

## Chapter 25

### Lighting Plans

The following are changes, additions or deletions to the January 2003, Topic #625-000-007, Plans Preparation Manual (PPM) - English, for use on Turnpike projects only:

#### 25.1 General

*Add the following items*

7. Lighting General Notes
8. Underdeck Lighting Section/Details Sheet
9. Load Center Schematic One-Line Diagram and Service Point Details Sheet.
10. Miscellaneous Details Sheet (as applicable)
11. Panelboard schedules and power riser diagram (for projects with box girders)

#### 25.3.1 Lighting General Notes Sheet

*Add this section*

A lighting general notes sheet shall be provided (see the latest 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.

#### 25.4 Pole Data and Legend Sheet

*Add the following to the list in paragraph 2*

7. When a pole has two arms, then the number "two" shall be placed under the respective arm and luminaires column.
8. The underdeck luminaires with their respective stations shall be included in the schedule.
9. When pole-top luminaires are used, an additional column shall be added to include the tilt of the luminaires.
10. When high mast luminaires are used, an additional column shall be added for each luminaire on a high mast pole to show the aiming angle and direction/orientation of each.

*Add the following*

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

- 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.
- Provide symbol with proper description for the conduit and pull boxes that are embedded in the bridge structures or traffic barrier walls.

## 25.5.2 Required Information

*Add the following paragraphs*

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 (when the service is underground). 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 size and quantity. On projects with multiple (more than 3) branch circuits, provide two conduits from the load center to a pull box adjacent to the load center and split the branch circuit conductors into each conduit such that no more than three circuits are installed in one conduit. Provide a detailed description of the load center to include the following information:

- Load Center designation.
- Station and offset of the load center.
- Full description of the service voltage.
- Whether the service is overhead or underground.
- The rating and number of poles for the main circuit breaker.
- The rating and number of poles for each branch circuit breaker.
- The service feeder size.
- Indicate whether the enclosure will be pole mounted or pedestal mounted.
- Whether a photocell is required.
- 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.
- 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 included.

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. Wherever possible, the underdeck lighting fixtures shall be located such that lane closures are not required for routine maintenance of the lighting fixtures. 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. See the latest Guide Drawings for additional sheet information.

## 25.7 Box Girder Maintenance Lighting and Power Plan Sheet(s)

FDOT Structures Design Office Standard Drawings shall be used as a guide in the preparation of the box girder lighting/power plans. The General Electrical Notes are minimum requirements that shall be maintained and met except as revised hereinafter. A sheet shall be prepared for each box girder. This sheet shall show the internal lighting and receptacles 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.

No welding or burning of the structure will be allowed. All fasteners shall be approved mechanical devices. The electrical work associated with the box girders involves working in confined space areas. All precautions and rules according to "confined spaces" of the Code of Federal Regulations, 29 CFR 1910.146 shall apply.

The minimum conductor size shall be No. 10 AWG. A green insulated conductor shall be installed in each conduit run. The minimum conduit size shall be 1 inch (size 27). All interior conduits within a box girder shall be PVC Schedule 80.

The six-hour timers shall control the lighting contractors. Timers shall be provided at each hatch entrance and mid span.

The light fixtures shall be connected to separate branch circuit breakers from the receptacle branch circuit breakers.

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

The service voltage for the box girders shall be 240/480 volts, single-phase, three-wires and then step down to the 120/240 volts through the mini power centers. A main disconnect switch shall be provided immediately adjacent to the hatch door of each girder. The 240/480 volt-feeder shall terminate in a distribution panelboard. The distribution panelboard shall provide 480 volt power to each mini power center.

The number of mini power centers within each box girder shall be determine based on the number of lights and receptacles. The maximum number of lights and receptacles within a mini power center shall be as indicated on Structural Index.