

CITY OF LAGRANGE
Gas System Material Specifications
Revised: January 11, 2009

Materials installed in the City of LaGrange gas system shall satisfy all applicable ANSI Standards, and comply with all Federal, State, and Local regulations including Pipeline Safety Regulations, Code of Federal Regulations, Title 49.

STEEL PIPE AND FITTINGS

- ◆ Steel pipe must be manufactured with electrostatically applied “fusion bonded epoxy” (FBE) exterior coating in accordance with API standards. Coating shall conform to the current National Association of Pipe Coating Applicators Specifications (NAPCA) and be 14 mils nominal and 12 mils minimum terminating 3” from the pipe ends. Coating shall be Scotchkote 206N epoxy as manufactured by 3M Electrical Products Division of St. Paul, Minnesota or approved equal.
- ◆ Directionally drilled pipe must be a “dual coated” multi-layer combination of the same coating application as specified above plus an additional plant applied durable coating designed to be applied over fusion bonded epoxy coating for harsh to severe installation conditions. Additional coating shall be applied electrostatically to an average plant thickness of 20 mils with a minimum thickness at any point of 15 mils terminating three inches (3”) from the ends of the pipe. Total multi-layer coating system shall be an average plant thickness of 34 mils with a minimum thickness at any point of 27 mils. Coating specifications, procedures and electrical inspection shall be in accordance with the National Association of Pipe Coating Applicators (NAPCA) Specifications and Plant Coating Guide, Latest Edition and as required by the coating manufacturer. Additional plant applied coating shall be equal to the Scotchkote 6352 Fusion Bonded Epoxy Dual Coating System as manufactured by 3M Electrical Products Division of St. Paul, Minnesota or the Pipe Clad 2040 (*Black*) system as manufactured by Lilly Industries, Inc. of North Kansas City, Missouri.
- ◆ The following minimum information shall be stenciled to the exterior of plant applied coatings:

Name of Coating Applier
Name of Pipe Manufacturer
Pipe O.D. in Inches
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Name of Coating Applier
Name of Pipe Manufacturer
Pipe O.D. in Inches
Pipe Wall Thickness in Inches
Type of Pipe Manufacture and Grade
Coating Specification Symbol
Pipe Wall Thickness in Inches
Type of Pipe Manufacture and Grade

Coating Specification Symbol

- ◆ Pipe ends shall be properly beveled for butt-welding unless otherwise indicated for certain connections. Pipe shall be seamless or electric resistance welded.
- ◆ Fittings shall be butt weld, Grade B, seamless steel with a minimum yield strength of 52,000 psi meeting the requirements of ASTM A106 and ANSI B16.9. Welding fittings shall be Standard Weight or Extra Strong, Pipe Schedule Number 40 in accordance with ANSI B36.10 as specified in the plans and shall be equal to those as manufactured by Ladish Company of Cudahy, Wisconsin. All elbows shall be minimum 3R radius to allow for the passage of internal pigging devices.
- ◆ Tees, elbows, reducers, caps, saddles, and other welded fittings shall be standard products of Tube Turns, Fleet-Line, Bonney Forge, Hackney, Ladish, or FloBend. Fittings shall be manufactured to have the same internal dimension throughout that is comparable to the pipe they are to be welded to and shall be made of material that will meet the specified strength and pressure requirements.

FLANGES

- ◆ Flanges shall be raised face, carbon steel meeting the requirements of ASTM A105 and ANSI B16.5. Flanges shall be of the welding neck type or blind type as shown in the plans and shall be ANSI Class 600 as applicable. Studs, nuts and bolts shall be as specified by the flange manufacturer. Flanges shall be equal to those as manufactured by Ladish Company of Cudahy, Wisconsin.

PLASTIC PIPE AND FITTINGS

- ◆ Plastic pipe used for mains and service lines must be PPI approved and meet the requirements of ASTM D 2513. Resin shall meet the requirements of ASTM D 1248 or ASTM 3350. Acceptable manufacturers are Performance, and Polypipe.
- ◆ Pipe shall be medium density polyethylene and tinted yellow.

CASING PIPE

- ◆ Casing pipe, where required under streets and installed in steel mains shall be steel pipe conforming to ASTM A-139, Grade B, electric fusion welded steel pipe. The pipe shall have a minimum strength of 35,000 psi.
- ◆ Spacers shall be plastic.
- ◆ Ends of casing shall be sealed with Linkseal type seals.

CATHODIC PROTECTION BOND STATION

- ◆ Condulet/Conduit
Conduit, condulet and conduit straps shall be rigid steel and shall be zinc-coated

(*galvanized*). Condulet shall be single tap and equal to those as manufactured by Crouse-Hinds.

