

Construction Specification 43—Clay Pipe

1. Scope

The work consists of furnishing and installing clay pipe and/or clay drain tile and the necessary fittings as shown on the drawings.

2. Material

Pipe, drain tile, and fittings shall conform to the requirements of Material Specification 544, Clay Pipe and Drain Tile, for the kind of pipe or tile specified.

Sealing compound for filling rubber gasket joints shall conform to the requirements of Material Specification 536, Sealing Compound for Joints in Concrete and Concrete Pipe.

Compression joints using resilient material shall conform to the requirements of ASTM C 425.

Nonpour joint sealer shall conform to the requirements of Material Specification 536, Sealing Compound for Joints in Concrete and Concrete Pipe.

Cold-applied sealing compound shall conform to the requirements of Material Specification 536, Sealing Compound for Joints in Concrete and Concrete Pipe.

Joint packing shall be commercial grade oakum.

3. Laying and bedding

Pipe and tile shall be installed to the line and grade shown on the drawings. Each pipe section shall be installed with the bell end upstream.

The pipe shall be firmly and uniformly bedded throughout its entire length to the depth and in the manner specified on the drawings. The pipe shall be loaded sufficiently during backfilling around the sides to prevent uplift of the pipe and the development of voids between the pipe and bedding.

Perforated pipe and tile shall be laid with the perforations down and oriented symmetrically about the vertical centerline. Perforations shall be clear of any obstructions when the pipe is installed.

4. Joints

Pipe joints shall conform to the details shown on the drawings except where unsealed joints are indicated. The joints shall be sound and watertight at the pressures specified.

Rubber gasket joints shall be assembled in accordance with the gasket manufacturer's recommendations except as otherwise specified.

Compression joints using resilient material shall be assembled in accordance with the manufacturer's recommendations.

Mastic sealed joints—At the time of pipe assembly, the inside surface of the bell and the outside surface of the spigot shall be clean, dry, and primed as recommended by the manufacturer of the sealing compound. A closely twisted gasket of joint packing, of the diameter required to support the spigot at the proper grade and to make the joint concentric, shall be made in one piece of sufficient length to pass around the pipe and lap at the top of the pipe and be thoroughly packed into the annular space between the bell and the spigot.

Hot-pour joint sealer—The sealing compound shall be heated to within the temperature range recommended by the manufacturer and shall not be overheated or subjected to prolonged heating. After the joint is assembled, with the pipe in its final location, a suitable joint runner shall be placed around the joint with an opening left at the pipe top. Molten sealing compound shall be poured into the joint as rapidly as possible without entrapping air until the annular space between bell and spigot is completely filled. After the compound has set, the runner may be removed. Alternate joints may be poured before the pipe is lowered into the trench. When this installation procedure is used, the joint shall be poured with the pipe in a vertical position without the use of a runner. The compound shall have thoroughly set before the pipe is placed in the trench, and the pipe shall be handled so as to cause no deformation of the joint during placement.

Cold-applied sealing compound—The annular space between bell and spigot shall be completely filled with the sealing compound. The compound shall be mixed on the job in accordance with the manufacturer's recommendations and in relatively small quantities so that setting is not appreciable before application.

Preformed sealing compound—Joint packing is not required except as recommended by the manufacturer of the sealing compound. Preformed strips or bands of the sealing compound shall be applied to the bell and spigot before assembly of the joint in accordance with the manufacturer's recommendations. Any compound extruded from the interior side of the joint during assembly shall be trimmed even with the interior surface of the pipe.

Cement mortar sealed joints—Cement mortar for joints shall consist of one part, by weight, of portland cement and two parts, by weight, of fine sand with adequate water added to produce a workable consistency. At the time of assembly, the inside surface of the bell and the outside surface of the spigot shall be clean and moist.

With packing. A closely twisted gasket of joint packing, of the diameter required to support the spigot at the proper grade and to make the joint concentric, shall be made in one piece of sufficient length to pass around the pipe and lap at the pipe top. The gasket shall be saturated with neat cement grout, laid in the bell throughout the lower third of the circumference, and covered with mortar. The end of the spigot shall be fully inserted into the bell so that the pipe sections are closely fitted and aligned. A small amount of mortar shall be placed in the annular space throughout the upper two-thirds of the circumference. The gasket then shall be lapped at the top of the pipe and thoroughly packed into the annular space between the bell and the spigot. The remainder of the annular space shall then be filled completely with mortar and beveled off at an angle of about 45 degrees with the outside of the bell. If the mortar is not sufficiently stiff to prevent appreciable slump before setting, the outside of the joint thus made shall be wrapped with cheesecloth. After the mortar has set slightly, the joint shall be wiped inside the pipe. If pipe is too small for a person to work inside, wiping may be accomplished by dragging an approved swab through the pipe as the work progresses.

Without packing. The lower part of the bell shall be filled with stiff mortar of sufficient thickness to make the inner surface of the abutting sections flush. The spigot end of the pipe to be jointed shall be fully inserted into the bell so that the sections are closely fitted and aligned. The remaining annular space between the bell and spigot shall be then filled with mortar and the mortar neatly beveled off at an angle of about 45 degrees with the outside of the bell. After the mortar has set slightly, the joint shall be wiped inside the pipe. If pipe is too small for a person to work inside, wiping may be accomplished by dragging an approved swab through the pipe as the work progresses.

Unsealed joints—When unsealed joints are specified, they shall conform to the details shown on the drawings.

5. Curing mortar joints

The external surface of mortar joints shall be covered with moist earth, sand, canvas, burlap, or other approved material and shall be kept moist for 10 days or until the pipe is backfilled.

Water shall not be turned into the conduit within 24 hours after the joints are finished.

6. Measurement and payment

Method 1—For items of work for which specific unit prices are established in the contract, the quantity of each kind, size, and class of pipe or tile is determined to the nearest foot by measurement of the laid length along the invert centerline of the conduit. Payment for each kind, size, and class of pipe or tile is made at the contract unit price for that kind, size, and class. Such payment constitutes full compensation for furnishing, transporting, and installing the pipe or tile complete in place.

Method 2—For items of work for which specific unit prices are established in the contract, the quantity of each kind, size, and class of pipe or tile is determined as the sum of the nominal laying lengths of the sections satisfactorily installed. Payment for each kind, size, and class of pipe or tile is made at the contract unit price for that kind, size, and class. Such payment constitutes full compensation for furnishing, transporting, and installing the pipe or tile complete in place.

All methods—The following provisions apply to all methods of measurement and payment. Compensation for any item of work described in the contract, but not listed in the bid schedule, is included in the payment for the item of work to which it is made subsidiary. Such items and the items to which they are made subsidiary are identified in section 7 of this specification.

7. Items of work and construction details