943 Lighting Plans

943.1 General

This chapter provides the requirements for the development of Lighting Plans. See ***FDM 231*** for the requirements of lighting designs.

Lighting Plans are usually a component set of plans. Projects with minimal lighting improvements (e.g., requires limited discipline-specific design, can be adequately documented on a small number of plan sheets, does not warrant a separate plan package) may include Lighting Plan sheets in the Lead Component Plans set.

943.2 Key Sheet and Signature Sheet

The Key Sheet is the first sheet of the Lighting Plans set. The Signature Sheet, when required, is placed behind the Key Sheet. These sheets are created using the FDOT CADD Software.

Follow the same requirements contained in ***FDM 910*** for the development of a Key Sheet and Signature Sheet. Assemble the Lighting Plans in the following order:

Index of Lighting Plans

(1) Key Sheet

(2) Signature Sheet

(3) General Notes

(4) Legend

(5) Lighting Data Table

(6) Lighting Plan

(7) Pole Details

(8) Foundation Details

(9) Underdeck Lighting Details

(10) Box Girder Maintenance Lighting Details

(11) Service Point Details

(12) Report of Core Borings

Lighting Plans may require the insertion of sheets that were prepared independently of the current design phase (aka early works). See ***FDM 910.2.6.1*** for guidance on including early works sheets.

See ***FDM 910*** for an example of a Key Sheet and Signature Sheet.

943.3 General Notes

General Notes sheets convey site-specific requirements not covered by the ***Standard Plans*** or ***Standard Specifications***. See ***FDM 914*** for additional information concerning general notes.

General notes often include lighting design information, including:

- maintaining agency
- proximity to airport over overhead utilities
- load center location
- lighting design criteria (average illumination level, uniformity ratio, veiling luminance ratio)

943.3.1 Pay Item Notes

Place pay item notes on the General Notes sheet.

Information on how quantities are determined is contained in the Estimated Quantities (EQ) Report and should not be repeated in the plans as a pay item note.

Pay item notes are used to provide unique project information not covered by the basis of payment information contained in the ***Standard Specifications***, such as:

- Clarify how incidental work is to be paid for.
- Clarify the purpose, uses, or requirements.

943.3.2 Lighting Legend

A lighting legend provides symbols and descriptions and other abbreviations used in the Lighting Plans. Place a lighting legend on the General Notes sheet, or on a separate Lighting Legend sheet. Use symbols in accordance with the requirements of the FDOT CADD Software.

Provide a unique light pole symbol and description for each different type of installation or work (e.g., “New Light Pole Installation”, “Retrofit Existing Light Pole”, “Existing Light Pole to Remain”).

943.4 Lighting Data Table

The table provides a listing of each light assembly, and includes the following information (as applicable):

- Pole Number
- Station and Offset
- Coordinates
- Roadway Setback
- Pole Owner
- Maintaining Agency
- Pole Type (Standard or other)
- Arm Length
- Quantity of Luminaires
- Luminaire Type
- Luminaire Make/Model
- Lumen Output
- IES Distribution Pattern
- Correlated Color Temperature (CCT)
- Mounting Height
- Tilt Angle
- Input Wattage
- Input Voltage
- Load Center Number
- Circuit Number
- Foundation Type
- Pay Item Number

The table must list all luminaire installations, including underdeck lighting, sign mounted luminaires, and luminaires mounted on existing utility poles.

943.5 Lighting Plan Sheets

Lighting Plan sheets convey a graphic depiction and necessary information for the installation of lighting, including:

- Construction details
- Light poles and luminaire installations
- Electrical circuits, conduits, wires, and pull boxes
- Load center information

Produce the Lighting Plan sheet using sheets that are contained in the FDOT CADD Software.

Use the following horizontal scales:

	Standard	Optional
Curbed Roadways	1″ = 40′	1″ = 50′
Flush-shoulder Roadways	1″ = 50′	1″ = 100′

943.5.1 Required Information

Provide the same basic information required on the Roadway Plan sheet, including roadway geometrics, project limits, street names, curb and gutter, drainage inlets, sidewalks, and R/W lines.

Show underground and overhead utilities, signing structures, lighting structures, and ITS structures that may conflict with the installation of the lighting components. Identify potential conflicts with utilities, drainage, landscape features, sidewalks, and driveways in the plans.

Provide the following on the Lighting Plan sheet:

(1) Display a north arrow and scale within each plan view, typically in the upper right portion. Display the centerline of construction or baseline of construction such that the stationing is increasing from left to right. Flag and station the begin and end of the lighting limits.

