**ROADWAY ILLUMINATION ASSEMBLY NOTES**

1. Details apply to roadway lighting installations bid or referenced under Item 610, "Roadway Illumination Assemblies." Provide, furnish, and install all other materials not shown on the plans which may be necessary for complete and proper construction, where manufacturers provide warranties or guarantees as a customary trade practice, furnished to the State such warranties or guarantees.

2. The locations of poles and fixtures may be shifted by the Engineer to accommodate local conditions. Install or remove poles and luminaires, locate overhead wires, and utility access panels in accordance with the plans. Consult with the appropriate utility company prior to beginning such work.

3. Provide new and unused materials. Ensure that all materials and installations comply with the applicable articles of the National Electric Code (NEC), Texas Electric Code, and Underwriters Laboratories (UL). All materials must be listed by Underwriters Laboratories (UL) or a Nationally Recognized Testing Lab (NRTL) such as Canadian Standards Association, Intertek Testing Services NA Inc., or FM Approvals LLC. UL approval is not required for any installation or material not identified by the Engineer for rejection.

4. Provide roadway illumination light fixtures as per TxDOT Departmental Material Specification (DMS) 1010, Item 610, and as shown on the Material Pricing List (MPL) for roadway illumination and electrical supplies.

5. Fabricate steel roadway illumination poles in accordance with roadway illumination poles (RIP) standards and Item 610. Poles fabricated according to RIP standards do not require shop drawing submittals.

6. Use pre-qualified two-pole breakaway connectors for all luminaire pole installations. For luminaires fed by a circuit with a neutral conductor, use double pole breakaway connectors with the neutral side unlisted and marked white.

**Wiring Diagram Notes:**

1. Use 1/2 in.-13 UNC threaded, copper or tin-plated copper, rod bonding connector, sized appropriately for conductors, bonded to T-base, or use ground lug in handhole as available.

2. Use a certified two-pole breakaway connector for all luminaire pole installations. For luminaires fed by a circuit with a neutral conductor, use double pole breakaway connectors with the neutral side unlisted and marked white.

3. Split bolt or other connector.

**Decorative LED Lighting Notes:**

1. LED Drivers in Remote Outdoor Enclosures (for drivers that do not include an enclosure as part of a fixture assembly):
   - Provide NEMA 3R outdoor enclosure or an equivalent.
   - Install enclosure at least 12" above ground or other horizontal surface. Mount vertically or on ceiling, and avoid direct sun where possible.
   - Install enclosure at least 4 inches side to side and 1 inch end to end from other enclosures.
   - For multiple drivers in an enclosure, provide at least 3 inches side to side and 1 inch end to end from other enclosures. Drivers must be mounted on a metal bracket or other standoff to dissipate heat, or mount driver to side of the enclosure or to an exterior wall.
   - Ensure remote drivers with a maximum of 100 watts are installed in a manner that does not exceed 110 mph or to be mounted more than 25' above the surrounding terrain, provide poles meeting the following requirements:
   - Anchor all transformer bases to resist the theoretical plastic moment capacity of the pole. Submit certification of the plastic moment load test of the model of base being furnished with the shop drawings. Include on manufacturer's shop drawings the ASTM designations for all materials to be used.
   - Include transformer base and connecting hardware in calculations and shop drawing submittals.
   - Use 1/2 in.-13 UNC threaded, copper or tin-plated copper, rod bonding connector, sized appropriately for conductors, bonded to T-base, or use ground lug in handhole as available.

**Typical Wiring Diagram**

- LUMINAIRES SERVED AT 480V ON 240/480 Volt Service or LUMINAIRES SERVED AT 240/240 Volt Service. 

**Driver Spacing in Remote Enclosure**

- 4 min
- 2 min
- 1 1/2" Strut
- Non Conducting Drive Enclosure

- Driver spacing in remote enclosure

- Driver

- 1 1/2" Strut

- 2 min

- Driver Enclosure

- Non Conducting Drive Enclosure

- Driver

- 1 1/2" Strut

- 2 min

- Driver Enclosure

- Non Conducting Drive Enclosure