U.S. Department of Transportation
Federal Highway Administration

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

July 23, 2007

In Reply Refer To:
HSSD/WZ-103A (**REVISED)**

Mr. Jan Miller
Eastern Metal/USA Sign
1430 Sullivan Street
Elmira, NY 14901-1698

Dear Mr. Miller:

Thank you for your letter of November 19, 2001, amended via facsimile on December 19, 2001, requesting the Federal Highway Administration (FHWA) acceptance of a number of your company's portable signs and stands as crashworthy traffic control devices for use in work zones on the National Highway System (NHS). You requested that we find these devices 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" based on prior crash testing of your devices and interpolation of results.

Introduction
The FHWA guidance on crash testing of work zone traffic control devices is contained in two memoranda. The first, dated July 25, 1997, titled "INFORMATION: Identifying Acceptable Highway Safety Features," established four categories of work zone devices: Category I devices were those lightweight devices which could be self-certified by the vendor, Category II devices were other lightweight devices which needed individual crash testing, Category III devices were barriers and other fixed or massive devices also needing crash testing, and Category IV devices were trailer mounted lighted signs, arrow panels, etc. The second guidance memorandum was issued on August 28, 1998, and is titled "INFORMATION: Crash Tested Work Zone Traffic Control Devices." This later memorandum lists devices that are acceptable under Categories I, II, and III.

A brief description of your requests follows:

Request 1. X-602 Hi-level Spring Stand with frangible coupling, for use with 48 inch diamond, 48 x 60 inch and other sized signs of 0.100 and 0.125 inch thick solid aluminum substrates, and hollow-core 5/8 inch thick, blow molded HD Polyethylene substrate with waffle pattern tack-offs and radius corners, as furnished by the Stabler Companies, mounted at the tested height of 60 inches above grade.

The X-602 stand was accepted in our letter WZ-78A dated June 15, 2001. It was tested with 48 x 48 diamond signs of 0.080 aluminum and 5/8 inch plywood mounted at 60 inches. The tested signs weighed 18 pounds and 30 pounds respectively. This range brackets the weights of the signs you are presently requesting for use with this stand: 22.6 pounds (0.100 inch thick) and 28.25 pounds (0.0125 inch thick). The high density polyethylene (HDPE) substrate has not been crash tested, but because its properties are within the bounds of the plywood and the Endurance substrates, both of which have been successfully crash tested on this stand, it will be acceptable for use.

Because this stand performed in an acceptable manner due in large part to the frangible coupling we concur that the three requested signs will also be acceptable for use.

Request 2. Type III Barricade with reinforced plastic posts or perforated square steel tube post and skid system, using Semi-Rigid plastic plank rails. To be used with 48 x 48, 60 x 48 and smaller signs of Roll-up, corrugated plastic, hollow-core 5/8 inch thick, blow molded HD Polyethylene substrate with waffle pattern tack-offs and radius corners as furnished by the Stabler Companies, Endurance, and 0.080 inch aluminum panels mounted to lengthened accepted post system 60 inches or more above grade, above the 3-barricade rails.

Testing was conducted by others on type III barricades. Generic Type III barricades and acceptable signs to be mounted are covered in our acceptance letter WZ-85 dated November 15, 2001, a copy of which is enclosed. It permits the use of lightweight substrate signs attached to the face of the barricade, but not aluminum or plywood. Your request, however, is for aluminum signs (and the lightweight signs) mounted above the top rail. We concur in the use of these substrates and different shapes as long as the height to the top of the sign is kept at 128 inches (this is the height to the top of a 48 x 48 mounted at 60 inches above the pavement).

Request 3. E-350 Heavy Duty Tripod Stand with 48 x 48 diamond and smaller signs of 5/8 inch plywood, 0.100 and 0.125 solid aluminum, and hollow-core 5/8 inch thick, blow molded HD Polyethylene substrate with waffle pattern tack-offs and radius corners, as furnished by the Stabler Companies.

The E-350 was accepted in our letter WZ-78A with various substrates, mounted at 15 inches above the pavement, the heaviest of which was the hinged ABS at 23.25 pounds. Based on this test series as well as others conducted on various portable sign stands with the full range of sign substrates, we observed that the weight and erratic performance of the hinged solid ABS material qualifies this item as the “worst case” substrate. Your request is to use 5/8 inch plywood (30 pounds), 0.125 aluminum (28.25 pounds), and 0.100 aluminum (22.6 pounds). We concur with your request for acceptance of additional substrates based on the successful crash testing of the “worst case” impact performance hinged 0.250 inch hinged solid ABS plastic in addition to various rigid and semi-rigid substrates.

Request 4a. X-550 series mid-size stands with hollow-core 5/8 inch thick, blow molded HD Polyethylene substrate with waffle pattern tack-offs and radius corners, as furnished by the Stabler Companies.

The X-550 stands (Model X-552, Model X-553) have been crash tested with various substrates that bracket the weight and rigidity properties of the HDPE substrate, therefore it will be acceptable for use under the same conditions and mounting heights (15 inches) as the other substrates were tested.

Request 4. The X-550 Series stand has been successfully tested with 0.080 aluminum and found acceptable in the FHWA acceptance letter WZ-78A. The X-550b stand includes a frangible aluminum mast that is similar in design and performance to another manufacturer's mid-height breakaway stand that was successfully tested with 0.080 aluminum and acceptance was extrapolated to include 15 mm (5/8 inch thick) plywood. Your request is for acceptance of the X-550b stand with 5/8 inch plywood, 0.100 aluminum and 0.125 aluminum. Successful tests conducted on the X-600 Series with plywood and other substrates indicate the significant contribution of the Frangible Mast System. By integrating this feature into the X-550 Series you believe that the performance of this system will be comparable to the other manufacturer's mid-sized dual spring breakaway sign stand currently accepted for use with various rigid and semi-rigid substrates.

Clearly the safer, lighter weight substrates ought to be used in any mid-height stand. However, in order to promote a level playing field among similar product manufacturers, we will consider the use of 5/8 inch plywood on the X-550b stand as acceptable but marginal. Substrates of 0.100 aluminum are also acceptable. However because of reservations regarding weight and thickness of the thicker 0.125 inch aluminum, we are withholding acceptance of the stand with that material.

Findings
Your requests 1), 2), 3), 4a), and 4) are acceptable as you asked with the exception of 0.125 aluminum in Request 4. Request 4 concerning the 5/8 plywood is considered acceptable but marginal.

The devices described above are acceptable for use on the NHS under the range of conditions tested, or under the extrapolation conditions discussed above in your four requests, when proposed by a State.

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 WZ-103A 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 devices described above are patented products 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,

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