Refer to: HSA-10/WZ-134

Mr. Larry W. Brown
New York State Department of Transportation
Albany, New York 12232

Dear Mr. Brown:

Thank you for your letter of October 11, 2002, requesting Federal Highway Administration (FHWA) acceptance of your state's temporary lumber sign support as a crashworthy traffic control device for use in work zones on the National Highway System (NHS). Accompanying your letter were drawings of the support and a verbal comparison to a similar crash tested support. You requested that we find this device 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." You provided additional information, including drawings, on February 24, 2003.

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 the device\s follows:

The **NYS DOT Temporary Lumber Sign Support** consists of two 8-foot long uprights of nominal 2x4 inch lumber. The skids are also 2x4 inches and are 48 inches long. The diagonals are also 2x4s. The crash tested support, as detailed in FHWA Acceptance Letter WZ-3 dated August 28, 1998, uses 4x4 inch uprights that are 9 feet long, and 2x6 inch skids that are 72 inches long. The tested support also uses 2x4 inch diagonals, but only one pair on the downstream side of the uprights.

The cross section of the uprights and skids of the NYS DOT support are smaller than the crash tested support and are likely to result in equal or better performance than the tested support. Drawings of your sign stand, in English and Metric units, are enclosed for reference. The only

significant differences between the NYS DOT support and the tested support that could lead to poor performance are the height of the uprights and the presence of four diagonal braces, as discussed below:

1. Height of sign: The tested device used 9 foot long uprights and supported the sign at a height of 5 feet above the pavement. At this height, the head-on test allows the sign to pass over the vehicle with little or no contact. At the 90 degree hit, however, the corner of the sign does contact the roof and cause minor deformation. If the sign is mounted any lower it is possible that the edge of the sign could impact the windshield and cause unacceptable damage. Therefore it is important that 48x48 diamond signs are mounted at a minimum height of 5 feet to the bottom, and other size/shape signs be mounted as high on the support as possible. This is noted on your drawing.

2. Diagonal bracing: The tested support used one pair of diagonals on the downstream side of the uprights. This is the most critical location as the tops of the braces are "aimed" towards the impacting vehicle. No tendency for the diagonals to exacerbate the damage was noted. In the NYS DOT design, the second pair of diagonal braces is in a position to be struck first by the vehicle and knocked down and out of harm's way. Therefore the extra braces should not adversely affect the performance of the stand.

Findings

Because the NYS DOT temporary lumber sign support is comparable to the tested lumber sign stand, it may also be considered crashworthy with the restriction that the signs must be mounted at a minimum height of 5 feet from the ground (for diamond signs. Rectangular signs must be mounted as high as practical.) Therefore, the sign stand described above and shown in the enclosed drawings for reference is acceptable for use as a Test Level 3 device on the NHS under the range of conditions the comparable sign was 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.

- The fabricator will be expected to certify to potential users that the hardware

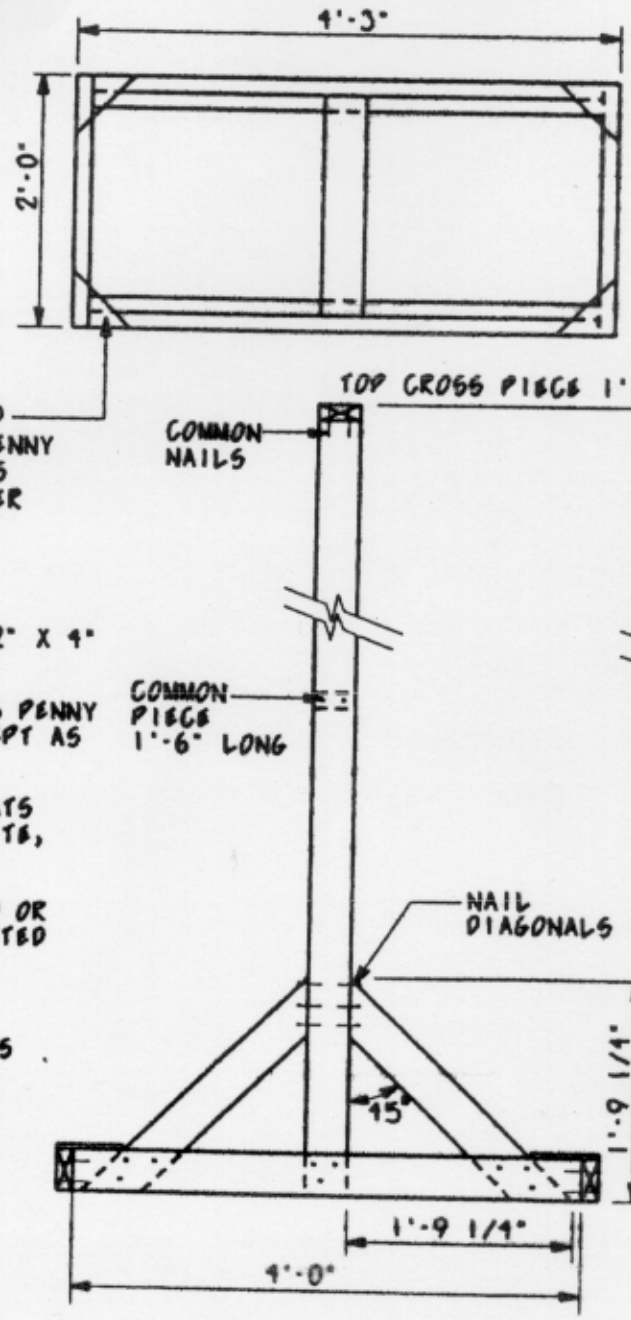
furnished has essentially the same mechanical properties and geometry as that submitted for acceptance, and that they will meet the crashworthiness requirements of FHWA and NCHRP Report 350.

