

SECTION 11300 - GRINDER PUMP SERVICE LINES

PART 1 - GENERAL

1.1 WORK INCLUDED

- A. The Contractor shall furnish and install the grinder pump service force mains from the grinder pump station to the gravity lateral. Installation shall include all materials, appurtenances, labor, trenching, bedding backfilling, testing, and restoration.

1.2 REFERENCES

- A. American Society for Testing and Materials.
 - 1. ASTM D1784, Rigid Poly (Vinyl Chloride) (PVC) Compounds and Chlorinated Poly (Vinyl Chloride) (CPVC) Compounds.
 - 2. ASTM D2241, Poly (Vinyl Chloride) (PVC) Plastic Pipe (SDR-21).
 - 3. ASTM D2774, Standard Recommended Practice for Underground Installation of Thermoplastic Pressure Piping (Attachment 5)

1.3 SUBMITTALS

- A. Shop Drawings and Product Data: Furnish completely dimensioned shop drawings, cuts or other data as required to provide a complete description of piping, piping specialties, fittings and restraint systems.
- B. Make submittals in accordance with Section 01300 - Submittals.

1.4 QUALITY ASSURANCE

- A. Shop Tests and Inspection: Furnish materials which are certified by the supplier for compliance with the pertinent Specifications. Shop inspections and testing may be required. The cost of shop testing shall be borne by the Contractor.
- B. Disposition of Defective Material: All material found during the progress of the work, either before or after installation, to have cracks, flaws or other defects will be rejected by the Engineer.

1.5 DELIVERY, STORAGE AND HANDLING

- A. Replacement of Damaged Material: Replace all material found defective in manufacture or damaged in handling.

PART 2 - PRODUCTS

2.1 PIPE AND PIPE FITTINGS

A. Polyvinyl Chloride Pipe and Fittings (PVC)

1. Iron pipe size O.D. PVC pipe conforming to ASTM D2241, SDR-21.
2. Fittings: Compatible PVC fittings as recommended by pipe manufacturers, and of same Class as the pipe.
3. Joints: Solvent weld or push-on.
 - a. Provide thrust blocks at changes in alignment, valves, tees, caps, and plugs.
 - b. Do not use split retainer flanges in place of thrust blocks.
 - c. Submit proposed joint restraint system for Engineer's review and approval.

2.2 CONNECTION TO GRAVITY LATERAL

- A. Provide fittings and riser clean out as shown on the drawing. Work shall be performed in accordance with all specifications and plans.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Earthwork perform earthwork for pressure sewer as specified in Section 02221.

3.2 PIPE INSTALLATION

- A. General: Lay all pipe to the required lines and grades with valves at the required locations; all valves plumb.
- B. Construction Control: Lay pipe at a constantly increasing grade to each high point, air release manhole, or point of discharge.
- C. Caution in Excavation: Proceed with caution in the excavation and preparation of the trench so that the exact location of underground structures, both known and unknown, may be determined. Contractor shall be held responsible for the repair of such structures when broken or otherwise damaged because of carelessness.
- D. Depth of Pipe: Lay all pipe to a minimum depth of 42 inches from grade to the crown of pipe.

- E. Laying Pipe: Take every precaution to prevent foreign material from entering the pipe while the pipe is being placed in the trench. At times when pipe laying is not in progress, Contractor shall close the open ends of pipe with a watertight plug or other means approved by the Engineer.
- F. Permissible Deflection of Joints: If deflection is required, provide deflection after joint is assembled. The amount of deflection shall not exceed the maximum amount recommended by the pipe manufacturer.
- G. Unsuitable Conditions for Laying Pipe: Do not lay pipe in water. Contractor shall follow exactly the procedures presented in ASTM D2774 and manufacturer's handling and installation guide.
- H. Make joints as recommended by the manufacturer so as to effect a leak-free joint.
- I. Separation of Water Mains, Sanitary Sewers and Storm Sewers
 - 1. Parallel Installation - Water mains shall be laid at least 10 feet horizontally from any existing sewer or storm drain. The distance shall be measured edge to edge. In cases where a 10 foot separation cannot be maintained, the following installation instructions apply.
 - a. The water main shall be laid in a separate trench or on an undisturbed earth shelf located on one side of the sewer or drain.
 - b. The bottom of the water main shall be at least 18 inches above the top of the sewer or drain.
 - 2. Cross Overs - Whenever water mains must cross over building drains, storm drains or sanitary sewers, the following installation instructions shall apply.
 - a. A vertical separation of at least 18 inches between the bottom of the water main and the top of the sewer or drain shall be maintained.
 - b. The length of the water main shall be centered at the point of crossing so that the joints shall be equivalent and as far as possible from the sewer or drain.
 - 3. Cross Under - Whenever water mains must cross under building drains, storm drains or sanitary sewers, the following installation instructions shall apply.
 - a. A vertical separation of at least 18 inches between the bottom of the sewer or drain and the top of the water main shall be maintained.
 - b. Adequate structural support for the sewers or drains shall be provided to prevent excessive deflection of the joints and the settling on and breaking of the sewer or water main.
 - c. The length of the water main shall be centered at the point of the crossing so that the joints shall be equidistant and as far as possible from the sewer or drain.

4. Exceptions to Parallel Installation - If the 18 inch vertical separation condition cannot be met, the following installation instructions apply.
 - a. Polyethylene encasement shall be utilized and shall be installed per AWWA C105 Method A or B.
5. Exceptions to Cross Overs and Cross Under - If any conditions cannot be met, the following installation instructions shall apply.
 - a. Concrete encasement of the sewer or drain shall be provided if approved in writing by the Engineer. If the concrete encasement method is utilized, the concrete shall extend 3 feet in each direction from the crossing. The 3 feet is to be measured as a perpendicular distance from the sewer or drain.
6. Where the installation instructions of items, 1, 2, 3, 4, or 5 cannot be met, contact the Engineer for direction.

3.3 FIELD QUALITY CONTROL

A. Low Pressure Air Test

1. The Contractor shall conduct a low pressure air test on the installed pressure sewer service line. The Engineer shall authorize and witness said testing. The Contractor shall notify the Authority 48 hours prior to conducting final testing and inspections.
2. The Contractor shall test each service line between the grinder station and gravity connection.
3. A minimum of two minutes shall be provided to allow equilibrium of the air temperature with pipe wall before test readings shall commence. The rate of air loss shall be determined by measuring the time interval required for the average internal pressure to decrease by 1.0 psig.
4. The initial test pressure to be developed in the service line shall be 4 psig.
5. The pipe shall be considered acceptable if the air loss rate does not exceed 0.0030 cubic feet per minute per square foot of internal pipe surface when tested at the initial pressure previously defined in this subsection. The time for the air pressure to decrease 1.0 psig shall not be less than the time indicated in the following table:

<u>Pipe Diameter</u>	<u>Minutes</u>	<u>Seconds</u>
1-1/2"	2	30
2"	2	30

6. If the above rates of leakage are exceeded, the Contractor shall, at his expense, determine source of leakage and make all necessary corrections and retest.
7. The Contractor shall submit to the Engineer for approval the detailed test procedure and list of test equipment he proposes to use prior to testing.

END OF SECTION 11300