

CONSTRUCTION SPECIFICATION

PIPELINE

ND-516

SCOPE

The work shall consist of all construction operations and furnishing all materials as required by the drawings and specifications for the complete installation of the pipeline. All work shall be conducted in a skillful and workmanlike manner. The completed job shall present a workmanlike appearance.

LOCATION

The location of the pipeline shall be as shown on the drawings or as staked in the field.

MATERIALS

Steel pipe shall meet requirements specified in ASTM-A-120 or in AWWA Specification C-200. Steel pipe will be adequately protected from corrosion. If, because of local conditions, coal-tar enamel protective coating is needed for steel pipe, the coating shall meet the requirements of AWWA Specification C-203. In corrosive soils or waters use plastic pipe.

Plastic pipe shall meet the requirements of ASTM D1785 or D2241 for polyvinyl chloride (PVC) and ASTM D2239 or D3035 for polyethylene (PE). Equivalent plastic pipe and fittings conforming to other ASTM or AWWA specification may be approved for use.

PE pipe for use above ground will be made of materials with 2 percent carbon black to provide ultraviolet light resistance for the life of the pipe.

All plastic pipe shall have a manufacturer's guarantee of quality against defective materials and workmanship, rot, rodent damage, and weathering. Suitable pipe markings will be considered full compliance. Suitable pipe markings shall include the following: a) The nominal pipe size, b) the type of plastic pipe material e.g. PE3408, c) the pressure rating in psi for water at 73.4°F, d) the standard designation such as dimension ratio with which the pipe complies, and e) the manufacturer's name and code, spaced at intervals of not more than 5 feet.

All fittings and couplers shall meet or exceed the same strength requirements as that of the pipe and be made of material that is recommended for use with the pipe. All fittings shall be installed in accordance with the recommendations of the pipe manufacturer. Solvents, gaskets, butt fusion, and other joining methods shall conform to the requirements of the appropriate ASTM or AWWA specification for the type of pipe used.

Where water is to be used for human consumption, the requirements of the National Sanitation Foundation (NSF) shall be met. The pipe must be suitably marked.

INSTALLATION

A. EXCAVATION

Pipe excavation may be completed with any equipment necessary to install to the proper burial depth. The bottom of the pipe trench shall be graded to provide uniform support for the pipe. The bottom of the pipe trench shall be free of rocks, clods, and other obstructions. If uniform support cannot be obtained because of rocks, dense, or wet soils, the trench shall be over-excavated 2 to 6 inches and backfilled with sand or fine-grained soils.

The minimum depth of the excavation shall be sufficient to provide the specified depth of cover from the original ground line to the top of the pipe.

The bottom width of the pipe trench shall be sufficient to provide clearance on both sides of the pipe at all locations including the joints. Pipelines may be placed by “plow-in” equipment in lieu of conventional trenching if the soils are suitable and rocks will not be detrimental to the pipe, as approved by the Natural Resources Conservation Service Representative (NRCSR).

Excavated materials shall be stockpiled adjacent to the excavation.

Excavations shall not be entered by workers unless the excavations meet the requirements of Construction Industry Standards and Interpretations, PART 1926, SAFETY AND HEALTH REGULATIONS FOR CONSTRUCTION, SUBPART P-EXCAVATIONS, The width and sideslopes of the excavation shall be increased as necessary to meet these requirements or to provide space for sheeting, bracing, shoring, and other supporting installations. The contractor shall furnish, place, and remove such supporting installations. All trenching and ground disturbing excavation shall be done in compliance with North Dakota One-Call.

B. PLACEMENT

The pipe shall be placed in accordance with the manufacturer’s recommendation for joint deflection and pipe bending radius. The temperature of the pipe should be within a few degrees of the ground temperature prior to backfilling or connecting to other facilities to account for thermal contraction and expansion. Pipelines laid on the surface or shallow buried will be snaked to prevent damage from thermal contraction and expansion.

When handling and placing plastic pipe, care shall be taken to prevent impact blows, abrasion damage, and gouging or cutting. Special care shall be taken to avoid impact when the pipe must be handled at temperatures of 40°F or less.

C. BACKFILL

All backfilling shall be completed before the line is placed in service. Prior to backfilling, the trench shall be dewatered. For plastic pipe, the initial backfill shall be of selected material, free from rocks or other sharp-edged material that would damage the pipe. Care shall be taken to avoid deformation or displacement of the pipe during initial backfill operations.

The remainder of the backfill shall be placed and spread in such a manner as to completely fill the trench so that there will be no unfilled spaces in the backfill. Mound the backfill soil to replace the soil removed from the trench.

D. THRUST BLOCKING

Unless otherwise specified, provide thrust control as follows:

On pipelines greater than 1 1/2”, in diameter, thrust shall be controlled at all elbows greater than 45 degrees, all tee connections, major appurtenances, and at any location of potential thrust damage. The method of thrust control shall be to fill the void between the pipe and the undisturbed trench wall with concrete for a distance of 1 foot along the pipe in each direction from the center of the thrust.

TESTING

The pipeline shall be thoroughly tested at the design working head. Prior to testing, the line shall be thoroughly flushed.

MEASUREMENT

The length of pipeline will be measured to the nearest lineal foot for each kind, size, and class of pipe and for each depth and type of excavation.

OTHER CONSIDERATIONS

EROSION CONTROL

All disturbed or exposed surfaces in the construction area shall be seeded when specified on the plans or in the construction details. Seedbed preparation, seeding, fertilizing, mulching, or other vegetation shall be as shown on the plans or as specified in the construction details. Water bars or similar diversion techniques shall be used to prevent surface water from flowing alongside and eroding the pipe trench, when applicable.

ITEMS OF WORK AND CONSTRUCTION DETAILS

