



U.S. Department
of Transportation

**Federal Highway
Administration**

400 Seventh St., S.W.
Washington, D.C. 20590

JUL 7 2006

In Reply Refer To:
HSA-10/SS-139

Mr. Clifford Dent
P.O. Box 6007
Farmington, New Mexico 87499

Dear Mr. Dent:

Thank you for your letter sent May 12 requesting the Federal Highway Administration's (FHWA) acceptance of your company's fuse plate for use with breakaway sign supports on the National Highway System (NHS). Based on full scale crash tests of generic perforated fuse plates by others and static testing that compared your design with the generic design, you requested that we find Dent Fuse Plates 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."

Many States have found that slotted fuse plates slip and fail under some wind and vibration conditions. The generic perforated fuse plates developed by Texas to solve this problem do not always release completely upon vehicle impact. The Dent Fuse Plate is an attempt to improve the breakaway performance of crashworthy sign supports while avoiding unintended sign "blow downs" in high winds.

Accompanying your letter was a report by Exponent Failure Analysis Associates of static laboratory testing of your fuse plate design and of the generic perforated fuse plates. Both were tested on the following sizes of wide flange steel beams:

S4 x 7.7
W6 x 9
W6 x 15
W8 x 18

In each case the force required to release your fuse plate was less than that required to release the generic design. This indicates that the breakaway performance of these wide flange posts mounted on approved breakaway supports would be improved using Dent Fuse Plates. As you



discussed with Mr. Artimovich of my office, we would still recommend that full-scale automobile or bogie testing (not pendulum) of a dual-leg wide-flanged signpost installation be conducted with a production model Dent Fuse Plates in place in the near future.

The Dent Fuse Plates, as shown in the enclosed drawings for reference are acceptable for use as Test Level 3 devices on the NHS under the conditions noted above, when proposed by a State. The plate designed for the S-3 x 5.7 post will also be acceptable for use. The W6 x 9 Plate will also be acceptable when modified to be used with the 4 x 4 inch square tube sign support.

Please note the following standard provisions that apply to the 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 the FHWA and the NCHRP Report 350.
- To prevent misunderstanding by others, this letter of acceptance, designated as number SS-139, 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.
- This is a patented device and is considered "proprietary." When proprietary devices are *specified by a highway agency* for use on Federal-aid 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 existing highway facilities or that no equally suitable alternative exists; (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 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,



John R. Baxter, P.E.
Director, Office of Safety Design
Office of Safety

Enclosure

FHWA:HSA-10:NArtimovich:tb:x61331:7/3/06

File: h://directory folder/artimovich/SS139-DentFuseFIN.doc

cc: HSA-10 (Reader, HSA-1; Chron File, HSA-10; NArtimovich, HSA-10;
MMcDonough, HSA-10)