

**BRIDGE CONDUIT SYSTEM
FOR LIGHTING WITH STEEL RAILING
BR27C-SERIES WITHOUT SIDEWALK**

NOTES TO DESIGNER:

Standard is to be used only when lighting is installed as part of project and used with the Railing standard BR27C-series without sidewalk and when all railings are attached on the traffic side of the rail posts. Terminal wall for the steel railing is located on abutment or U-back wing.

Access to junction chamber is from the inside of the steel railing concrete pedestal face on the traffic side.

Light pole anchorage is designed in accordance with AASHTO *Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals*, 4th Edition (2001), including Interim Specifications. Design requirements are as follows:

Pole mounting height: 40 feet
Pole size: avg. 6" O.D. (8" O.D. on base)
Bracket arm: length: 6'-0"; weight of truss: 15 lbs.
Size of luminaire: 3.2 sq. ft.
Weight of luminaire: 81 lbs.
Bolt circle for anchorage (base plate): 11" diameter thru 16" diameter

Light pole anchorage is to be located no closer than 4 feet to abutment (backwall) or parapet joint. Show location of centerline of light pole anchorage(s) on appropriate plan sheet, normally plan of deck slab. The standard provides for adequate pole clearance for placement of the rail on the front or back face of the post.

Size of junction chamber: 8" x 8" x 1'-4". Conduit size: 2" diameter. Show location and size of conduit(s) on transverse section sheet. Show location of junction chambers on appropriate plan sheet, normally plan of deck slab.

For larger conduits the bend radius in the conduit (steel elbow and nonmetallic elbow) and the run of the junction chamber need to be changed in the CONDUIT LAYOUT. The minimum run for the junction chamber is 8 x nominal diameter of conduit. For example, the minimum run for a 2" dia. conduit is 1-4" (8 x 2" = 16" = 1'-4"). If larger conduit is used, JUNCTION CHAMBER FRAME needs to be adjusted, i.e., spacing of screws needs to be adjusted. Also, the size of the concrete blister needs to be adjusted to provide additional space between the junction chamber and the light anchorage.

Longitudinal movement (for filling table):

Coefficient of linear expansion of:

concrete: 0.000006 in./in./°F (AASHTO *Standard Specification for Highway Bridges*, 1996; 1997 and 1998 Interim Specifications; and VDOT modifications, Article 8.5.3)

steel: 0.0000065 in./in./°F (AASHTO *Standard Specification for Highway Bridges*, 1996; 1997 and 1998 Interim Specifications; and VDOT modifications, Article 10.2.2)

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NOTES TO DESIGNER (cont'd):

Temperature ranges (AASHTO *Standard Specification for Highway Bridges*, 1996; 1997 and 1998 Interim Specifications; and VDOT modifications, Article 3.16):

concrete structures: 40°F

steel structures: 60°F

Example: Steel structure, 250 feet of expansion

Longitudinal movement = $250 \times 0.0000065 \times 60 = 0.0975 \text{ ft} = 1 \frac{1}{8} \text{ in.}$

t (movement/10°F) = $250 \times 0.0000065 \times 10 = 0.01625 \text{ ft} = \frac{3}{16} \text{ in.}$

ADD THE FOLLOWING NOTES, DIMENSIONS, DETAILS, ETC. TO STANDARD:

PLAN:

Add diameter of bolt circle.

SECTION A-A:

Add size of plate.

TABLE:

Complete table. Use $\frac{1}{8}$ " multiples for longitudinal movement. Use $\frac{1}{16}$ " multiples for t (movement/10°F).

For reinforcing steel schedule, complete the No. (number of bars) column.
For RT0601, input the length of bar.

NOTES:

Complete first note by adding the Class I, II or III of corrosion resistant reinforcing steel required.
For additional information on corrosion resistant reinforcing steel (CRR), see Structure and Bridge Division Memorandum (current IIM-S&B-81).