

**TABLE OF CONTENTS – UTILITIES ATTACHED TO BRIDGE STRUCTURES**

**CHAPTER 29**

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\* Indicates 11 x 17 sheet; all others are 8½ x 11.

## INTRODUCTION

It is the intent of this chapter to establish the specific requirements, practices and/or guidelines of the Structure and Bridge Division for the use, design and detailing of utility connections to bridge structural elements. Utilities include but are not limited to:

bridge conduits, fittings, junction boxes for traffic control devices including intelligent traffic systems;

electrical lines/systems;

lighting, underbridge lighting, etc.;

telephone lines;

fiber optic lines, cable line, etc.;

gas lines;

water lines, sanitary lines, etc.

It also provides other sources of information along with cross references to other Manuals of the Structure and Bridge Division (Volume V – series) to assist in the preparation of utility plan sheets.

It is not the intent of the requirements and guidelines to supersede the requirements contained in Chapter 1 of this manual but to convey necessary information to the designer for the completing the utility plan sheet(s).

### NOTE:

Due to various restrictions on placing files in this manual onto the Internet, portions of the drawings shown do not necessarily reflect the correct line weights, line types, fonts, arrowheads, etc. Wherever discrepancies occur, the written text shall take precedence over any of the drawn views.

## **GENERAL INFORMATION**

### **Hanger Systems – General Requirements:**

Conduits/lines for utilities (electrical, gas, lighting, telephone, water, etc.), light fixtures for underbridge lighting, etc. shall not be attached directly to beams/girders or substructure elements (abutments, piers, etc.) but supported by an independent hanger system.

The independent hanger system shall be supported by the superstructure through connections to beams/girder webs or, in the case of slab spans, threaded inserts. Steel fittings and rods for the hanger system shall be galvanized in accordance with ASTM A153.

Structural steel for supporting angles shall be the same as that for the beams/girders. If the beams/girders are painted, the supporting angles shall be galvanized in accordance with ASTM A123.

When the supporting angles to which the rods are attached are weathering steel, a neoprene or vinyl washer shall be placed between the angle surface (on both sides) and the nut/washer to isolate the contact between the two surfaces.

All bolted connections shall be with H.S. ASTM A325 bolts. If the supporting angle is galvanized, the H.S. bolts shall be ASTM A325 galvanized. If the supporting angle is not painted (unpainted weathering steel), the H.S. bolts shall be ASTM A325, Type 3.

### **Bridge Conduit Systems and Bridge Lighting Systems:**

Attachment to bridge elements of conduits, fittings, junction boxes and other items for traffic control devices, intelligent traffic systems and other electrical or lighting systems shall be submitted to the Department for review and approval.

Conduits shall be installed in accordance with the details shown in Manual of the Structure and Bridge Division, Volume V – Part 3, BCS-series. When conduits cannot be embedded in bridge parapets or railings, they shall be supported by an independent hanger system.

### **Telephone Conduits:**

Telephone conduits shall be installed in accordance with the details shown in Manual of the Structure and Bridge Division, Volume V – Part 3, BTC-series.

### **Gas and Water Lines:**

Gas lines and water lines shall be installed in accordance with the details shown in Manual of the Structure and Bridge Division, Volume V – Part 3, BGL-series and BWL-series.