**SECTION 02685**

**GAS DISTRIBUTION SYSTEMS**

**PART 1 - GENERAL**

1.1 **SUMMARY:**

A. Section Includes:

1. Natural gas distribution system and appurtenances.

B. Related Sections:

1. Section 02200 - Earthwork.
2. Section 02221 - Trenching, Backfilling, Compacting.
3. Natural gas piping within the building: Division 15 sections.

1.2 **QUALITY ASSURANCE:**

A. All gas distribution facility construction shall conform to the requirements of the following codes and standards:

1. Xcel Energy.
4. Williams-Steiger Occupational Safety and Health Act (OSHA).

B. Pay all required connection, material and meter costs.

C. All facilities must be protected from washouts, floods, unstable soil, landslides, or other hazards that may cause the facility to move or fail.

1.3 **SUBMITTALS:**

A. Record Drawings:

1. At project closeout, submit record drawings of installed natural gas system piping and products, in accordance with requirements of Section 01720.
2. Detailed on one (1) inch = twenty (20) feet scale engineering drawings presented the specific conduit and or aerial cable routing and associated manhole and/or pole locations and specifications.

1.4 PROJECT CONDITIONS:

A. Coordinate with and notify Xcel Energy, and aid in locating natural gas system line locations for installation by them or their agent.

B. Obtain natural gas configuration from Xcel Energy.

PART 2 – PRODUCTS

2.1 UNDERGROUND FACILITIES:

A. Pipe

1. Steel or plastic material should be used for the gas distribution pipe.

2. All plastic pipe must be installed below ground level.

B. Depth of Cover

1. Depth of cover shall be measured from the final grade to the top of the pipe.

2. Minimum depth of cover shall be 36 inches for transmission lines and 30 inches for distribution lines.

3. Minimum depth of cover for service lines shall be 24 inches.

4. Transmission and distribution lines installed under streams and ditches must have minimum cover of 48 inches.

5. All gas main and services shall have a minimum of 12” clearance from any foreign utilities in accordance with CFR 192.325.

C. Components

1. Transmission line valves shall be installed in boxes or be otherwise readily accessible.

2. Transmission line pressure relief and pressure limiting devices shall be installed in underground vaults, unless aboveground installation is permitted by the Director of Public Works.
3. All service lines shall be equipped with shutoff valves.

4. An electrically conductive tracer wire shall be installed with all plastic and non-conductive pipes.

D. Casing Pipe

1. Gas pipe must be installed in casings under all roadways with appropriate venting. Steel gas mains will require casing insulators. Casing pipe shall be steel pipe with a wall thickness of ¼ inch minimum extending at least five (5) feet beyond the limits of any roadway improvements.

E. Corrosion Protection

1. All pipes susceptible to corrosion shall be cathodically protected and have a protective coating.

2. All corrosion susceptible pipes must also be electrically isolated from other metallic structures.

2.2 ABOVEGROUND FACILITIES:

A. All aboveground facilities shall be protected from accidental damage by vehicular traffic impacts or similar causes either by being located a safe distance away from traffic or by structural barricades.

B. All aboveground facilities shall be located so as not to cause unnecessary obstruction to pedestrian and vehicular traffic.

2.3 IDENTIFICATION:

A. Underground Type Plastic Line Marker:

1. Manufacturer’s standard permanent, continuous-printed plastic tape with metallic core, intended for direct-burial service; not less than 6” wide x 4 mils thick. Provide yellow tape with black printing reading “CAUTION NATURAL GAS LINE BURIED BELOW”.

PART 3 - EXECUTION

3.1 INSTALLATION OF IDENTIFICATION:

A. During backfilling and topsoiling of underground natural gas piping, install continuous underground plastic line markers, located at two (2) depths, 1’ below grade and 1’ above pipe.
3.2 TESTING REQUIREMENTS

A. All newly constructed pipes must be tested prior to placing the line in service. No pipe shall be placed in service, or returned to service, with leaks or without adequate corrosion protection.

1. Pressure Testing
   All pipes shall be pressure tested for leakage as described in CFR 49 part 192. In order to establish the maximum allowable operating pressure (MAOP), pipes shall be tested at 1.5 times the MAOP.

2. Corrosion Control Testing
   Corrosion control devices shall be tested whenever the pipe is exposed for maintenance or repair. Additionally, all corrosion control devices must be tested at least once each calendar year.

3. Records Retention
   Records of testing shall be maintained for the life of the pipe.

END OF SECTION 02685