

## CHAPTER 15

## ELECTRICAL PLANS

ROADWAY ELECTRICAL PLANS

15-1

When a Project Engineer or Section Engineer has a project which he feels may warrant lighting, he should provide the Lighting/Electrical Engineer a print of the title sheet, traffic volumes, project numbers, (both preliminary and construction) and a letting date with a request to evaluate the project for potential lighting. This request should be made shortly after the preliminary field inspection but in no case later than the date final field inspection data is furnished to the Division. The Department's policy is to consider lighting only on fully controlled access facilities. See Policy and Procedure Manual, Chapter 15 for interchange lighting policy.

The Lighting/Electrical Section will need specific information relating to geometrics, operational features, environmental aspects, and accident data. The Lighting/Electrical Section will obtain this information directly from the Project Design Engineer or Assistant Section Engineer and the Traffic Engineering Branch.

The Lighting/Electrical Engineer will evaluate the project for lighting and make a recommendation to light, provide electrical duct for future lighting or not to light. The recommendation will be submitted to the State Highway Design Engineer for further action.

If approval of lighting or electrical duct is granted by the State Highway Design Engineer, the Project Engineer or Section Engineer will provide CADD files of the necessary plan sheets for the Lighting/Electrical Section to use in preparing lighting plans.

PLANS FOR ELECTRICAL CONDUIT

15-2

If it is determined to provide electrical duct only, the Lighting/Electrical Section will provide the Project Engineer or Section Engineer plan files with location of duct and circuit markers to be included in the Roadway Plans. The Lighting/Electrical Section will also provide the special provisions and estimate. The Project Engineer or Section Engineer will include the lighting items on the summary of quantities sheet.

The Lighting/Electrical Section will need approximately two weeks for evaluation of the project for lighting and an additional two weeks to prepare electrical duct plans including special provisions and estimates.

PLANS FOR LIGHTING

15-3

If lighting of the project is approved, the Lighting/Electrical Section will provide plans, special provisions and estimates to incorporate into the roadway plans. The Project Engineer or Section Engineer will be responsible for including lighting quantities on the summary of quantities sheets.

The Lighting/Electrical Section will need approximately eight weeks after approval to prepare lighting plans, special provisions and estimates.

If lighting for electrical duct is warranted, the Lighting/Electrical Engineer should advise the Utility Agent to assure that any work by the utility company to provide electrical service for lighting is included in the project utility agreement and project estimate.

DESIGN GUIDELINES FOR LIGHTING WELCOME CENTERS  
AND REST AREAS

15-4

The IES (Illuminating Engineering Society) Lighting Handbook shall be used for design criteria except modified as follows:

- (1) The design lux and uniformity shall not be excessively better than the minimum values listed in the handbook.
- (2) Lighting will not be installed on the roadways leaving the rest area beyond the point where the car and truck traffic merge.
- (3) Lighting will not be installed on the entrance to the rest area except in the immediate gore area where the rest area traffic separates from the main roadway.
- (4) Lighting will not be installed on the interior roads except at gores where truck, car or camper traffic separates and special situation areas, such as curves, or beginning of curb section. Where interior roadway is lighted, an illumination level of 6.5 minimum maintained average lux with a uniformity ratio of four-to-one is to be used.
- (5) Parking areas should be evaluated to determine how much of the area will be utilized for night parking. This night parking area may range from 50 to 100 percent of the total parking area depending on the capacity and night traffic volume. Night parking areas should be lighted to 6.5 minimum maintained average lux and uniformity of four-to-one. The remaining parking area should be lighted for security.

DESIGN GUIDELINES FOR LIGHTING WELCOME CENTERS  
AND REST AREAS (continued)

15-4

- (6) Walkways in main activity areas should be illuminated to 6.5 minimum maintained average lux and a uniformity of better than four-to-one. Spill light from the building and walkway luminaries may provide adequate illumination in the activity area surrounding the comfort station. Minimum levels and uniformity are not established for this area but illumination in the range of 3.2 lux and four-to-one uniformity will be reasonable.
- (7) Minor activity areas will not be lighted except for walkways, which are to be used at night. Minor activity area walkways selected for lighting should have 3.2 minimum maintained average lux with a uniformity of four-to-one.
- (8) Security lighting shall be provided in areas which are not likely to be used at night but which need illumination so that persons may view the surroundings with a sense of security.