

14.01 SCOPE

The work covered by this section of the Specifications consists of furnishing all plant, labor, material and appliances and performing all operations for the installation of piping and equipment as shown on the drawings and hereinafter specified.

14.02 PIPING AND FITTINGS:

This work consists in furnishing all plant, labor, equipment and materials and in performing all operations necessary to install the piping within the pressure reducing valve chamber as shown on the plans. All work to be performed as shown on the drawings and specifications.

A. Applicable Specifications

The following specifications and standards of the latest issue form a part of this specification to the extent indicated by reference thereto:

1. American Water Works Association Standards:
AWWA C-505 Resilient wedge gate valves.

2. American Standards Association Standards:

A21.2 Cast iron pit cast pipe for water and other liquids.

A21.4 Cement-mortar lining for cast iron pipe and fittings for water.

A21.6 Cast iron pipe centrifugally cast in metal molds for water and other liquids.

A21.8 Cast iron pipe centrifugally cast in sand-lined molds for water and other liquids.

A21.10 Short body, cast iron fittings, 3 inch to 48 inch for 250 psi.

A21.11 Rubber gasket joints for cast iron pressure pipe and fittings.

A21.12 Cast iron pipe, 2 inch and 2-1/4 inch centrifugally cast for water and other liquids.

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- A21.50 Thickness design for ductile iron pipe.
- A21.51 Ductile iron pipe, centrifugally cast in metal molds or sand-lined molds for water or other liquids.
- B16.1 Cast iron pipe flange and flanged fittings, Class 125.

3. National Electrical Code:

All electrical work.

4. American Society for Testing Materials:

A-72 Welded wrought iron pipe.

A-120 Black and hot-dipped zinc-coated (galvanized) welded and seamless steel pipe for ordinary uses.

B. Materials

The following items of material installed within the well house or room shall be furnished by the Contractor and shall conform to the various requirements as hereinafter specified.

1. Ductile Iron Pipe

Shall be used for all interior pressure reducing valve station piping 4-inch diameter and larger. Ductile iron pipe shall be designed in accordance with the latest revision of ASA specifications A21.50 and A21.51. The pipe shall be designed to withstand a minimum working pressure of 200 psi and a minimum hydrostatic test pressure of 300 psi.

2. Interior Joints

Interior joints within the pressure reducing valve station shall be flanged and constructed with flanges, bolts, nuts, washers and gaskets conforming to AWWA standard C110 and ANSI Standard B16.1. Uni-flange joints will be accepted if rodded.

3. Gate Valves:

- a) Valves 2-1/2" through 12" within the pressure reducing valve station shall have a cast or ductile iron body and bonnet with a minimum non-shock W.O.G. working pressure of 200 psi.

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Gate valves shall be resilient wedge gate valves and shall meet the requirements of AWWA C-505. Gate valves within the pressure reducing valve station shall be flanged and have handwheel operators.

- b) Valves 2" and smaller shall have a bronze body and union bonnet with a minimum non-shock W.O.G. working pressure of 200 psi. Seats shall be integral with the valve body and shall be machined for leakproof shut-off with the disc. The disc shall be a solid bronze wedge. The stem shall be bronze and shall be packed with TFE impregnated asbestos packing. Valves shall have screwed ends and handwheel operators unless otherwise specified or shown on the drawings.

- 4. Wall Castings and Sleeves shall be installed in all concrete work where pipes, wires or other equipment pass through. Wall castings for 4-inch diameter or larger pipe shall be cast iron having an anchor flange located in the center of the concrete wall or floor. Castings and sleeves shall be similar to those as manufactured by the East Jordan Iron Works or approved equal. Joint between pipe and sleeves shall utilize a link-seal fitting or approved equal.

