Chapter 4
Bridge Program Drawings

Section 4.16-Utilities

Introduction

Utilities on bridge structures are sometimes the most economical way to span rivers, railroad yards, or impossible topographic areas. The most common types of utilities on bridge structures are telephone, electrical, water, gas, power, and sewer systems. For the various ways in which these utility systems can be attached to bridge structures, see Suggested Hanger Systems. Utilities should not be placed through the approach fill of bridge structures. They should be beveled or swept around the abutment wings at 45 degrees and extended or capped as necessary.

The Utilities Section of the Highway Development Program and the District are responsible for initiating and approving the attachment of utilities to bridge structures. The utilities attachments must also be approved by the State Bridge Engineer.

Railroad authorization is required for utilities that go over railroads. The utility company usually contacts the railroad company for this authorization.

Utility Types

A telephone company must request that **TELEPHONE SYSTEMS** be attached along the length of a bridge. The telephone company will request the size, number, and location of conduits needed for the given structure. The number of conduits may vary, depending upon the location of the structure. Most telephone conduit systems are attached to bridge structures by means of a strap or a two-rod hanger system.

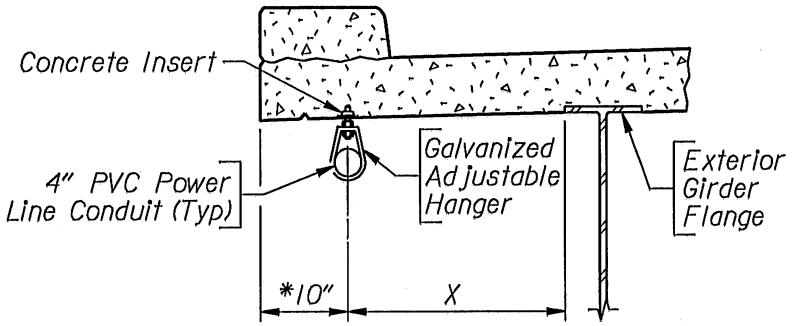
ELECTRICAL SYSTEMS are used when requested by the Traffic Program. This system is used in conjunction with lighting systems of bridges and roadways. The size, number, and location of the conduits along the length of a structure are then determined. Most electrical conduit systems run through the bridge slab or sidewalks and are installed before concrete is placed. In some cases, the conduits can be attached by straps or clips to the girders.

WATER, GAS, POWER, AND SEWER SYSTEMS are used when a public utility company requests that the systems be attached to a structure. The utility company will request the size, type, number, and location of the utility line required. These utility line systems are attached to the bridge structure by two-rod roller hanger systems. The sizes and types of hangers for such utilities may vary, depending upon the manufacturer. Water and sewer lines shall be protected from freezing.

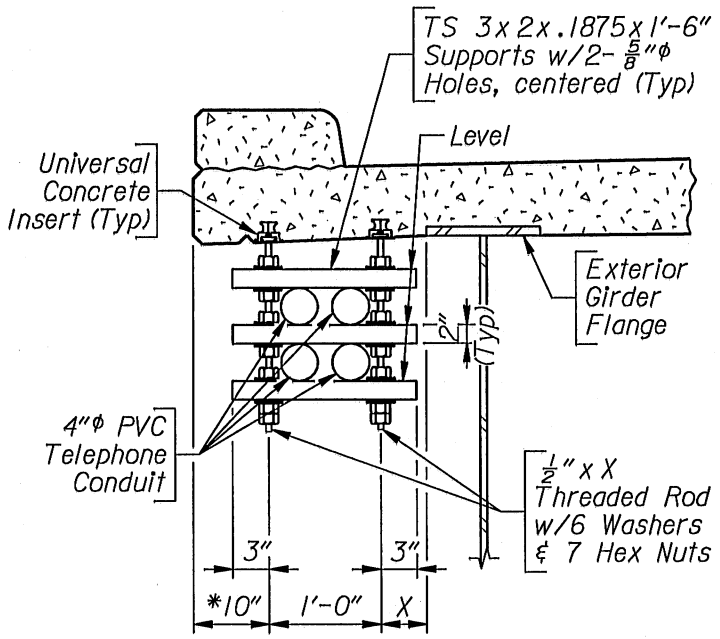
General Design and Detail Information

HANGER SPACING shown on the detail shall be determined by the size, type, and number of conduits; allowable deflection of the conduit; the type of hanger; and the capacity of the concrete insert. Currently, the hanger spacing for one or two conduit installation is limited to around 10'-0". The weight of a single PVC conduit is estimated at 1.5 pounds per foot with the cable weighing approximately 6.5 pounds per foot. The tech file should be consulted for information on the capacity and availability of the various systems.

Suggested Hanger Systems

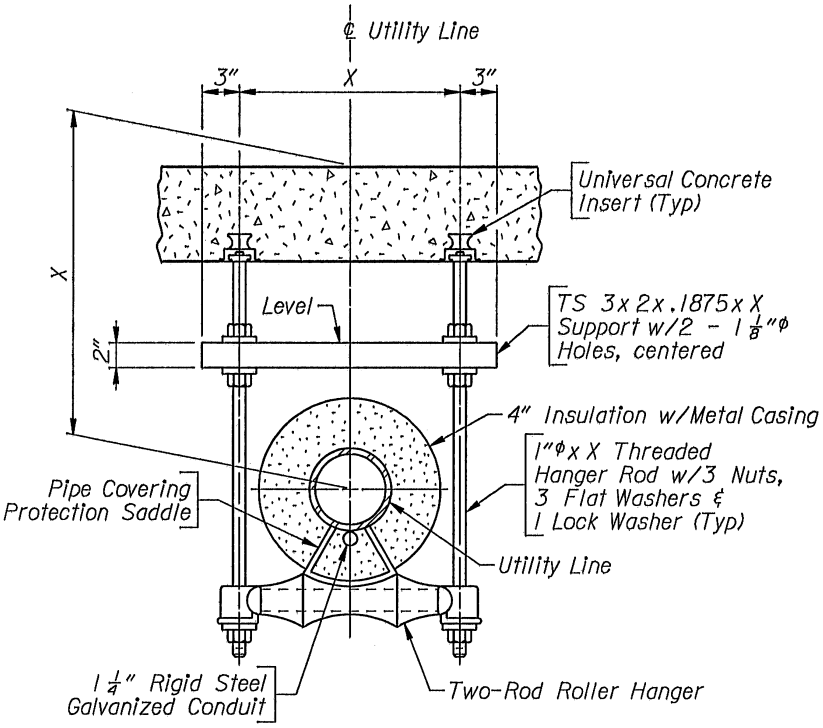


ADJUSTABLE HANGER
*Suggested dimension



STRUCTURAL TUBE HANGER

*Suggested dimension



TWO-ROD ROLLER HANGER

Cells

Name	Description
CONELE	Conduit Elevation
CONSEC	Conduit Section at Abut
CON2I3	3 Conduits, 2 Inch PVC
CON4I1	1 Conduit, 4 Inch PVC
CON4I2	2 Conduits, 4 Inch PVC
CON4I4	4 Conduits, 4 Inch PVC
INSSEW	Insulated Sewer Line Detail
INSWTR	Insulated Water Line Detail
UNICON	Universal Concrete Insert.