

SECTION 02605 - BURIED PIPE AND FITTINGS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Material and bedding requirements for all pipe and pipe fittings for underground pressure and nonpressure piping.

1.02 RELATED SECTIONS

- A. Section 01666 - Pipe and Manhole Leakage Testing
- B. Section 02315 - Excavation
- C. Section 02316 - Fill and Backfill
- D. Section 02317 - Trenching for Site Utilities
- E. Section 02901 - Restoration of Surfaces
- F. Division 3 - Concrete
- G. All work shall be in compliance with the requirements of the Town of Hartford.

1.03 ABBREVIATIONS

(Also, see PIPE SCHEDULE 02605-1)

DI	Ductile Iron
PE	Polyethylene
PVC	Polyvinyl Chloride

1.04 SUBMITTALS

- A. See Section 01300 - Administrative Requirements
- B. Brochures containing complete information and instructions pertaining to the storage, handling, installation, and inspection of pipe, fittings and joints furnished.
- C. Test certificates for the manufacturers' tests required under Paragraph 1.06.
- D. Pipe manufacturers' Certificates of Compliance on pipe, with each lot of pipe supplied. Immediately turn certificates over to Engineer. Materials delivered to the site without accompanying certificates will be subject to rejection.

1.05 QUALITY ASSURANCE

- A. Pipe and pipe fittings shall be produced in a plant of recognized reputation that is regularly engaged in the production of pipe conforming to the specified standards.

Pipe and pipe fittings of the same type shall be the product of a single manufacturer.

- B. All pipe shall be manufactured in a plant of a member of the following organizations:

Pipe	Organization
DI	Ductile Iron Pipe Research Association
PVC & PE	Plastics Pipe Institute

- C. Furnish the services of a competent field representative of the manufacturer at the start-up of installation of each type of pipe to instruct Contractor and Engineer in installation and inspection procedures. The representative, Contractor and Engineer shall inspect the first shipment or shipments of pipe and check dimensional tolerances prior to the installation of the first section of each type of pipe. The representative shall make periodic scheduled visits to the Project as the Work progresses and be present during leakage testing, when requested by Engineer.

1.06 SOURCE QUALITY CONTROL

- A. General - The manufacturers shall test and furnish three copies of certificates covering all pipe and fittings supplied under this Section. Select test samples from the run of pipe proposed to be furnished to the Project. Unless Engineer elects to witness such testing, the manufacturer shall select the samples for testing. Advise Engineer at least two weeks in advance of the time and location of the testing.
- B. Ductile Iron Pipe - Inspect and test DIP in accordance with AWWA C151.
- C. Polyethylene Pipe - Inspect and test PE Pipe in accordance with ASTM D1248.
- D. Polyvinyl Chloride Pipe - Test as follows:
- | | |
|--------------------|--------------------|
| Test | In Accordance with |
| Quick Burst | ASTM D1599 |
| Sustained Pressure | ASTM D1598 |
| Acetone Immersion | ASTM D2152 |
- E. Copper Pipe - Inspect and test CUP in accordance with ASTM B88.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Each length of pipe delivered to the site shall be clearly marked with the name of the manufacturer, class of pipe and pipe diameter. PVC sewer pipe shall be marked with the legend "SDR 35 PVC Sewer Pipe." Store in accordance with manufacturer's approved instructions.
- B. Carefully handle all pipe and fittings when loading and unloading. Lift pipes and fittings by hoists or lower on skid-ways in a manner to avoid shock. Lower pipe into trench with derricks, rope or other suitable equipment.
- C. Do not dump or drop pipe and fittings. Those that are dumped or dropped are subject to rejection by Engineer.
- D. Store PVC pipe under canvas or other opaque material which will allow air circulation but will eliminate the direct rays from the sun.
- E. Comply with all other recommendations of the manufacturers.

PART 2 PRODUCTS

2.01 COPPER PIPE

- A. Tubing - ANSI H23.1.
 - 1. Underground installations - Soft annealed, Type K.
 - 2. Interior and above-ground installations - Hard drawn domestic Type L.
- B. Fittings
 - 1. Wrought copper solder type - ANSI B16.22.
 - 2. Cast bronze flared tube fittings - ANSI B16.26.
 - 3. Cast bronze solder type - ANSI - B16.23.
- C. Joints
 - 1. Soldered - Solid string or wire solder composed of 95-5 tin and antimony. Use noncorrosive flux.
 - 2. Flared - Flare pipe ends using proper size flaring tool specially manufactured for the flaring of pipe ends.
- D. Pipe Bedding - Ordinarily, Class C bedding as specified in Section 02317 and detailed on the Drawings, except in projection conditions, rock, or otherwise specified or when directed by Engineer.

