



SUBJECT Decorative Luminaire Support Design Requirements	FINAL NUMBER TR07-06(B)	EFFECTIVE DATE 12/01/2007	VALIDATION DATE 07/01/2012	SUPERSEDES or RESCINDS
WEB LINK(S) http://www.oregon.gov/ODOT/HWY/TECHSERV/Pages/technicalguidance.aspx				
TOPIC/PROGRAM <u>ODOT Decorative Luminaire Supports</u>	APPROVED SIGNATURE Original signed by: Bob Pappé, PE, PLS State Traffic Engineer			

PURPOSE

This bulletin discusses the items that must be addressed before non-standard decorative lighting poles and foundations can be installed on the State Highway system.

GUIDANCE

The use of decorative luminaire poles has increased over the past few years. These poles must satisfy the AASHTO Standard Specifications for Structural Support for Highway Signs, Luminaires, and Traffic Signals code requirements to be installed on the State Highway system. In addition, installation procedures and requirements must be specified in the project plans and specifications. This technical bulletin provides the design requirements necessary to use decorative luminaire supports instead of the ODOT standard drawings and specifications for Slip Base and Fixed Base Luminaire Supports as shown on TM629 and TM630.

DEFINITION

Traffic designer – A designer from ODOT, Local Agency, or consulting firm who provides Traffic Sign, Signal, and Illumination drawings that are certified by a Registered Engineer in the State of Oregon that include the type and placement of structural supports to be used.

Traffic Structures Designer – A designer from ODOT, Local Agency, or consulting firm who provides structural designs certified by a Registered Engineer in the State of Oregon for sign, signal, and illumination supports and associated foundations.

Decorative Luminaire Support – A luminaire support that is selected based on the appearance and/or historic appeal. The support includes the luminaire arm, vertical post, anchor bolts, and foundation. Sometimes these types of poles are referred to as Ornamental Luminaire Supports.

Cast in Place Foundation – A foundation installation that drills a hole, places the rebar, places the anchor bolts, and pours the concrete against undisturbed soil.

Pre-cast Foundation – A foundation installation where the concrete footing is manufactured in a shop, a hole is excavated to a depth and diameter larger than the concrete to be installed, and granular material is compacted under and around the footing.

EXPLANATION

The current standard drawings for Slip Base and Fixed Base Luminaire Supports, which has been developed by ODOT over the years, has many qualified manufacturers, and has pre-qualified shop drawings to make the process more efficient. Decorative luminaire pole structural designs are typically based on the manufacturer's testing and are selected for the desired appearance by local communities and/or utility companies. The selected decorative luminaire poles must satisfy the requirements of the AASHTO Standard Specifications for Structural Support for Highway Signs, Luminaires, and Traffic Signals, installed with generally accepted construction procedures, have material quality control, and allow lawful competition between manufacturers.

RESPONSIBILITIES

Traffic Designer responsibilities: A Traffic Designer that specifies a specific decorative luminaire support and associated foundation on the State Highway system before the contract is Let, or specifies general decorative pole requirements in the plans and has the Contractor submit the required information, must satisfy the following State requirements:

- The pole must meet the 4th Edition 2001 AASHTO Standard Specifications for Structural Support for Highway Signs, Luminaires, and Traffic Signals with all interims.
- Local 3-second gusted wind speed minimums must be satisfied.
- A minimum design life of at least 50 years must be used.
- A fatigue Category II must be satisfied.
- Steel design must meet Section 5 of the 4th Edition 2001 AASHTO code.
- Aluminum design must meet Section 6 of the 4th Edition 2001 AASHTO code.
- The minimum embedment depth is equal to or greater than the depth required according to Section 13.10 of the 4th Edition AASHTO code with an S1 value of 1500 psf.
- The 1994 AASHTO Standard Specifications for Structural Support for Highway Signs, Luminaires, and Traffic Signals may be used instead of the 4th Edition 2001 AASHTO code with a fastest mile wind speed that is equal to or greater than the local requirements.
- Fluted poles are only allowed on vertical posts that have a single luminaire load at the top. No fluted vertical poles are allowed on the State Highways with luminaire arms that produce torsion in the vertical shaft.
- A fluted shell cover that fits around the standard round pole can be used. The fluted shell has a different drag coefficient and calculations are required for the pole and foundation.
- Cast in place foundation footings: Specify the footing to use from the ODOT Slip Base and Fixed Base Luminaire supports standard drawings TM629 and TM630 or provide similar details as shown on TM629 and TM630.

- Pre-cast footings: These are not recommended for use on ODOT projects. In many cases the tops of the curbs and sidewalks have not been located and it requires more expertise to survey each footing installation to result in the correct top of footing elevations. It should be noted that many times the elevations that are used during the project to set the top of the footings with accurate survey techniques may not be the final elevation that the curbs and sidewalks are poured to because of roadway construction issues that occur during the project. Special requirements must be included in the plans and specifications to ensure proper installation. Provide details similar to those shown on the Slip Base and Fixed Base Luminaire supports standard drawing. In addition, at least 1 foot below the bottom of the footing shall be filled with well compacted material. Also, a minimum space of 1 foot shall be provided around the entire footing and replaced with well compacted material. A note or special provision statement must specify that “a foundation installation will be rejected when the tops of the pre-cast foundation is lower than the surrounding sidewalks or curbs, the top of the pre-cast footing shall be no more than 2 inches above the top of the sidewalk or curb, and it shall not create a tripping hazard”. Guidance for the grout between the base plate and the top of the foundation must be addressed and a drain hole must be specified.
- At least three manufacturers must be specified for each item of the decorative luminaire support to allow for lawful competition. If only one manufacturer is available, the statement “or approved equal” must be added. A public interest finding can be obtained if one specific product must be used.

Drawings, details, calculations, and a statement certifying that ODOT and AASHTO standards have been met shall be stamped by a Professional Engineer registered in the State of Oregon and submitted to the Traffic Designer according to 00150.35(b-1). This information will be forwarded to the Traffic Structures Engineer for review.

ODOT Traffic Structures Engineer responsibilities: Review the submittal and return comments within 21 days.

ACTION REQUIRED

The Region Traffic, Consultant, and Local Agency Project Engineers/Managers must be notified of this technical bulletin and must notify all Traffic Designers that perform illumination designs on the State Highways about these requirements. The ODOT Traffic Structures Manual and the Traffic Lighting Design Manual must be updated to incorporate this design guidance.

CONTACT INFORMATION

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