

New York State Thruway Authority

**Design and Construction
Requirements for
Installations/Crossings on or Attached
to Bridge Structures, Bridge Culverts
or Structural Retaining Walls**



Office of Real Property Management

TAP-421D (1/2010)

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I. INTRODUCTION

Proposals for installations/crossings that will be on or attached to bridge structures, bridge culverts or structural retaining walls will not be considered until it has been demonstrated to the satisfaction of the Authority Division Director or designee that an underground crossing of the mainline pavement and shoulder through an encasement pipe is not practical.

When it has been demonstrated that there is no viable alternative, such proposals shall be reviewed for the ability of the subject bridge or structure to carry the proposed installation and for the method of attachment. This review will also verify that the additional loads can be safely carried by the structural members through which holes will be drilled for installation attachment. The review will determine the proposal's conformance with the current applicable structural standards of the Authority, the New York State Department of Transportation, the American Association of State Highway and Transportation Officials, the American Institute of Steel Construction, and the American Concrete Institute.

As provided in TAP-401, the Permittee may be required to pay a surety deposit to, or post a performance bond for, the Authority for any suspended conduit systems.

II. INSTALLATION REQUIREMENTS

A. UTILITY FACILITIES ON STRUCTURES

Utility Facilities placed on bridges must comply with the following provisions:

1. All Utility Facilities to be installed shall be fully detailed and shown in plan, section, and elevation when required. The *Occupancy and Work Permit Specification Diagram: Installations/Crossings on or Attached to Bridge Structures, Bridge Culverts or Structural Retaining Walls* (available from the Division Permit Coordinator) is an example of the detail, plan, section and elevation required. Utilities shall not be placed on an existing structure if their weight would reduce the allowable vehicle loading below the legal limit.

Should the Permittee at any time in the future desire to expand their installation, the Permittee shall submit fully detailed plans for review and approval by the Authority's Bureau of Design Services prior to the commencement of work.

2. Utility Facilities shall not be placed in any location where they can be impacted by traffic (e.g., at or below the bottom of the superstructure).
3. Utility Facilities shall not be attached to railings or otherwise located where they may be subject to vehicular impacts.
4. Utility Facilities shall not be located where they will impair or interfere with roadway drainage.
5. Utility Facilities shall not be supported from the bottom of the concrete structural slab.
6. Utility Facilities shall be located so they are visible and identifiable and do not interfere with the maintenance and inspection of the structure. Utility Facilities shall not prohibit or interfere with the maintenance operations of jacking and lubricating the bearings or jacking of the girders for concrete repairs (specifically, to the pedestals). Preferred locations, in order of preference, are:
 - a. in bays between the main longitudinal bridge members
 - b. between voided bridge box beam members
 - c. on a utility ledge on the fascia
 - d. attached to the fascia, preferably on a downstream side

B. EXPANSION DEVICES

1. Utility Facilities shall have expansion capability adjacent to the bridge expansion bearings so as to conform to the bridge horizontal movements. In the case of bridges with steel sliding or rocker bearings, vertical expansion capability shall also be incorporated to facilitate the jacking and lubricating or replacement of those bearings. Additional expansion devices may be required at other locations if the operating temperature range of the utility or the coefficient of thermal expansion of the utility installation differs from the characteristics of the bridge; or
2. Utility Facilities shall be supported on a system of rollers that allow it to expand and contract independently of the bridge.

C. SHUT-OFF DEVICES

All Utility Facilities carrying fluid or gaseous materials shall have a shut-off device at the supply side of the facility. If reverse flows are possible, a shut-off device is required on each end of the facility. Shut-off devices should be located as close to the facility as feasible, not over 1000 feet from the end. Exceptions may be granted for low-pressure lines upon a showing that such exception does not compromise public safety.

D. UTILITY MARKING REQUIREMENT

All Utility Facilities over, under or attached to bridge structures, bridge culverts or structural retaining walls shall be clearly marked with the type of installation (water line, gas pipeline, etc.) and the name of the Utility or agency responsible for repair of the installation. This marking must be durable and secure, and be approved by the Authority.

E. PROTECTIVE STRUCTURES

The Authority may require fencing or other protective structures for Utility Facilities.

F. WATER LINES

Water lines shall have welded or restrained joints or shall be cased for the length necessary, as determined by the Authority, to prevent water from falling onto an underlying roadway, railway, or other areas.

G. SEWER LINES

Sewer lines shall have welded or restrained joints or shall be cased for the length necessary, as determined by the Authority, to prevent sewage from dropping on an underlying roadway, railway, or other areas.

H. NATURAL GAS LINES

All plans involving natural gas lines must contain a certification by a licensed professional engineer that the work conforms to all applicable provisions of law, including but not limited to the Natural Gas Pipeline Safety Act (49 U.S.C. 1672 et. seq.) and regulations promulgated thereunder, and State Public Service Commission requirements in 16 NYCRR Part 255. Where not superseded by federal or state law:

1. All installations on structures shall be designed as if subject to the most populous "class location" requirements in 16 NYCRR Part 255.
2. Unless otherwise approved, all welds on carrier lines shall be nondestructively tested.
3. All lines on structures shall be electrically insulated from the structure or shall be electrically isolated from the buried portion of the line.
4. Unless otherwise approved, lines installed in an enclosed portion of a structure, or encased in concrete, shall be sleeved in a continuous manner, with adequate venting. This provision does not apply to sections of lines where they pass through abutments or retaining walls.

I. COMMUNICATIONS LINES

Communications lines shall be placed in ducts having sufficient bending strength to span between points of support.

J. INSPECTION

Permittees shall inspect their Utility Facilities on a regular basis and shall repair/replace Utility Facilities which have been damaged or deteriorated. Inspections or repairs/replacements may require additional Work Permits.