2.02 DUCTILE IRON PIPE

- A. Pipe - AWWA C151, laying lengths, except for closures and specials, shall be a minimum of 18'.
- B. Fittings - AWWA C110, grey cast iron or ductile iron rated at 250 psi, unless otherwise noted.
- C. Joints - See Pipe Schedule 02605 - 1.
- D. Class - See PIPE SCHEDULE 02605-1.
- E. Couplings
 - 1. Sleeve type coupling - Model 3506 by Pipeline Products Company; Hymax-2000 by Total Piping Solutions, Inc.; or approved equal.
- F. Lining - See PIPE SCHEDULE 02605-1.
 - 1. Bituminous per AWWA C151.
 - 2. Cement Mortar with bituminous seal coat per AWWA C104.
- G. Coatings - Bituminous per AWWA C151.
- H. Pipe Bedding - As detailed on the Drawings.

2.03 POLYETHYLENE PIPE

- A. Pipe and Fittings - ASTM D3035.
- B. Joints - Watertight joint for stormwater piping in accordance with the pipe manufacturer's recommendations. See Pipe Schedule 02605-1.
- C. Pipe Bedding - As detailed on the Drawings.

2.04 POLYVINYL CHLORIDE PIPE

- A. NSF Seal - Pipe shall bear National Sanitation Foundation Seal of approval.
- B. Pipe and Fittings - See PIPE SCHEDULE 02605-1.
 - 1. ASTM D2241 and ASTM D1784, Type 1, Grade 1 PVC. Laying lengths, except for closures and specials, shall be a minimum of 20 feet, plus or minus one inch.
 - 2. ASTM D1785, Type 1, Schedule 80 pipe - ASTM D2464 threaded fittings - ASTM D2467 socket type fittings.
 - 3. ASTM F789, Type PS-46, ASTM D3212 elastomeric gaskets. Laying lengths not greater than 12.5 feet, plus or minus one inch.

4. ASTM D3034, Type PSM, ASTM D3212 elastomeric gaskets. Laying lengths not greater than 12.5 feet, plus or minus one inch.
 - C. Joints - See PIPE SCHEDULE 02605-1.
 1. Rubber sealing ring allowing expansion and contraction at each joint and supplied by the pipe manufacturer. Bell joint integral with the pipe shall be wall thickened so that standard dimension ratios are maintained or exceeded.
 2. Solvent Cement - ASTM D2564.
 - D. Pipe Bedding - as detailed on the Drawings.
- 2.05 COUPLINGS/FLEXIBLE CONNECTIONS
- A. Sleeve Type Coupling - Style 38 by Dresser Manufacturing Division, Dresser Industries, Inc., or approved equal.

2.06 VALVES

- A. Gate valves with a diameter of 4" or smaller shall comply with AWWA C509 or C515 with a resilient wedge/seat system. Gate valves with a diameter of greater than 4" shall comply with AWWA C515 with a resilient wedge/seat system. Valves shall include NSF-61 compliant fusion-bonded epoxy coating (AWWA C550) and low-lead compliant internal components. Example: Clow Valve 2600 series, Kennedy Valve KS series or American Cast Iron Pipe Company 2500 series.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Pipe installations are specified in other Division 2 Sections under which the pipes are furnished and installed.
- B. All sewer piping installed under homes shall be installed by a licensed plumber per State/local codes.
- C. All sewer piping installed under homes shall be sloped to drain and be supported with pipe hangers spaced in accordance with applicable plumbing codes.

3.02 FIELD QUALITY CONTROL

- A. In the presence of Engineer, inspect each length of pipe delivered to the job for flaws, cracks, dimensional tolerances and compliance with the applicable specifications.

B. Provide Engineer with suitable templates, calipers, feeler gauges and other equipment for checking pipes and fittings. Only pipes and fittings accepted by Engineer, and so marked, shall be installed in the Work.

3.03 PIPE SCHEDULE 02605-1 - See Attached Schedule

3.04 PIPING ABBREVIATIONS - See Attached

END OF SECTION

PIPE SCHEDULE 02605 - 1

PIPE			MATERIALS			
Use	Size	Strength	Pipe/Joint	Lining	Coating	Fittings/Joints
Water Services	<2"	Class 200	PE	-	-	Brass CMP w/ stainless steel stiffener tubes

Piping pipe strengths shown are minimum. Stronger pipe may be used. Abbreviations used in this SCHEDULE are defined below.

* Design for maximum trench loading which will be applied after backfill is in place.

PIPE ABBREVIATIONS

Strength	Linings and Coatings
CL – Class DR – Dimension Ratio	CM – Cement Mortar with Bituminous Seal Coat BIT – Bituminous ALUM – Aluminum Jacket
Materials	Joint Types
DI – Ductile Iron HDPE – High-Density Polyethylene PE – Polyethylene	PO – Push On MJ – Mechanical Joint FUSION – Fusion CMP – Compression