

Refer to: HSA-10/LS-52

Armand A. Damiano, P.E.
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Dear Mr. Damiano:

Thank you for your March 1 letter to Mr. Nicholas Artimovich of my office requesting Federal Highway Administration (FHWA) acceptance of your company's breakaway coupling for use with luminaire supports on the National Highway System (NHS). Accompanying your letter was a report from E-Tech Testing Services and videos of the crash tests. You requested that we find Valmont's Pro-Tech couplings 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." Your email of May 29 provided additional information in response to our request.

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

Pendulum testing was conducted on a steel light pole with four Pro-Tech couplings positioned to support a 254.0 mm base diameter. The height of the tapered pole was 15 240 mm, and its wall thickness was 3.04 mm. The mass of the test article was 320 kg, and the mass of the pendulum bogie was 845 kg. The couplings were fastened to a rigid steel foundation with 25.4 mm diameter SAE J429 GD 8 galvanized studs. The couplings were torqued to the manufacturer's specifications. The support pole base was positioned and fastened to the top of the couplings with additional 25.4 mm bolts. The heavy hex nuts were torqued according to the manufacturer's specifications. The devices as tested are shown in the enclosures.

| Test # | NCHRP 350 | Speed | Article | Occup. Speed | Delta V |
|--------|---------------|------------|------------------|--------------|----------|
| 1 | 3-60 | 34.9 km/h | Valmont Pro-Tech | no contact | 3.30 m/s |
| 2 | Extrapolation | (100 km/h) | | n/a | 4.76 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 maximum stub height was 26 mm. 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, which 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 LS-52 shall not be reproduced except in full. As this letter and the supporting documentation, which support it, become public information, it will be available for inspection at our office by interested parties.

The Valmont Pro-Tech coupling is or will be a patented product and is considered "proprietary." The use of proprietary devices specified on Federal-aid projects, except exempt, non-NHS projects: (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.

Sincerely yours,

Carol H. Jacoby, P.E.
Director, Office of Safety Design

Enclosure



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Valmont Industries, Inc.
Pro-Tech
Breakaway Support System

Test Report No: 162
Issue Date: February 19, 2002
Revision: 0 (supercedes earlier revisions)

Enclosure 1
Test Item Photograph