C. Installation of Piping Valves and Fittings

- 1. Ductile Iron Piping, Valves and Fittings shall be used for all piping 4-inch diameter and larger. Ductile iron flanged piping, valves and fittings shall be used for all interior exposed piping unless otherwise approved by the Township Engineer. Pipe, valves and fittings shall be carefully laid to line and grade. Care shall be taken to keep the pipe clean and free from dirt and other foreign materials. Piping laid in the ground shall have bearing over its entire length. Piping along floors, walls, or ceiling shall be adequately supported by saddles, posts, wall brackets, pipe hangers, or other approved devices. The exact location, number and design thereof shall be subject to the approval of the Design Engineer.

14.03 Pressure Reducing Valves

Pressure reducing valves of the size and type indicated shall be installed as shown on the drawings. This valve shall maintain a constant downstream pressure regardless of varying inlet pressures. It shall be a hydraulically operated, pilot-controlled, diaphragm-type globe valve. The main valve shall have a single removable seat and a resilient disc. The stem shall be guided at both

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ends by a bearing in the valve cover and an integral bearing in the valve seat. No external packing glands are permitted and there shall be no pistons operating the main valve or any pilot controls.

Pressure reducing valves shall have a pressure rating of 250 psi, with an adjustment range of 30 to 300 psi. Valves shall be constructed of cast iron with brass trim.

The pilot control shall be a direct-acting, adjustable, spring-loaded, normally open diaphragm valve designed to permit flow when controlled pressure is less than the spring setting. The control system shall include a fixed orifice.

Pressure reducing valves shall meet the requirements of a Clayton 90G-01 AB (Adjustment Range 30-300 psi) Pressure Reducing Valve as manufactured by Cla-Val Company.

14.04 Pressure Gauges

Pressure gauges, as shown on the plans, shall have a 2-1/2 inch diameter dial with a steel case and a bronze or stainless steel tube. The accuracy of each gauge shall meet or exceed ANSI Grade B, 3-2-3 percent and have a pressure range of 0-200 psi, with a maximum increment of five psi. Pressure gauges shall be as manufactured by Omega Commercial Grade, or approved equal.

14.05 Sump Pump

See standard detail for location of portable pump (supplied by others).

14.06 Equipment Installation and Start-Up

A. General

All equipment shall be installed in a neat, workmanlike manner, acceptable to the Owner and the Engineer and in conformance with all applicable local, state and federal codes and requirements.

B. The contractor shall submit operation and maintenance manuals for the following:

- 1) Pressure reducing valves
- 2) Sump pump

- C. The contractor shall submit parts lists and/or names of suppliers for any equipment requested by the Township.

14.07 Shop Drawings

The Contractor shall submit, as prescribed under "General Requirements" section, complete shop drawings and details of all equipment to be furnished under this section. These shop drawings shall be submitted and approved by the Design Engineer with concurrence of the Township Engineer before installation of these items.

14.08 Record Drawings

Any changes that are made in equipment, controls, wiring, etc. from that shown in the plans and specifications shall be made only by approved shop drawings.

After such changes are made, the Contractor shall submit to the Design Engineer and Township Engineer, record drawings which show these changes in equipment installation.

14.09 Guarantee

The Contractor shall furnish a manufacturer's guarantee covering all material and equipment that he furnishes. He shall guarantee his workmanship and material for a period of one year from the date of acceptance. Such guarantee shall provide for the replacement of defective workmanship, together with the restoration of any related materials or workmanship that are disturbed as a result of such imperfections in the work. All such replacements or repairs shall be done without expense to the Owner. All guarantees shall be in written form and submitted to the Owner in triplicate.

14.10 Painting

All pipes, valves, flow meters and any other portions of watermain or ferrous metals exposed inside of the well house shall be painted. If necessary, heat shall be provided to maintain good drying conditions. All items to be painted shall be dry and clean before application of the paint. Any rust or scale shall be removed by wire brushing or scraping. Painting system shall be:

- 1 coat (350 sf/g) Pug Primer (Kopper's or equal)
- 2 coats (500 sf/g) Rustamor 500 (Kopper's or equal)