

CONSTRUCTION SPECIFICATION

VA-757. CONCRETE PIPE

1. SCOPE

The work will consist of furnishing and installing concrete pipe and the necessary fittings as shown on the construction drawings.

2. MATERIALS

Concrete pipe will conform to the requirements listed below and as shown on the construction drawings.

Joint sealing compound will meet the approval of the NRCS or SWCD representative prior to installation.

Nonreinforced concrete pipe will conform to the requirements of ASTM C14 for the class of pipe specified.

Round reinforced concrete pipe will conform to the requirements of ASTM C76 or ASTM C655 for the class of pipe specified.

Reinforced concrete arch pipe will conform to the requirements of ASTM C506 for the class of pipe specified.

Reinforced concrete elliptical culvert pipe will conform to the requirements of ASTM C507 for the class of pipe specified.

Reinforced concrete box sections will conform to the requirements of ASTM C1433.

3. LAYING AND BEDDING

Pipe will be laid to the line and grade shown on the construction drawings. Pipe will be laid with the bells or grooves facing upstream. The pipe will be firmly and uniformly bedded throughout its entire length to the depth and in the manner shown on the construction drawings or as specified by the NRCS or SWCD representative.

The trench or foundation width on which the pipe will be laid will be at least two times the pipe diameter, or the pipe diameter plus two feet whichever is greater. Appropriate safety measures will be used while installing pipes in trenches including, but not limited to, trench boxes, forms, side sloping, etc.

4. JOINTS

Rubber gasket pipe joints will conform to the requirements of ASTM C443 and will be assembled in accordance with the gasket manufacturer's recommendations.

Mastic sealed pipe joints will have strips or bands of preformed sealing compound applied to the tongue and groove prior to assembly of the joint in accordance with the manufacturer's recommendations. Any compound extruded from the interior side of the joint during assembly will be trimmed even with the interior surface of the pipe.

5. JOINING BELL AND SPIGOT PIPE

- a. Rubber Gasket Joints for Pressure Pipe. Just before the joint is connected, the connecting surfaces of the spigot and the bell or coupling band, sleeve or collar will be thoroughly cleaned and dried, and the rubber gasket and the inside surface of the bell or coupling band, sleeve or collar will be lubricated with a light film of soft vegetable soap compound (flax soap). The rubber gasket will be stretched uniformly as it is placed in the spigot groove to insure a uniform volume of rubber around the circumference of the pipe.

The joint will be connected by means of a pulling or jacking force so applied to the pipe that the spigot enters squarely into the bell. When the spigot has been seated to within 1/2 inch (13 mm) of its final position, the position of the gasket in the joint will be checked around the entire circumference of the pipe by means of metal feeler gage. In any case where the gasket is found to be displaced, the joint will be disengaged and properly reconnected. After the position of the gasket has been checked, the spigot will be completely pulled into the bell and the section of the pipe will be adjusted to line and grade.

- b. Rubber Gasket Joints for Sewer, Culvert, or Irrigation Pipe. The pipe will be joined in accordance with the gasket manufacturer's recommendations, except as otherwise specified.
- c. Mastic Sealed Joints. At the time of assembly, the inside surfaces of the bell and the outside surfaces of the spigot will 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, will be made in one piece of sufficient length to pass around the pipe and lap at the top. The gasket will be laid in the bell throughout the lower third of the circumference. The end of the spigot will be laid on the gasket and the spigot will be fully inserted into the bell so that the pipe sections are closely fitted and aligned. The gasket then will be lapped at the top of the pipe and thoroughly packed into the annular space between the bell and the spigot.
 1. Hot-Pour Joint Sealer. The sealing compound will be heated to within the temperature range recommended by the manufacturer and will not be overheated or subjected to prolonged heating. After the joint is assembled, with the pipe in its final location, a suitable joint runner will be placed around the joint with an opening left at the top. Molten sealing compound will 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. In this case, the joint will be poured with the pipe in a vertical position without the use of the runner. The compound will have thoroughly set before the pipe is placed in the trench, and the pipe will be handled so as to cause no deformation of the joint during placement.

2. Cold-Applied Sealing Compound. The annular space between bell and spigot will be completely filled with the sealing compound. The compound will be mixed on the job in accordance with the manufacturer's recommendations and in relatively small quantities so that setting will not be appreciable before application.
 3. Pre-formed Sealing Compound. Joint packing will not be required, except as recommended by the manufacturer of the sealing compound. Preformed strips or bands of the sealing compound will be applied to the bell and spigot prior to assembly of the joint in accordance with the manufacturer's recommendations. Any compound extruded from the interior side of the joint during assembly will be trimmed even with the interior surface of the pipe.
- d. Cement Mortar Sealed Joints. Cement mortar for joints will consist of one part by weight of portland cement and two parts by weight of fine sand with enough 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 will be clean and moist.
1. 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 will be made in one piece of sufficient length to pass around the pipe and lap at the top. The gasket will 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 will be fully inserted into the bell so that the pipe sections are closely fitted and aligned. A small amount of mortar will be placed in the annular space throughout the upper two-thirds of the circumference. The gasket then will 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 then will be filled completely with mortar and beveled off at an angle of approximately forty-five (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 will be wrapped with cheesecloth. After the mortar has set slightly, the joint will be wiped inside the pipe. For pipe too small to work inside, wiping may be done by dragging an approved swab through the pipe as the work progresses.
 2. Without Packing. The lower portion of the bell will 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 joined will be fully inserted into the bell so that the sections are closely fitted and aligned. The remaining annular space between the bell and spigot will then be filled with mortar and the mortar neatly beveled off at an angle of approximately forty-five (45) degrees with the outside of the bell. After the mortar has set slightly, the joint will be wiped inside the pipe. For pipe too small to work inside, wiping may be done by dragging an approved swab through the pipe as the work progresses.

- e. Unsealed Joints. When unsealed joints are specified, they will conform to the details shown on the construction drawings.

6. JOINING TONGUE AND GROOVE PIPE

- a. Cement Mortar Sealed Joint. Mortar will be as specified for bell and spigot joints. The tongue end of the section being placed will be covered with mortar and firmly pressed into the groove of the laid section in such a manner that the tongue fits snugly and truly in the groove and that mortar is squeezed out both on the interior and exterior of the joint. Care will be taken that no mortar falls from the groove end during the abutting operation. Immediately after the pipe sections have been abutted, exposed external surface mortar will be pressed into the joint and any excess mortar removed, after which the interior surface of the joint will be carefully pointed and brushed smooth, and all surplus mortar removed.
- b. Mastic Sealed Joints. Strips or bands of preformed sealing compound will be applied to the tongue and groove prior to assembly of the joint in accordance with the manufacturer's recommendations. Any compound extruded from the interior side of the joint during assembly will be trimmed even with the interior surface of the pipe.
- c. Rubber Gasket Joints. The pipe will be joined in accordance with the gasket manufacturer's recommendations except as otherwise specified.
- d. Unsealed Joints. When unsealed joints are specified, they will conform to the details shown on the construction drawings.