

# Lighting Design Analysis Report

[Project Name]

[Project Description]

[Project Location (County)]

**Project FPID:** [#####-#-##-##]

## Prepared for:

Florida's Turnpike Enterprise  
Mile Post 263, Building 5315  
Ocoee, FL 34761

## Prepared by:

[Company Name]  
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**Submission Information:** [Phase ## (## %)]

**Submission Date:** [##/##/#####]

Engineer of Record: [Name]  
P.E. Number: [#####]

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## Section 1 – General Description

- Describe project location.
  - Provide location map (if required).
- Describe the type and general condition of the existing light fixtures, poles, and electrical equipment (load centers, enclosures, pull boxes, etc.) within the project limits.

## Sections 2, 3, 4 – [Roadway, Underdeck, Sign] Lighting

### [2, 3, 4].1 - Design Methodology

- Describe how the lighting design was developed.
  - Discuss design alternatives (if required).
- Describe reference standards, criteria, etc. used.
- Describe lighting criteria.
  - Designate and Describe design deviations/variations from criteria. Identify criteria that cannot be met by the design, along with limitations and design consultant recommendations.
    - **For example only:**
      - “DEVIATION/VARIATION #1: FTE Criteria TDH Table 2321.2.1, Horizontal illumination average cannot be met using wall mounted fixtures only due to the width of the roadway, bridge wall spacing, and lack of center roadway bridge pier columns. Design consultant has coordinated with FTE stake holders and recommends the use of pendant hung fixtures with additional support structure to supplement the wall mounted lighting at this location. Layout, plans, and details for this pendant hung lighting have been submitted to the department, along with a request to open a project specific pay item. Pay item approval is pending. If pendant hung fixtures are not approved, roadway beneath the bridges at this location may not meet average horizontal illumination. However, design consultant does not see this condition as a major issue, since the average is 1.47 foot- candles and driver will experience this condition only momentarily while passing beneath.”
- Describe any standards and specifications for light fixtures.
- Describe software used.
- Describe calculation methodology.
- Describe calculation assumptions.

### [2, 3, 4].2 - Photometric Analysis

- Provide luminaire schedule from software.
- Provide calculation summary from software.
- Provide location map showing photometric calculation zones (if multiple zones are used).

- Provide legible point by point calculations (11" x 17" pages).

[2, 3, 4].3 - Luminaires

- Provide luminaire cut sheet from manufacturer.
- Indicate complete catalog number.

Section 5 – Airspace Obstruction Analysis

- Provide evaluation of proximity to airport(s) and/or heliport(s).
- Provide evaluation of project site(s).

Provide analysis of project site and nearby airport(s) and/or heliport(s) against CFR, Title 14, Part 77, 77.9 criteria.

- See the link below and provide results in the report:

<https://oeaaa.faa.gov/oeaaa/external/gisTools/gisAction.jsp?action=showNoNoticeRequiredToolForm>

- Provide copies of FAA Forms 7460-1 (if required) or provide "No Airspace Obstructions Letter".

Section 6 – Load Analysis

- Provide load summary for each circuit and for the load center.

Section 7 – Voltage Drop Calculations

- Provide voltage drop summary for each circuit and for the load center.
- Provide cumulative voltage drop calculation for each circuit and for the load center, which must include voltage drop from the utility service point to the load center enclosure. Service voltage drop should also be notated separately, for clarity of its contribution.
- Provide all equations, variable definitions, and data used in the calculations.

Section 8 – Short Circuit Analysis and Device Coordination

Short Circuit Analysis - (For manual calculations)

- Provide available fault current summary for each piece of electrical equipment.
- Provide available fault current calculation for each piece of electrical equipment. Available fault current at the utility service transformer's secondary, as obtained directly from the utility, should be used as the starting point.
- Provide one-line/riser diagram, accurate for existing/proposed field conditions.
- Provide all equations, variable definitions, and data used in the calculations.

Short Circuit Analysis - (For software based analysis)

- Provide data input summary for one-line/riser diagram. Available fault current at the utility service transformer's secondary, as obtained directly from the utility, should be used as the starting point.
- Provide one-line/riser diagram, accurate for existing/proposed field conditions.
- Provide calculation summary from software.

#### Device Coordination

- Provide description of design considerations and device coordination methodology.
- Provide overlays of electrical equipment time current curves, either from software or as provided by electrical equipment vendors. Service disconnects shall be included in coordination of devices.
- Provide summary of device coordination.

### Section 9 – Arc Flash Hazard Analysis

- Provide data input summary for one-line/riser diagram.
- Provide one-line/riser diagram, accurate for existing/proposed field conditions.
- Provide calculation summary from software.
- Provide copies of all arc flash labels, with all pertinent information required for the label shown. Labels will also be included in the plans.

### Section 10 – Conclusions

- Document all major design decisions and recommendations.
- Document any “non-standard” design items and summarize any deviations/variations/exceptions described in the design methodology sections of the report.
- Document any items that the Turnpike should consider for this project or future projects.

### Section 11 – Appendices

Include appendices for photometric layouts, typical section photometrics for veiling luminance calculations, equipment cutsheets, FAA coordination correspondence, Utility power service coordination correspondence, and Department coordination correspondence, etc.