(2) Display and label existing and proposed lighting features at their correct locations (station/offset) using symbols which represent poles, conduits, pull boxes, and underdeck luminaires.

(a) Include pay item number, number of conduits, length of conduits, and conductor sizes when labeling conduit runs.

(b) Include pole number, description of installation and arm length, baseline or centerline station and offset, and circuit number when labeling poles.

(c) Include the estimated foundation depth as “for information only” when labeling existing high mast light poles that are to be removed.

(3) Display and label service point locations and electrical devices. Display the routing of the service feeder from the power company service pole to the load center. ***Standard Plans, Index 639-001*** provides details for the service point. Provide the following service point information:

(a) Power company providing service.

(b) Baseline or centerline station and offset.

(c) Voltages and phases (e.g., 240/480 Volt, 3 phase).

(d) Main or overhead breaker size.

(e) Number of branch circuits and breaker size of each.

(4) Label the field-verified vertical elevation and horizontal location (V_{vh}) of existing utilities (SUE data) on the plan view. Include the following with the label (or in a summary table):

(a) V_{vh} number

(b) Utility type and owner

(c) Size and material

(d) Location (Sta/Offset/Lt or Rt)

(e) Existing ground and top of utility elevations

943.6 Lighting Details Sheets

The required construction details for light poles and foundations are provided in ***Standard Plans:***

- ***Index 715-001*** (Conventional Lighting)
- ***Index 715-002*** (Standard Aluminum Lighting)
- ***Index 715-003*** (Utility Conflict Pole)
- ***Index 715-010*** (High Mast Lighting)
- ***Index 715-240*** (Maintenance Lighting for Box Girders)

Use Lighting Details sheets to provide project-specific requirements and construction details not covered by the ***Standard Plans*** or ***Standard Specifications***.

943.6.1 Pole Details Sheet

Provide a Pole Details sheet when proposing a non-standard light assembly.

Pole details may also include:

- Tilt angle details when luminaire is tilted
- Installation and wiring requirements
- Identification ID tag

943.6.2 Foundation Details Sheet

Provide a Foundation Details sheet when any of the following apply:

(1) Proposing a non-standard light assembly.

(2) Project soil conditions are weaker than soil conditions which the standard foundation designs are based on.

(3) Unavoidable site restrictions (e.g., limited R/W, utility conflicts).

943.6.3 Underdeck Lighting Details Sheet

The Underdeck Lighting Details sheet provides the following information:

(1) The location of the embedded junction boxes, conduits and associated electrical work with standard notation to indicate the items that are incidental to the bridge.

(2) Mounting details and associated hardware needed for the installation of the underdeck luminaires.

(3) Electrical work associated with bridge mounted signs, when applicable.

943.6.4 Box Girder Maintenance Lighting Details Sheet

The Box Girder Maintenance Lighting Details sheet provides the following information:

(1) The location of internal lighting, receptacles, switches, load centers, life safety devices, and wiring needed for maintenance.

(2) The quantity of each electrical item within each box girder.

(3) A panelboard schedule for the distribution panelboard and for each mini power center.

943.6.5 Service Point Details

Provide a one-line diagram and panel schedule for each service point. Panel schedules must include the following:

(1) Panel ratings: voltage, phases, capacity (main lugs or main circuit breaker) and short circuit current rating.

(2) Enclosure type.

(3) Neutral bus and ground bus requirements.

(4) Capacity of the circuit breakers.

(5) Circuit loads.

(6) Total and demand loads.

943.7 Report of Core Borings Sheet

The Report of Core Borings sheets provide soil information for each proposed high-mast pole and for non-standard foundations. See ***FDM 920*** for additional information.

The following information is required:

(1) Depiction of the boring identifying the type and depth of soil strata encountered, and the water level encountered. Provide boring number and location.

(2) Soil boring location map illustrating where the boring was taken. Provide boring number.

(3) Soil properties and environmental classification.

943.8 Temporary Highway Lighting Sheets

Temporary Highway Lighting is not always required. See ***FDM 240*** for additional guidance for temporary highway lighting usage and installation requirements.

If included with the Contract Plans Set, provide Temporary Highway Lighting sheets that provide the following, at a minimum:

(1) Temporary Lighting Data Table, that includes the following listed by TTC phase and stationing range:

   (a) Light pole type (e.g., standard, temporary)

(b) Light pole spacing

(c) Light pole offset (meeting minimum lateral offset requirements)

(d) Foundation type (e.g., standard, barrier-mounted)

(2) Temporary Lighting Plan sheets for complex projects (i.e., typically not necessary for simple layouts)

(3) Temporary Lighting Details sheets, including barrier bracket mount details and Type K Temporary Barrier anchorage details.