

SECTION 051
SPECIFICATIONS - SEWER CONSTRUCTION BY JACKING AND TUNNELING

1.0 Sewer Construction by Tunneling

Where shown, specified or directed, the sewer shall be constructed in tunnels beneath roads, railroads or other structures, and all operations and materials shall conform to the regulations of the Railroad, Highway Department or other agency having jurisdiction over the crossing. Approval by said agency and by the Engineer of the Sanitary District shall be obtained before any work is started. Except as may be additionally required by the terms of any permit issued by a Railroad, Highway Department, or other agency having jurisdiction, the following specifications shall govern construction in tunnel excavation.

The Contractor shall furnish, place, and maintain all sheeting, bracing and lining required to support the sides, floor and heading of the excavation in tunnel shafts. Tunnel lining shall be steel liner plates or tight wood lagging, of sufficient strength to hold all loads under all conditions and approved by the Engineer. The shafts shall be of suitable size and shape and shall be properly equipped to carry on the work. The annular space between the sewer and the tunnel lining shall be packed with lean concrete grout, 1 part Portland Cement and 10 parts sand, and the ends of the tunnel shall be sealed with brick masonry.

Where a price is taken for construction of a sewer in tunnel, construction shall be in tunnel unless specific permission is obtained from the Engineer to construct it in open cut and at agreed price which in no event will exceed the total cost if done in tunnel.

2.0 Sewer Construction by Jacking

Where shown, specified or directed, the sewer shall be constructed by jacking the sewer pipe or a casing pipe beneath roads, railroads or other structures, AND ALL OPERATIONS AND MATERIALS USED SHALL CONFORM to the regulations of the Department or agency having jurisdiction over the crossing. Approval by said agency and by the Engineer of the Sanitary District of all materials and methods shall be obtained before any work is started.

Except as may be otherwise required by the terms of any permit issued by the Railroad, Highway Department, or other agency having jurisdiction, ductile iron sewer pipe with gripper gaskets 4-inch to 60-inch in diameter shall be placed to line and grade within the jacket casing pipe with dimensions as follows:

<u>Sewer Pipe Diameter</u>	<u>Casing Pipe Diameter</u>
54 inches	64 inches
42 inches to 48 inches	58 inches
30 inches to 36 inches	44 inches
20 inches to 24 inches	36 inches
16 inches to 18 inches	26 inches
12 inches to 14 inches	24 inches
8 inches to 10 inches	24 inches
4 inches to 6 inches	24 inches

Casing spacers shall be attached to the carrier pipe so that the completed sewer will be at the required line and grade, centered within the casing pipe, and restrained against flotation. Spacers shall be either

Pipeline Seal and Insulator (PSI), Inc., Model S stainless steel casing isolators or Advance Products and Systems (APS), Inc., stainless steel band casing spacers, Model SSI, or equal as approved by the Engineer.

Widths and sizes for spacers and isolators shall be based upon both the manufacturer's recommendations and the specific application. Spacers and isolators shall be placed in accordance with the following guidelines:

1. Two spacers or isolators shall be placed no more than one (1) foot apart and no more than one (1) foot from both the entrance and exit of carrier pipe into and out of casings.
2. One (1) spacer or isolator shall be placed no more than one (1) foot on both sides of a joint between two sections of carrier pipe.
3. No more than twelve (12) feet of carrier pipe shall be placed without the placement of a spacer or isolator.

After the carrier pipe has been placed within the casing, the ends of the casing pipe shall be sealed with brick and mortar, or as approved by the Engineer.

END OF SECTION