# DESIGN BULLETIN #35/2006

## New Guidelines for the Design of Roadway Lighting

### Summary

This Bulletin is issued to inform designers, planners, consultants and other staff working for Alberta Infrastructure and Transportation that the department has adopted new guidelines for the design of roadway lighting. The new guidelines have been adopted from the Transportation Association of Canada (TAC) *Guide for the Design of Roadway Lighting* (*2006)* and will apply to all projects which involve lighting installations on the provincial highways. When the opportunity arises, the department will incorporate the new guidelines into the provincial *Highway Lighting Guide*. Until that time, consultants and department staff are advised to use the TAC *Guide for the Design of Roadway Lighting* as a source for lighting design parameters (i.e., lighting levels and warrants) on roadway lighting projects. The general design guidelines from the provincial guide (including general design requirements, construction and maintenance) are still the primary guidelines to be used on the provincial projects.

The following summarizes the lighting design topics and new guidelines from the TAC Guide that should be used when planning or designing a lighting system on a provincial highway:

### New Guidelines for Planning and Design of Roadway Lighting

- Warrants for Roadway Lighting adopted from the TAC *Guide for the Design of Roadway Lighting (2006)*
  - Section 9.1, Sub-section 9.1.3, Pedestrian Related Definitions should be applied in conjunction with the roadway definitions (roadway definitions as provided in the provincial guide).
  - Section 9.4.4, Roadway and Interchange Warrant Form

    Figure 9.9 Warrants for Lighting Arterial, Collector and Local Roads – the warrant procedure should be used on all provincial arterial and collector highways (two lane two- and three-digit highways).

    Figure 9-10 Warrant for Lighting Expressways-Highways.

    Figure 9-11 Warrant for Lighting Freeways.

    Figure 9-12 Warrant for Lighting Interchanges.

    Section 9.4.6 Partial Lighting of Freeway On-Ramps and Off-Ramps.
  - Section 9.4.7 Gaps in Continuous Lighting on Roadways between Intersections and Interchanges – the guidelines should be used when determining the need for in-fill lighting.
  - Section 9.4.7 Underpass, Overpass and Bridge Lighting – the TAC guidelines incorporate the recommendations from research studies, IESNA RP-22 Report and should be used when determining the need for lighting on bridges, underpasses and overpasses.

- Section 9.5.5 Transition Lighting – Table 9.4 Recommended Minimum Lengths of Transition Lighting.
- Chapter 11, Roundabout Lighting – the new TAC Guide includes a comprehensive set of guidelines devoted to the design of lighting at roundabouts. The guidelines should be used for projects involving lighting installations at a roundabout.
- Section 12.4 Midblock Crosswalks Warrants – the guidelines apply to all mid-block crosswalks with nighttime pedestrian activities.
- Section 13.4 At-Grade Railway Crossings Warrants – the guidelines incorporate recommendations for lighting at railway crossings published by Transport Canada.

The need for lighting at intersections should be determined using the warrant system described in the TAC Guide for Illumination of Isolated Rural Intersections.

- Lighting Design Criteria
  - Section 9.5 Roadway and Interchange Lighting Requirements

    Table 9.2 Luminance Criteria for Roadways and Interchanges – all roadway lighting designs should be based on the luminance criteria included in Table 9.2. The roadway design projects should use the luminance method as the primary lighting calculation method and follow the design requirements recommended in Section 9.5
  - Section 9.5.3 Horizontal and Vertical illuminance for Sidewalks – the guidelines from this section should be used in conjunction with Table 9.3 Recommended Values for Pedestrian Areas.
  - Section 10.5 Intersection Lighting Requirements

    Table 10-1 Recommended Illuminance Levels for Full Intersection Lighting.

    Table 10-2 Recommended Illuminance Levels for Partial Intersection Lighting. The primary lighting calculation method for the intersection lighting design is the illuminance method.

    Intersection lighting design should be based on the illuminance criteria from Tables 10.1 and 10.2 and follow the design requirements from Section 10.5.

    Section 10.5.3 Delineation Lighting – the guidelines should be used when designing delineation lighting at an intersection.
  - Chapter 11, Roundabout Lighting – all the design considerations, lighting requirements and design calculations from this chapter should be used when designing a lighting system at a roundabout.
  - Chapter 12, Mid-block Crosswalks – all the design considerations, lighting requirements and calculations apply to mid-block crosswalks.
  - Chapter 13, Railway Crossings - all the design considerations, lighting requirements and calculations apply to railway crossings.
  - Chapter 16 –Off Roadway Facilities

    Walkways and Bikeways - Lighting levels for walkways should be established based on Table 16.1 Recommended Illuminance Levels for Walkways and Bikeways.
    Weight Scales - Lighting levels for weight scales should be established based on Table

16.2 Lighting Criteria for Weight Scale Facilities.

Rest Areas - Lighting levels for rest areas should be established based on Table 16.3 Recommended Illuminance Levels and Uniformities for Rest Areas.

The new guidelines, as indicated in this Bulletin, are to be applied immediately to new lighting design projects on all provincial highways.

Effective Date: June 16, 2006.

## Contact

Richard Chow at (780)415-1050, Highway Operations, Alberta Transportation.

## References


- TAC Guide for Guide for the Design of Roadway Lighting (2006)
- Alberta Infrastructure and Transportation, Highway Lighting Guide. http://www.transportation.alberta.ca/Content/docType233/Production/lighting.pdf