- ◆ Connection to Main
Connections of bond wire to mains shall be accomplished by the Cadweld process developed by Erico Products, Inc. of Solon, Ohio utilizing F-33 Weld Metal of copper oxide and aluminum or equal.
- ◆ Plastic Cover
Plastic cover shall be yellow in color and constructed from polycarbonate plastic. Plastic cover shall be of two binding post construction with optional bonding strap and shall be equal to the FINKPlate as manufactured by Cott Manufacturing Company of Los Angeles, California.
- ◆ Post
Post shall be pressure-treated yellow pine measuring 4"x4" (*nominal size*).
- ◆ Protective Cap
Protective cap shall protect the connection of the wire to the steel pipe meeting the requirements of the Pipeline Safety Regulations, Code of Federal Regulations, Title 49, Latest Edition, Part 192.471-External Corrosion Control: Test Leads. Protective cap shall be equal to the Handy Cap 2 with Royband 747 Primer as manufactured by Royston Laboratories, Inc. of Pittsburgh, Pennsylvania.
- ◆ Wire
Bond wire shall be insulated copper strand designed for use with cathodic protection systems protecting against galvanic and electrolyte corrosion of underground pipelines and shall be of the size specified in the plans. The conductor shall be soft drawn bare copper strand meeting the requirements of ASTM B3 and ASTM B8. The insulation shall be high molecular weight polyethylene (*HMW/PE*) meeting the requirements of ASTM D-1248 for Type 1 Class C Category 4 or 5 and ICEA S-61-402 for 75°C operating temperatures. Insulating jacket shall provide high resistance to mechanical abrasion and most organic and inorganic substances. Bond wire shall be equal to the Special Purpose Power/Cathodic Protection Cable as manufactured by Tamaqua Cable Products Corporation of Schuylkill Haven, Pennsylvania.

VALVES

- ◆ All valves installed on steel mains shall be carbon steel valves. Valves shall be ball or plug valves with welded or flanged-end connections as specified by the Gas Superintendent for the specific installation.
- ◆ Steel valves shall be coated and wrapped and comply with the standards of API Section 6D.
- ◆ Polyethylene valves shall be ball type and meet the requirements of 49CFR192.145. Allowable working pressure shall be 80 psi or greater.

- ◆ All valves shall be rated 150 psi or greater.
- ◆ Valves 2" and smaller may be reduced port, but all valves 4" and larger must be full port.
- ◆ Acceptable manufacturers of valves are Nordstrom, Poly-Gas, Polytec, Perfection, Rockwell, Ballmax, and Kerotest.

VALVE BOXES

- ◆ Valve boxes shall be of the cast iron roadway, sliding adjustable type. The boxes shall have a minimum inside diameter of 5-1/4" and a minimum bottom bell inside diameter of 8". The valve cover shall be marked with the label "GAS". The length shall be adjustable from 36" to 48" and, if necessary, the Contractor shall supply and install extensions recommended for the valve box being installed. The minimum thickness of metal at any point shall not be less than 5/16". The top section shall have a flange at the bottom to prevent external loads from being supported by the valve. Valve boxes shall be painted inside and outside with a good bitumastic paint and shall be equal to 2-piece Sliding Type Adjustable Valve Box, Figure No. 4908 and, if necessary, Sliding Extension, Figure No. 4906-X as manufactured by Opelika Foundry.
- ◆ Valve boxes shall be mounted plumb in a round concrete pad (poured or precast) and centered over the operating nut.

VALVE TEES

- ◆ Valve tees shall be weld end and constructed of forged steel with a working pressure of 1,440 psig. Valve tees shall have a built-in valve assuring positive shut-off in the closed position. Valve tees shall be the No-Blo Capped Steel Valve, Catalog No. H-17656 as manufactured by Mueller Company, Gas Products Division of Decatur Illinois.

SERVICE TAPPING TEES

- ◆ Service Tees shall be manufactured by Perfection or Central Plastics or approved equal. They shall be heat fusion or electrofusion medium density PE meeting the requirements of 49CFR192, ASTM D 2513, and CSA B137.4.

RISERS

- ◆ Risers shall be anodeless, pre-bent, fusion bond epoxy coated and manufactured by Perfection or approved equal. They shall have a 3/4" threaded outlet and the inlet shall be 1/2" CTS. Risers shall meet ASTM D 2513, ANSI B 1.2, ANSI B 31.8, 49CFR192, CSA B137.4, and NFPA 58.

INSULATING JOINTS

- ◆ Insulating joints shall be a monolithic design manufactured for dielectric separation of metallic pipe and suitable for use with natural gas. Insulating joints shall meet the requirements of ASME 31.4, Latest Edition with dielectric properties across the

insulating joint in air measuring 5 mohms minimum resistance with 3,000 volts minimum voltage breakdown. Insulating joints shall be of standard construction manufactured from API 5L X-52 steel pipe with beveled weld ends for welding and shall be externally epoxy coated. Insulating joints shall be ANSI Class 600 and shall be equal to the IsoJoint as manufactured by Advance Products & Systems, Inc. of Lafayette, Louisiana.

INSULATION SPACERS

- ◆ Insulation spacers shall be constructed of a non-conductive material and shall prevent electrical shorts between the steel line pipe and metallic structures in close proximity. Insulation spacers shall be equal to the FRP insulation spacer-Type No. 120 as manufactured by Glas Mesh Company of West Chester, Pennsylvania.

TRANSITION FITTINGS

- ◆ Transition fittings shall be cathodically protected. A 17 pound magnesium anode and test station shall be installed at each fitting as shown on project drawings or designated by the Gas Division. Transition fittings shall meet ASTM D 2513, ANSI B 31.8, 49CFR192, and CSA B137.4

METERING EQUIPMENT

- ◆ All metering equipment shall be provided by the City unless otherwise specified.