

## Chapter 25

### Lighting Plans

The following are changes, additions or deletions to the January 2010, Topic #625-000-008, Plans Preparation Manual (PPM) - English, for use on Turnpike projects only:

#### 25.1 General

*Replace the third paragraph with the following*

The Lighting Plans shall be assembled as follows:

1. Key Sheet
2. Tabulation of Quantities
3. Lighting General Notes
4. Legend Sheet \*
5. Pole Data \*
6. Underdeck Luminaire Data \*
7. Sign Luminaire Data \*
8. Layout Sheets (as applicable)
9. Plans Sheets
10. Underdeck Lighting Plan Sheets
11. Underdeck Lighting Section/Details Sheet
12. Load Center Schematic One-Line Diagram, Power Riser Diagram, Service Point Details, Panelboard Schedules, and Grounding Details Sheet(s)
13. Power Riser Diagram and Panelboard Schedules (for projects with box girders) Sheet(s)
14. Miscellaneous Details Sheet (as applicable)
15. Foundation Details - High Mast (if required)
16. Boring Data Sheets - High Mast (if required)

\* Sheets may be combined based on project size.

#### 25.3.1 Lighting General Notes Sheet

*Add this section*

A lighting general notes sheet shall be provided (see the latest Lighting Guide Drawings). All notes shall be modified as necessary to make them project specific and to describe any special considerations and directions to the Contractor. Remove general notes that do not apply. A note indicating “not all notes are applicable” or similar is not acceptable.

#### 25.3.2 Pay Items

*Add this section*

Provide pay item notes below Tabulation of Quantities Table on first sheet only or reference the location of the pay item notes in all Tabulation of Quantities Tables (if not shown on the first sheet).

## 25.4 Pole Data and Legend Sheet

*Add the following to the list in paragraph 2*

7. Pole Number
8. Tilt angle (in degrees) for pole-top luminaires
9. Aiming angle and direction/orientation for each luminaire on high mast poles

Note:

When a pole has two arms, then the number "two" shall be placed under the respective arm and luminaires column.

Pole numbering shall be coordinated and follow the maintenance scheme.

*Add the following*

The following information shall be given for each sign luminaire:

1. Sign Panel
2. Circuit Number
3. Roadway Station and Offset
4. Arm Length
5. Tilt angle (in degrees)
6. Luminaire Wattage
7. Luminaire Placement (Configuration, Sign Size, Spacing Dimensions)

The following information shall be given for each underdeck luminaire:

1. Luminaire Name
2. Circuit Number
3. Roadway Station and Offset
4. Luminaire Wattage
5. Mounting Height
6. Pay Item Number

Provide a tilt angle convention detail for all fixtures types that are tilted.

*Add the following*

The Legend section of this sheet should include the following information:

1. Provide a separate and unique symbol for each condition. Basically, a separate symbol is needed for each bid item number used on the tabulation of quantities. Do not use the same light pole luminaires symbol for two different mounting heights or two different mounting types.
2. Provide symbol with proper description for the conduit and pull boxes that are embedded in the bridge structures or traffic barrier walls.
3. Remove any symbols that are not applicable. A note indicating “not all symbols are applicable” or similar is not acceptable.

## 25.5.2 Required Information

*Modify the second paragraph as follows*

The lighting layout shall be shown on the plan format. This shall be accomplished by symbols which represent poles, underdeck luminaires, pull boxes conduit, service points and all necessary light fixtures or electrical devices to be part of the project design. A flag or note shall be used to identify conduit runs.

*Add the following*

The lighting plan sheet that shows the load center shall show, label and identify the power company point of service and shall also show the routing of the service feeder from the power company service pole to the load center. The plan shall show the branch circuit conduit runs from the last light pole to the load center with a wiring call-out identifying the circuit designations in addition to the conductor sizes and quantities (in cross section). The phase, neutral, and ground conductors shall be clearly identified. Provide a detailed description of the load center to include the following information:

1. Load Center designation.
2. Station and offset of the load center.
3. Full description of the service voltage.
4. Service Type (Overhead or Underground).

An underdeck lighting plan sheet shall be prepared for each underdeck lighting location. This plan sheet shall be drawn to scale with the scale used properly identified, shall use the bridge plan as background with the intensity reduced, and shall also indicate the electrical work associated with bridge mounted signs if applicable. The plan shall show the location of the embedded junction boxes, conduits and associated electrical work with proper notation to indicate what items are incidental to the bridge. A separate section/detail sheet shall be prepared to show all necessary mounting details and associated hardware needed for the installation of the underdeck luminaires.

All widening, resurfacing, and All Electronic Tolling (AET) projects shall show existing light fixture locations.

## 25.7 Box Girder Maintenance Lighting and Power Plan

**Sheet(s)***Add the following section*

FDOT Design Standards Index No. 21240 shall be used as a guide in the preparation of the box girder lighting/power plans. The Box Girder Maintenance Lighting Notes are minimum requirements that shall be maintained and met except as revised hereafter. A sheet shall be prepared for each box girder. This sheet shall show the internal lighting, receptacles, switches, load centers, life safety devices, and wiring needed for maintenance. The sheet shall be drawn to scale and shall provide a list or table identifying the quantity of each electrical item within each box girder.

A panelboard schedule shall be provided for the distribution panelboard and for each mini power center.

**25.8 Load Center Schematic One-Line Diagram, Power Riser Diagram, Service Point Details, Panelboard Schedules, and Grounding Details Sheet(s)***Add the following section*

Provide a detailed design of the load center to include the following information:

1. Load Center designation.
2. Station and offset of the load center.
3. Full description of the service voltage.
4. Service Type (Overhead or Underground).
5. Indicate whether the enclosure will be pole mounted or pedestal mounted.
6. Indicate the enclosure NEMA rating.
7. Whether a photocell is required.
8. Power distribution riser diagram with short circuit values.
9. Conductor ampacities (sizes) and insulation type.
10. Circuit interrupting devices and fault current interrupting capability.
11. Location and characteristics of surge protective devices.
12. Main and distribution equipment, control devices, locations and sizes.
13. Load computations.
14. Grounding and bonding shall indicate at a minimum the following:
  - A. Type and location of grounding electrodes.
  - B. Bonding requirements.
  - C. Testing requirements.
  - D. Conductor material type, size and protection requirements.
  - E. Connections of separate grounding systems, bonded, and use requirements.
15. A note requiring shop drawings for all the electrical equipment associated with the load center. The load connected to each branch circuit breaker and the overall total

load connected.

16. If future luminaires are included in the branch circuit conductor size, the affected lighting plans shall be provided with a proper note defining the number of future luminaires include.

## **25.9 Lighting Design Analysis Report (LDAR)**

*Add the following section*

A Lighting Design Analysis Report (LDAR) shall be provided (LDAR guidelines can be found at the link below). LDAR guidelines shall be modified as necessary to make them project specific and to describe any special considerations.

[http://design.floridasturnpike.com/prod\\_design/lightelect/doc/LDAR\\_Template.pdf](http://design.floridasturnpike.com/prod_design/lightelect/doc/LDAR_Template.pdf)