OREGON DEPARTMENT OF TRANSPORTATION TECHNICAL SERVICES

Traffic-Roadway Section BULLETIN

SUBJECT	FINAL NUMBER	EFFECTIVE DATE	VALIDATION DATE	SUPERSEDES or RESCINDS
Implementation of Douglas Fir No. 1 Wood Sign Posts	TR10-01(B)	01/01/2010		New
	WEB LINK(S) http://egov.oregon.gov/ODOT/HWY/TECHSERV/techguidance.shtml			
TOPIC/PROGRAM Wood Post Sign Supports	APPROVED SIGNATURE Original Signed by: Edward L. Fischer, P.E. State Traffic Engineer			

PURPOSE

Projects that use the Standard Drawing TM670 Wood Sign Supports will use Douglas Fir No.1 material starting on the first let date in June 2010.

GUIDANCE

The Standard Drawing TM670 with the effective date December 1, 2009 – May 31, 2010 will be updated in the January 2010 revision to the Standard drawings to use Douglas Fir No. 1 material for 4 inch x 4 inch, 4 inch x 6 inch, 6 inch x 6 inch, and 6 inch x 8 inch wood sign post sizes.

DEFINITIONS

NCHRP 350 – Specifies the procedures for safety performance evaluation of highway features.

AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals – Design code that is required by the Federal Highway Administration to place sign supports on the National Highway System (NHS). The code specifies the NCHRP 350 crash testing, the wind loading, and material design requirements that must be satisfied.

BACKGROUND/REFERENCE

The Wood Sign Post Standard Drawing was required to be stamped and the history of the design was not well documented. Research was performed to determine the type of material that was crash tested before the drawing was stamped. During this investigation, the FHWA provided information for crash testing that used Southern Yellow Pine No. 2 material. It was determined that Douglas Fir No. 2 must be used to make sure the supports were crashworthy, the wind load tables on TM670 were updated, and the drawing was revised and stamped. This significantly reduced the sign

area that each post could mount on it to satisfy the AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals.

Historically, it was reported by ODOT Maintenance staff that Douglas Fir No. 1 posts have performed well during crashes in the field. This resulted in ODOT performing laboratory pendulum crash testing on the Douglas Fir No. 1 to show that this material satisfies the NCHRP 350 crash testing requirements, which are required by the FHWA for sign structures that are installed on the NHS. The pendulum testing was performed in Rocklin California and it compared the performance of the Douglas Fir No. 1 to the Southern Yellow Pine No. 2 and to the NCHRP 350 requirements. The results of the testing showed that the Douglas Fir No. 1 performed well. The results were submitted to the FHWA requesting to allow this material on the NHS. The acceptance letter from the FHWA was received on September 28, 2009 and work was started on updating the design wind load tables shown on TM670.

Suppliers of the wood post material were called to investigate the availability of this material change. It was stated from multiple sources that Hem Fir is not supplied and that only the Douglas Fir material is sorted and stocked. Also, it was noted that Hem Fir posts in the supplier's storage facility warped during some long term storage instances and had to be discarded. This was one of the reasons why the supplier does not stock the Hem Fir material. In addition, the Hem Fir allowable bending stress material properties for the 4 inch x 4 inch and the 4 inch x 6 inch post sizes are a little less than the Douglas Fir properties and this would have resulted in reducing some of the sign area that can be placed on these post sizes. Removing the Hem Fir option will allow slightly higher strength values to be used in the Standard Drawing design. The preceding reasons resulted in removing the Hem Fir option, but it can always be added in the future as required.

EXPLANATION

The revisions to the design wind load tables on TM 670 must be updated to show the larger sign areas that can be placed on the stronger Douglas Fir No. 1 material. TM670 will be updated with the new wind load tables in the January 2010 Standard Drawing revisions release and will have an Effective Date June 1, 2010 – November 30, 2010.

In addition, the grading requirements will have to be updated in the 2008 Special Provisions section 02110.40 boiler plates to show the use of Douglas Fir No. 1.

RESPONSIBILITIES

The Traffic Structures Engineer will update the wind load tables on TM670 and the Senior Standards Engineer will incorporate the revised drawing in the January 2010 revisions to the Standard Drawings.

The Traffic Structures Engineer will submit a specification revision request to the specifications group to have section 02110.40 updated. This revision will have to be

proposed to the Structures Materials Engineer, who is the technical owner of this section, for acceptance of changing it.

ACTION REQUIRED

The designers that use the Standard drawing TM670 for Wood Sign Supports in contract plans shall use the updated wind load tables starting on projects with the first let date in June 2010. The Effective Date of the TM670 drawing will be June 1, 2010 – November 30, 2010. In addition, the Standard Boiler Plate for section 02110.40 must be used to specify the Douglas Fir No. 1 material.

Designers may use the Douglas Fir No. 1 material in projects let before June 2010, but it must be noted in the project specific plans that the design uses the design wind load tables shown on TM670 with an Effective Date of June 1, 2010 – November 30, 2010. In addition, the special provision section 02110.40 must specify the correct material grade for Douglas Fir No.1.

CONTACT INFORMATION

Title:	Traffic Structures Engineer
Branch/Section:	Traffic-Roadway Section
Phone:	(503) 986-3069
E-mail:	scott.u.jollo@odot.state.or.us