- To prevent misunderstanding by others, this letter of acceptance, designated as number WZ-134 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.

Sincerely yours,

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

FHWA:HSA-10:NArtimovich:tb:x61331:2/28/03
File: WZ134-NYSlumberFIN.wpd
cc: HSA-10 (Reader, HSA-1; Chron File, HSA-10;
N. Artimovich, HSA-10)



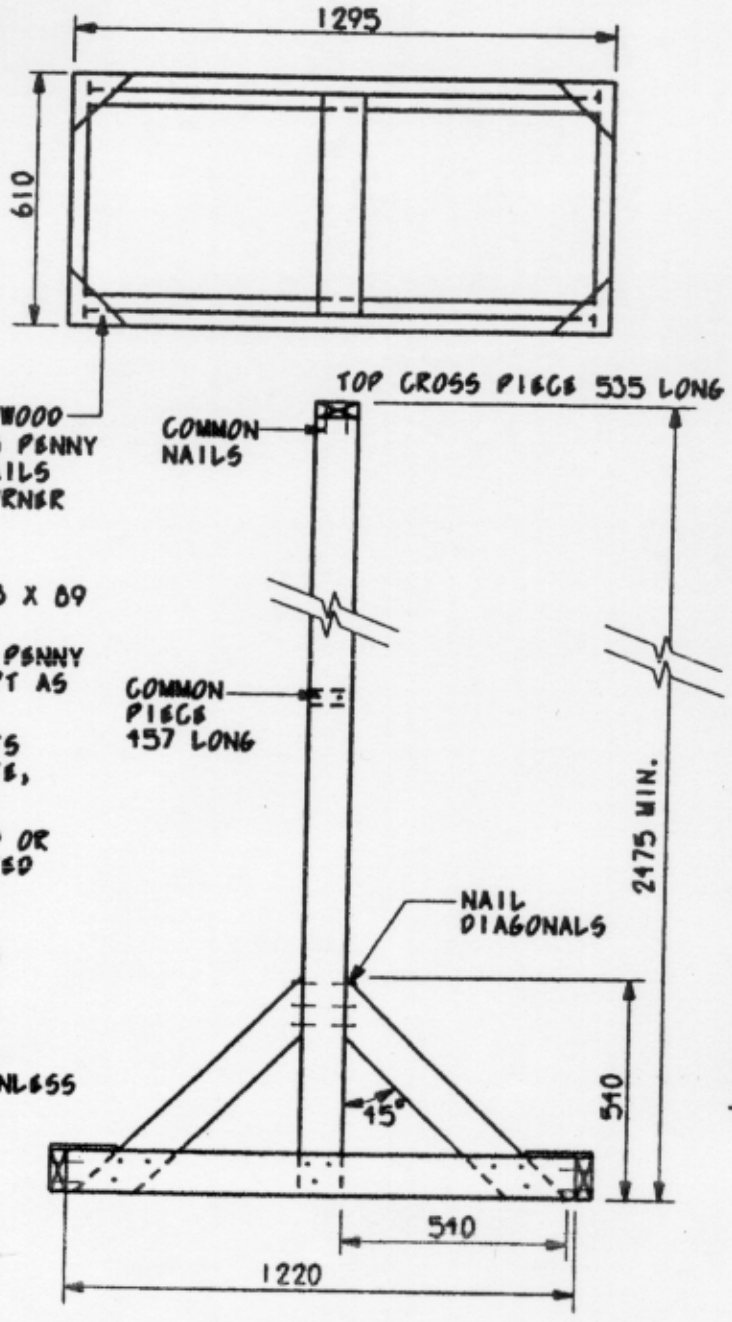
NOTES:

1. ALL LUMBER 2" X 4" NOMINAL
2. NAILS ARE 16 PENNY COMMON, EXCEPT AS NOTED.
3. PAINT, 2 COATS EXTERIOR WHITE, IF DIRECTED
4. 1/2" PLYWOOD OR OTHER PERMITTED RIGID SIGN SUBSTRATE
5. BALLAST SKIDS W/ SANDBAGS AS NECESSARY
5. CLINCH NAILS IF POINTS ARE EXPOSED.

NOTE: SIGN MOUNTING HEIGHT 5'-0" MINIMUM TO BOTTOM OF SIGNS WITH RIGID SUBSTRATES. NOT APPLICABLE WITH RIGID LIGHTWEIGHT PLASTIC SUBSTRATE.

TEMPORARY LUMBER SIGN SUPPORT

SCALE: NONE
FEBRUARY 24, 2003



NOTES:

1. ALL LUMBER 38 X 89 ACTUAL
2. NAILS ARE 16 PENNY COMMON, EXCEPT AS NOTED.
3. PAINT, 2 COATS EXTERIOR WHITE, IF DIRECTED
4. 12 MM PLYWOOD OR OTHER PERMITTED RIGID SIGN SUBSTRATE
5. BALLAST SKIDS W/ SANDBAGS AS NECESSARY
6. DIMENSIONS IN MILLIMETERS UNLESS AS NECESSARY
7. CLINCH NAILS IF POINTS ARE EXPOSED.

NOTE: SIGN MOUNTING HEIGHT 1.5 M MINIMUM TO BOTTOM OF SIGNS WITH RIGID SUBSTRATES. NOT APPLICABLE WITH RIGID LIGHTWEIGHT PLASTIC SUBSTRATE.

TEMPORARY LUMBER SIGN SUPPORT

SCALE: NONE
FEBRUARY 24, 2003