

Refer to: HSA-10/SS-118

Mr. Michael Conner, Vice President
HWYCOM
110 West 22nd Street
P.O. Box 3010
Big Spring, Texas 79721

Dear Mr. Conner:

Thank you for your letter, received April 30, requesting Federal Highway Administration (FHWA) acceptance of your company's triangular slip base as a breakaway sign support system for use on the National Highway System (NHS). Accompanying your request was a letter report from the Texas Transportation Institute and videos of the crash tests. You requested that we find the slip base acceptable for use on the NHS under the provisions of National Cooperative Highway Research Program (NCHRP) Report 350 "Recommended Procedures for the Safety Performance Evaluation of Highway Features."

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.

Testing

Low speed pendulum 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. The pipe used as the sign support had an outside diameter of 2.875 inches, and a wall thickness of 0.120 inches, (the Texas Department of Transportation standard sign post pipe).

The Low Profile Mounting tested in UAS P4 was bolted directly to the "ground". The Concrete Foundation in UAS P5 was 8 inches in diameter and 30 inches deep, and was cast in NCHRP 350 "weak" soil. Slip-base bolts were torqued to 40 ft-lbs .

Test #	NCHRP 350	Speed	Version	Occup. Speed	Delta V
UAS P4	3-60	33.6 km/h	Low Profile Mounting	1.1 m/s	0.59 m/s

UAS P5	3-60	35.2 km/h	Concrete Footer in S2 Soil	1.5 m/s	0.51 m/s
UAS P4	Extrapolation	100 km/h	Low Profile Mounting		0.50 m/s
UAS P5	Extrapolation	100 km/h	Concrete Footer in S2 Soil		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.

Findings

Velocity changes were all within acceptable limits, and the only stubs remaining were the low profile base plate in test UAS P4, the top surface of which was 2 inches above the “ground”, and the lower slip plate in test UAS P5, the top of which was 4 inches above the soil. Although interface washers were not used during the test you require that they be used in service. This is acceptable as the interface washers can only improve the breakaway performance and are standard hardware on most other slip base systems.

The results of testing 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.

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

- Our 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 FHWA and NCHRP Report 350.

- To prevent misunderstanding by others, this letter of acceptance, designated as number WZ-118 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 HWYCOM Universal Anchor Triangular Slip Base is a patented device and is considered "proprietary." The use of proprietary work zone traffic control devices in Federal-aid projects is generally of a temporary nature. They are selected by the contractor for use as needed and removed upon completion of the project. Under such conditions they can be presumed to meet requirement "a" given below for the use of proprietary products on Federal-aid projects. On the other hand, if proprietary devices are specified 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 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, a copy of which is enclosed.
- This acceptance letter shall not be construed as authorization or consent by the FHWA to use, manufacture, or sell any patented device. Patent issues are to be resolved by the applicant and the patent owner.

Sincerely yours,

Michael S. Griffith
Acting Director, Office of Safety Design
Office of Safety

Enclosure

FHWA:HSA-10:NArtimovich:tb:x61331:7/28/03

File: h://directory folder/nartimovich/SS118-HwyComFIN

cc: HSA-10 (Reader, HSA-1; Chron File, HSA-10;
N. Artimovich, HSA-10)