placed so that displacement or deflection of the tubing will not occur. Backfill shall extend above the ground surface to allow for settlement and be well rounded and centered over the trench.