



CONSTRUCTION SPECIFICATION AR-52 – STEEL PIPELINE

1. Scope

The work shall consist of furnishing and installing steel pipe complete with lining, coating, fittings, and appurtenances.

2. Material

Except as otherwise specified, steel pipe and fittings shall conform to Material Specification 554.

Unless otherwise specified, all special fittings and appurtenances shall be of the same material as the pipe.

3. Handling Pipe

Pipe shall be stored and handled by methods that will protect the pipe and coating from damage.

4. Placement of Buried Pipelines

Pipe shall be installed to the lines and grades shown on the drawings. The pipe shall be firmly and uniformly bedded to the depth and in the manner specified on the drawings. An ample bell hole working area may be left at pipe joints to perform welding, coating, and other related activities. The bell hole area shall be bedded as specified before backfill operations.

Where trenches are excavated in rock or other hard material that might damage the pipe or coating, trenches shall be excavated at least three inches deeper than line and grade and backfilled to grade with sand or fine earth. At least three inches of soil or sand shall separate pipe from objectionable material.

Backfill shall be placed to final grades (including mounding for settlement) shown on the drawings. Backfill within two feet of the pipe shall be free of debris, rocks, or other objects three inches nominal diameter or larger. Final backfill shall be placed in approximately uniform, void free, compacted layers.

5. Above Ground Pipelines

Above ground supports and pipelines shall be constructed to the lines and grades and as shown on the drawings.

6. Joints and Connections

Pipe joints shall conform to the details shown on the drawings and shall be sound and watertight at specified pressures. Gasket joints and other high pipe-to-pipe electrical resistance joints shall be electrically bridged with a welded, brazed, or soldered copper wire not smaller than #6 AWG.

Welded joints shall conform to the welding procedures and requirements of AWWA Standard C206. Field welding shall avoid burning pipe coatings except in the immediate vicinity of the weld. Welded field joints shall be single welded butt joints or lap welded slip joints as shown on the drawings.



Bell and spigot joint dimensions and installed seating shall conform to manufacturer's recommendations. The pipe shall be laid with the bell end upstream. Installed and seated gaskets must be in their annular recess and must provide a positive seal. Installed joints with "fish-mouthed" gaskets must be taken apart and resealed with a new gasket. Rubber gaskets shall meet AWWA C200.

Mechanical couplings - Pipe ends shall be free of dents, gouges, rust, and scale, and shall be machined to prevent displacing gaskets and ensure uniform end separation of the pipes. Gaskets shall be continuous rubber rings conforming to dimensions and tolerances recommended by the manufacturer. Coupling followers shall be drawn up evenly to ensure uniform pressure on the gasket. Grooved and shouldered joints shall meet AWWA C606.

Flanged joints - All steel ring flanges shall meet AWWA C207. Gaskets shall be either 1/16 to 1/8 inch thick neoprene cloth, or 1/16 inch thick red rubber. Gaskets used between flat flange surfaces shall cover the full flange face.

Fitting and coupling coating - Except as otherwise specified, compression couplings, mechanical couplings, and flanged couplings shall be coated with AWWA C203 coal tar enamel coating, or vinyl coating as recommended by the manufacturer. All bolts shall be stainless steel or low alloy steel and shall be field coated with coal tar enamel or vinyl coating after installation.

7. Field lining, coating, wrapping, and repair

Except as otherwise specified, lining and wrapping of field joints or connections and repair of wrap or coating damage on pipe, couplings, fittings, and appurtenances shall be cleaned and covered with a coating equal to that specified for the pipe.

8. Pressure Testing

Underground pipelines shall be tested before backfill has been placed over the field joints. Above ground pipelines shall be tested (anytime) after they are ready for operation.

Before testing, all specified concrete anchors and thrust blocks shall have been in place at least three days, pipe ends shall be plugged, and backfill around pipe between joints shall be placed to prevent pipe movement.

The pipeline shall be flushed and cleaned, and then slowly filled with water, taking care to bleed air and prevent water hammer. When the line is full, all valves shall be closed and the line brought up to maximum design working pressure for a period of two hours. All joints shall then be carefully inspected for leakage. Leaks shall be repaired and if necessary, the line shall be retested.

Testing shall demonstrate that all valves, vents, surge chambers, and other appurtenances function properly at design conditions. Objectionable surge, water hammer, unsteady delivery of water, damage to the pipeline, and detrimental discharge from control valves are evidence of malfunction.

9. Cathodic Protection

When specified, cathodic protection shall be provided and installed as shown on the drawings.