



December 8, 2008

In Reply Refer To: HSSD/B-185

Mr. Rick Mauer
Outside National Sales Representative
Nucor Steel Marion Inc.
P.O. Box 837
Greenland, NH 03840

Dear Mr. Mauer:

This letter is in response to your request for Federal Highway Administration (FHWA) acceptance of a modification to a Nucor Steel Marion W-beam barrier for use on the National Highway System (NHS).

Name of system: Nu-Guard 27 Barrier System
Blocked Out W-beam 27 to 31 inch heights
Type of system: W-beam guardrail
Test Level: NCHRP Report 350 Test Level-3 (TL-3)
Testing conducted by: Holmes Solutions of New Zealand
Date of request: July 25, 2008

You requested that we find this modified system acceptable for use on the NHS under the provisions of the National Cooperative Highway Research Program (NCHRP) Report 350 "Recommended Procedures for the Safety Performance Evaluation of Highway Features."

Requirements

Roadside safety systems should meet the guidelines contained in the NCHRP Report 350. The FHWA Memorandum "ACTION: Identifying Acceptable Highway Safety Features" of July 25, 1997, provides further guidance on crash testing requirements of longitudinal barriers.

Description

The TL-3 Nu-Guard barrier system consists of Nucor Strong Posts which are hot rolled high tensile steel fabricated into a U cross section of approximately 2" deep and 3-1/2" wide. The weight of each post is 5 pounds per foot. A slot, 3/4" wide is located 1" down from the top of the posts in the middle of the cross section. The slot has a total length of 7". All posts are 78" long and hot dip galvanized. When Nucor posts are used with 27" high non-proprietary W-beam guardrail systems, they are used with the original plastic blockouts, 14" x 3-5/8" which are used to space the guardrail 8" from the face of the U posts. The plastic blockouts are manufactured from a 50 percent blend of new and recycled high density polyethylene (HDPE).

This system was found acceptable in the following the FHWA acceptance letters:

B-162	September 11, 2007	TL-3	U-channel post, w-beam rail 27" w/blockout and 31" w/o blockout & median version
B-162B	June 27, 2008	TL-4	31" w/o blockout

Your present request is for the TL-3 Nu-Guard 27 w-beam barrier system with blockouts to be accepted for use if installed between 27 inches and 31 inches above the nominal ground line.

Crash Testing

Full scale crash testing was conducted on the 27-inch high version with 8-inch deep blockouts and on the 31-inch high version without blockouts. Performance was verified with the pickup at the 27 inch height and with the small car at the 31 inch height. It is apparent that the taller 31-inch rail, with or without blockout, would perform better with the pickup as the additional height would be advantageous with the taller light truck category. The only performance question would be with the small car and the blocked-out 31-inch tall barrier. Because blockouts have been used to enhance the performance of w-beam barriers by reducing vehicle contact with the posts and helping to keep the rail at a proper height to redirect impacting vehicles, we concur that blockouts may be used at rail heights between 27 inches and 31 inches on the NHS under the range of conditions tested, when such use is acceptable to a highway agency.

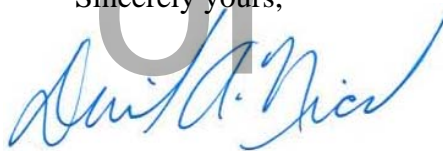
Please note the following standard provisions that apply to the FHWA letters of acceptance:

- This acceptance is limited to the crashworthiness characteristics of the system and does not cover its structural features, nor conformity with the Manual on Uniform Traffic Control Devices.
- Any changes that may adversely influence the crashworthiness of the system will require a new acceptance letter.
- Should the FHWA discover that the qualification testing was flawed, that in-service performance reveals unacceptable safety problems, or that the system being marketed is significantly different from the version that was crash tested, we reserve the right to modify or revoke our acceptance.
- You will be expected to supply potential users with sufficient information on design and installation requirements to ensure proper performance.
- You will be expected to certify to potential users that the hardware furnished has essentially the same chemistry, mechanical properties, and geometry as that submitted for acceptance, and that it will meet the crashworthiness requirements of the FHWA and the NCHRP Report 350.
- To prevent misunderstanding by others, this letter of acceptance is designated as number B-185 and shall not be reproduced except in full. This letter and the test documentation upon which it is based are public information. All such letters and documentation may be reviewed at our office upon request.
- The Nu-Guard barrier systems are patented products and considered proprietary. If proprietary systems are specified by a highway agency for use on Federal-aid projects, except exempt, non-NHS projects, (a) they must be supplied through competitive bidding with

equally suitable unpatented items; (b) the highway agency must certify that they are essential for synchronization with the existing highway facilities or that no equally suitable alternative exists; or (c) they must be used for research or for a distinctive type of construction on relatively short sections of road for experimental purposes. Our regulations concerning proprietary products are contained in Title 23, Code of Federal Regulations, Section 635.411.

- This acceptance letter shall not be construed as authorization or consent by the FHWA to use, manufacture, or sell any patented system for which the applicant is not the patent holder. The acceptance letter is limited to the crashworthiness characteristics of the candidate system, and the FHWA is neither prepared nor required to become involved in issues concerning patent law. Patent issues, if any, are to be resolved by the applicant.

Sincerely yours,



David A. Nicol
Director, Office of Safety Design
Office of Safety

Enclosures

Research
and
Historical
Purposes
Only