Division Manual has a section on Roadway Lighting that fully describes the procedures related to this work.

### 3.10.2 Underpass Lighting

Where the AASHTO Guide indicates that underpass lighting is desirable, the luminaires used are typically high-pressure sodium fixtures mounted on the abutment of the bridge or on a pier cap.

*Note: In all cases, VDOT Bridge and Structures Section must be consulted to approve placement of any item on a bridge or tunnel structure.*

Luminaires are typically located on the bottom of the bridge deck or fixed to the bridge girders when mounting would otherwise place them more than about 10 feet from the edge of the paved shoulder. This option, when compared to mounting locations further away, can improve light level uniformity, reduce the number of required luminaires, and discourage vandalism.

AASHTO recommends that the lighting level duplicate the lighting values on the adjacent roadway. However, due to the luminaire mounting height it is typically necessary to provide higher light levels in order to achieve the required uniformity. **Thus, it is not unusual for the underpass light level to be twice that of the adjoining roadway.**

### 3.10.3 Lighting on Bridges

The roadway on a bridge is normally treated the same as other parts of the roadway. If there is no lighting on the adjacent roadway, there is normally no need for lighting on the bridge. An exception is a very long bridge, which may be lighted even though the roadway is not lighted at other locations. In this situation, the lighting designer should consider placing roadway lighting in advance of the bridge to allow the driver's eyes to transition into the brighter roadway on the bridge.

The **transition zone** is discussed in general terms in IESNA RP-8. However, a thorough discussion of the subject is presented in IESNA RP-22 (Tunnel Lighting). Specifically, increasing the light pole spacing, or using a staggered pole arrangement to reduce the roadway illumination to 1/3 creates the transition zone the average level on the bridge. Many times this reduced lighting level can be accomplished using the same type and wattage luminaire installed on the bridge. The length of the transition zone is based on the wet pavement safe stopping distance.

For example:

> A bridge is illuminated at 1.2 ft-ca. The approach roadway, with a design speed of 40 mph, should have a transition zone extending 300 feet in advance of the bridge. The approach roadway should be illuminated at 0.4 ft-ca.

Where lights are to be installed on a bridge, the lighting designer should submit the proposed lighting standard locations to the bridge designer through VDOT Traffic