

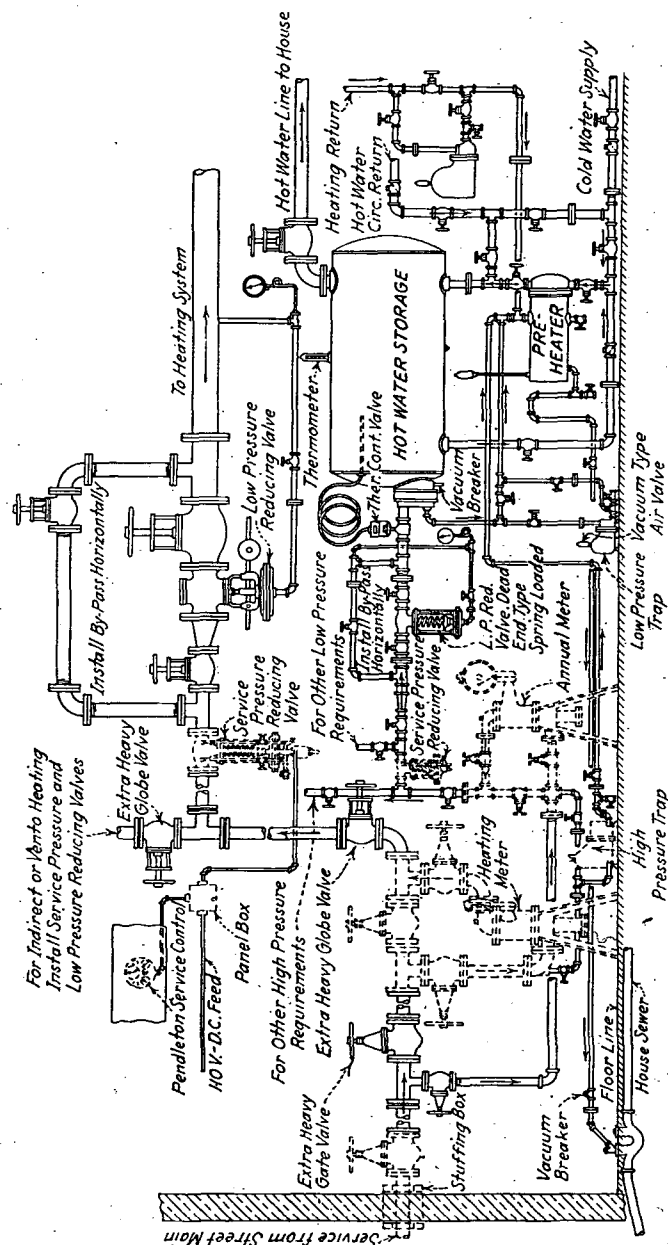


FIG. 3. TYPICAL SERVICE INSTALLATION

an anchor with double expansion joint is placed in each manhole, and the pipes are anchored midway between manholes.

9. Stabilizers to maintain alignment of pipes should be placed on each side of each expansion joint or bend.
10. A proper hydrostatic test should be applied to the piping before the top of the conduit is applied and before application of insulation. The pressure used in this test should be greater than the pressure used in service, and should be not less than 100 lb. per square inch in any case.

The styles and construction of conduits commonly used may be classified as follows:¹

Filler Type.—The pipes are supported on expansion rollers properly supported from the conduit or independent masonry base. The pipes are protected by a split tile conduit, and the entire space between the pipes and the tile is filled with an insulating filler. Thus the pipes are nested and the insulation between them and the tile effectively prevents circulation of air. The conduit is placed on a bed of gravel or crushed rock from 4 to 6 in. thick, which is extended upward so as to come about 2 in. above the parting lines of the tile. A tile underdrain is placed beneath the conduit throughout the entire length and is connected to sewers or to some other point of free discharge.

Insulated Tile Type.—The insulating material is molded to the inside of a split tile conduit. The pipes are supported on expansion rollers usually. The space between the pipes and the insulating conduit lining may also be filled with an insulating filler. The conduit insulation, piping and earth load are supported by the base drain. A few inches of gravel or crushed rock are placed about the conduit and the base drain.

Sectional Insulation Type (Tile Conduit).—Each pipe is insulated in the usual way with any desired type of sectional pipe insulation over which is placed a standard waterproof jacket with cemented joints. The pipes are enclosed in a split tile conduit which is placed on a bed of crushed rock or gravel from 4 to 6 in. thick. This gravel bed is extended upward so as to come about 2 in. above the parting lines of the tile. Underdrains are sometimes omitted where this type is used, any water which seeps into the conduit being allowed to flow down the bottom of the conduit to the nearest manhole. Drains are laid from the floor of each manhole to some point of free discharge. The pipes are supported on roller frames and these, according to the type of conduit used, are either supported by the conduit itself or have their lower parts set in concrete, thus supporting the pipes independent of the conduit.

Sectional Insulation Type (Tile or Concrete Trench).—A type of construction frequently used in city streets, where service connections are required at frequent intervals, the pipes are insulated as described in the preceding paragraph, and are enclosed in a box or trench made either entirely of concrete, or with concrete bottom and specially constructed tile sides and tops. The pipes are supported on roller frames secured in the concrete.

Sectional Insulation Type (Bituminized Fibre Conduit).—Each pipe is individually insulated and encased in a bituminized fibre conduit. The insulating material is 85 per cent carbonate of magnesia sectional pipe covering, applied in the usual manner as on overhead pipes, except that bands are omitted. After every fifth section of magnesia covering there is applied a short, hollow section of very hard asbestos material in the bottom portion of which rests a grooved-iron plate carrying ball-bearings upon which the pipe rides when expanding or contracting. This short expansion section is of the same outside diameter as the adjacent 85 per cent magnesia covering. Over the pipe covering and expansion device there are placed two layers of bituminized fibre conduit with all joints staggered and the surface of each conduit finished with liquid cement. Conduits are placed on a bed of crushed rock or gravel, approximately 6 in. deep, and this is extended upward to about the center line of the conduit when trench is backfilled. Underdrains leading to points of free discharge are placed in the gravel or crushed rock beds.

¹For further data on pipe insulation see Chapter XV.