



MINNESOTA DEPARTMENT OF TRANSPORTATION
Program Support Group
Technical Memorandum No. 01-24-TS-09
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To: Distributions 57, 618, and 650
From: Patrick C. Hughes
Director, Program Support Group
Assistant Commissioner
Subject: W-Beam Bull Nose

Expiration

This is a new Technical Memorandum. This Technical Memorandum will remain in effect unless it is superseded or until the information is placed in the Road Design Manual.

Background

As a result of discussions with FHWA and others it has been determined that it is necessary to discontinue the use of the 5 ft (1.5 m) radius, W-beam bullnose. This system has not been tested to the crash worthiness criteria of NCHRP Report 350 and it is not expected that it will meet those criteria if it is tested. A redesign of the system has been ruled out because of developmental complexity and cost.

There is an FHWA approved alternative bullnose that meets the crash worthiness criteria of NCHRP Report No. 350. It is a Thrie-beam system that was developed at the Midwest Roadside Safety Facility in Lincoln, Nebraska. There are other alternatives, depending upon the site and the hazard, that use approved terminals, sand barrels and crash cushions.

Implementation

The 5 ft (1.5 m) radius, W-beam bull nose will no longer be approved for use on new projects or on any new W-beam installations on the National Highway System or the Trunk Highway System. The disposition of existing W-beam bull noses will be as follows:

The 5 ft (1.5 m) radius bull nose must be replaced on any 3R projects or safety improvement projects where the existing guardrail is disturbed.

Other 5 ft (1.5 m) bull noses may remain in place and may be repaired unless the system is severely damaged or becomes functionally deficient for other reasons.

English dimensioned drawings of the Thrie-beam bull nose are complete, and they are available as Standard Plans 5-297.611 (Sheets 1 and 2). A transition from Thrie beam to W-beam rail is provided for with Standard Plan 5-297.614. Standard Plans 5-297.601 (Sheets 1 and 2) illustrate the application of the Thrie beam bull nose.

Systems can be designed using other terminals and crash cushions that are Federally approved as meeting NCHRP Report 350 crash worthiness criteria. The most commonly used terminals are discussed in Chapter 10 of the Road Design Manual, and shown in Figure 10-7.02A through H. Crash cushions are identified in Table 10-8.06A. Each situation will be unique. Designers should consult with their maintenance staff when considering which treatment to use. The issue of parts inventory may influence the decision.

The Design Standards Unit can provide advice on bull nose alternatives and guidance on specific Standards.

Questions

Questions regarding the implementation of this technical memorandum should be addressed to Andrew D. Halverson, Assistant Design Standards Engineer at (651) 296-3023 or andy.lhalverson@dot.state.mn.us.

Any questions regarding publication or distribution of this technical memorandum should be referred to Mohammad Dehdashti, Design Standards Engineer, at (651) 296-4859 or mohammad.dehdashti@dot.state.mn.us, or the Design Services Secretary at (651) 296-2381.
