



U.S. Department
of Transportation
**Federal Highway
Administration**

1200 New Jersey Ave., S.E.
Washington, DC 20590

September 5, 2008

In Reply Refer To:
HSSD/SS-128 Revised

Mr. Raymond Kisiel
Northwest Pipe Company
6307 Toledo Street
P.O. Box 2002
Houston, TX 77252-2002

Dear Mr. Kisiel:

Thank you for your letter of May 9, 2007, requesting an update to your Federal Highway Administration (FHWA) acceptance letter of your company's Poz Loc Slip base Casting 28339 as a breakaway feature for sign supports for use on the National Highway System (NHS). The update of this letter includes changing the reference from casting 2709 to casting 28339 and an updated drawing that is enclosed. Slight design modifications have been made which include adding a fourth set screw. These modifications will not affect the breakaway performance of this device.

Accompanying your original request letter that was received July 14, 2004, was a report from Texas Transportation Institute (TTI) and videos of the crash tests. You requested that we find this slip base 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." You provided additional information on February 14 and February 22, 2007 in response to our requests.

Introduction

Testing of the supports was in compliance with the guidelines contained in the NCHRP Report 350, Recommended Procedures for the Safety Performance Evaluation of Highway Features. Requirements for breakaway supports are those in the American Association of State Highway and Transportation Officials' Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals.

The test article consisted of a 73 mm (2.875 inch) outside diameter schedule 10 pipe support with a crossbar at the top, and a 1200 x 1200 mm x 16 mm (48 x 48 x 5/8 inch) plywood sign panel attached. The cast iron slip base device weighs 5 kg (11 pounds), the pipe was 4.6 kg (10 pounds, 4 oz.), and the sign panel was 14.8 kg (32 pounds, 8 oz.)



Testing

Pendulum bogie testing was conducted on your company's devices. The mass of the test vehicle was 820 kg in all tests. The complete devices as tested are shown in the Enclosures.

Test #	NCHRP 350	Speed	Impact Height	Occup. Speed	Delta V
1	3-60	35.1 km/hr	18 inches	None	0.47 m/s
2	3-60	35.1 km/hr	24 inches	None	0.47 m/s

Occup. Speed: Occupant Impact Speed: Speed at which a theoretical front seat occupant will contact the windshield. In meters per second.

Delta V: Speed change of the test vehicle. In meters per second.

Test #1 was conducted at the typical 18-inch bumper height for small cars (and pendulum bogie noses.) Test #2 was conducted at 24 inches above the ground to investigate a concern of the Texas Department of Transportation regarding the bending of thinner wall tubes. They surmised that low speed impacts with taller vehicles, especially in the light truck class, could cause a bending failure prior to slip activation. The slip base performed as intended at both heights. Calculations based on the FHWA memorandum of November 12, 1993, performed by the TTI show the expected velocity change during a 100-km/hr impact to be 0.48 m/s.

Findings

The results of the low-speed bogie testing and the high speed extrapolations met the FHWA requirements and, therefore, the devices described above and shown in the enclosed drawings for reference are acceptable for use as test level 3 devices on the NHS under the range of conditions tested, when proposed by a State.

FHWA accepts the results of testing conducted on torque values for slip base systems performed by TTI in 2001 that revealed the torque values for the keeper bolts may be increased from 38 foot-lbs. to 80 foot-lbs. The use of these increased torque values for keeper bolts is acceptable with the Poz-Loc 10 inch round slip base systems and this modification also applies to FHWA Acceptance letter SS-65.

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

- This acceptance is limited to the crashworthiness characteristics of the devices and does not cover their structural features, nor conformity with the Manual on Uniform Traffic Control Devices.
- Any changes that may adversely influence the crashworthiness of the device 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 device being marketed is significantly different from the version that was crash tested, it reserves the right to modify or revoke its 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 they will meet the crashworthiness requirements of the FHWA and the NCHRP Report 350.
- To prevent misunderstanding by others, this letter of acceptance, designated as number SS-128, shall not be reproduced except in full. This letter, and the test documentation upon which this letter is based, is public information. All such letters and documentation may be reviewed at our office upon request.
- The device is a patented product and considered proprietary. If proprietary devices are specified by a highway agency for use on Federal-aid projects, except exempt, non-NHS projects, they: (a) 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 device for which the applicant is not the patent holder. The acceptance letter is limited to the crashworthiness characteristics of the candidate device, 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,

A handwritten signature in blue ink that reads "George E. Rice, Jr." with a stylized flourish at the end.

George E. Rice, Jr.
Acting Director, Office of Safety Design
Office of Safety