



U.S. Department  
of Transportation  
**Federal Highway  
Administration**

March 10, 2011

1200 New Jersey Ave., SE  
Washington, D.C. 20590

In Reply Refer To:  
HSST/WZ-301

Mr. Henry A. Ross  
Director of Government Relations  
Plasticade Products  
7700 N. Austin Avenue  
Skokie, Illinois 60077

Dear Mr. Ross:

This is in response to your October 8, 2010, letter requesting the Federal Highway Administration's (FHWA) acceptance of your company's Navicade™ Traffic Channelizing Cone with a lightweight warning light attached as a crashworthy traffic control device for use in work zones and elsewhere on the National Highway System (NHS). Accompanying your letter was the FHWA Office of Safety Design form indicating successful performance when tested under the American Association of State Highway and Transportation Officials (AASHTO) Manual for Assessing Safety Hardware (MASH) Test 3-71 (modified.)

You requested that we find the Navicade™ Traffic Channelizing Cone acceptable for use with lightweight warning lights on the NHS under the provisions of the AASHTO MASH. Evaluation with the 1100C passenger car at low speed (Test 3-70), and the 2270P pickup-truck at high speed (3-72) are requirements under the MASH. Your request was accompanied by a January 17, 2010, letter from E-Tech Testing Services requesting a waiver of both MASH Tests 3-70 and 3-72 because of the nature of the test articles and geometry of the vehicles. We concur in the waiver of these tests.

This letter is the acknowledgement of the FHWA's acceptance of your request. The original completed form has been modified by the addition of the FHWA acceptance letter number and the date of our review. The form, of which a copy is enclosed for reference, will be posted on our Web site in the near future.

Sincerely yours,

Michael S. Griffith  
Director, Office of Safety Technologies  
Office of Safety

Enclosures



|                                     |                                                                                                                                                                                                                                                                                                                                     |                 |
|-------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
| Page 1                              | <b>FEDERAL HIGHWAY ADMINISTRATION<br/>OFFICE OF SAFETY DESIGN</b>                                                                                                                                                                                                                                                                   | Letter Number   |
|                                     | <b>Category 2 Work Zone Device Acceptance Letter</b>                                                                                                                                                                                                                                                                                | <u>WZ-301</u>   |
|                                     |                                                                                                                                                                                                                                                                                                                                     | Date            |
|                                     |                                                                                                                                                                                                                                                                                                                                     | <u>3-8-2011</u> |
| Contact Info                        | Petitioner / Developer Name and Address:                                                                                                                                                                                                                                                                                            |                 |
|                                     | Plasticade Products (An American Louver Co.)<br>7700 N. Austin Avenue<br>Skokie, IL 60077                                                                                                                                                                                                                                           |                 |
|                                     | I hereby certify that the device(s) covered by this Acceptance Letter meet(s) the crash – worthiness test and evaluation requirements of the FHWA and NCHRP Report 350.                                                                                                                                                             |                 |
| Signature                           |                                                                                                                                                                                                                                                                                                                                     |                 |
| Telephone #                         | 847-583-4175                                                                                                                                                                                                                                                                                                                        |                 |
| Email Address                       | Henry Ross [hross@americanlouver.com]                                                                                                                                                                                                                                                                                               |                 |
|                                     | Laboratory / Engineer Name and Address                                                                                                                                                                                                                                                                                              |                 |
|                                     | John F. LaTurner, P.E.<br>E-TECH Testing Service, Inc.<br>3617 Cincinnati Ave.<br>Rocklin, CA 95765                                                                                                                                                                                                                                 |                 |
| Check One:                          |                                                                                                                                                                                                                                                                                                                                     |                 |
| <input checked="" type="checkbox"/> | I hereby certify that the testing that supports this Acceptance Letter was conducted in accordance with MASH guidelines, that the device(s) tested is/are accurately described on this form, and that the test results indicate that the device meets all applicable MASH evaluation criteria.                                      |                 |
| <input type="checkbox"/>            | I have evaluated the requested modifications to these devices previously found acceptable by the FHWA in Acceptance Letter WZ-___, and hereby certify that, in my opinion, the modifications do not adversely affect the crash performance of the devices. I also certify that these devices are accurately described on this form. |                 |
| Signature                           | <i>John F. LaTurner</i>                                                                                                                                                                                                                                                                                                             |                 |
| Telephone #                         | 916-644-9146                                                                                                                                                                                                                                                                                                                        |                 |
| Email Address                       | John LaTurner [john.laturner@trin.net]                                                                                                                                                                                                                                                                                              |                 |
| Keywords:                           |                                                                                                                                                                                                                                                                                                                                     |                 |
|                                     | Type of Device (See page 3)                                                                                                                                                                                                                                                                                                         |                 |
|                                     | Channelizing Cone                                                                                                                                                                                                                                                                                                                   |                 |
|                                     | Composition of Sign or Rail substrate (See Page 3)                                                                                                                                                                                                                                                                                  |                 |
|                                     | Blow Molded UV stabilized high-density polyethylene plastic                                                                                                                                                                                                                                                                         |                 |
|                                     | Thickness of substrate (inches): N/A                                                                                                                                                                                                                                                                                                |                 |
|                                     | Height of sign from the ground (inches), if applicable: (See Page 3)                                                                                                                                                                                                                                                                |                 |
|                                     | N/A                                                                                                                                                                                                                                                                                                                                 |                 |
|                                     | Flags and or lights present during test? Indicate number of each:                                                                                                                                                                                                                                                                   |                 |
|                                     | # of flags: (0) # of lights: (1) Weight of lights: 2.6 lb ea.                                                                                                                                                                                                                                                                       |                 |
| Device Name                         | Navicade Channelizing Cone                                                                                                                                                                                                                                                                                                          |                 |

|                                                                                                                                |                                                                                                                                             |
|--------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| Detailed Desc.<br>Of Device,<br>Materials, sizes,<br>Fasteners,<br>Substrates<br>Foundation,<br>Aux. Features<br>Ballast, etc. | (May be attached on separate page(s)<br><br>See attached "MASH Crash Test Results for the Navicade<br>Channelizing Cone" E-TECH Report #364 |
|--------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|

|             |                                                                                                              |                                              |                    |
|-------------|--------------------------------------------------------------------------------------------------------------|----------------------------------------------|--------------------|
| Page 2      | <b>FEDERAL HIGHWAY ADMINISTRATION<br/>OFFICE OF SAFETY DESIGN</b>                                            |                                              | Letter Number      |
|             | <b>Category 2 Work Zone Device Acceptance Letter</b>                                                         |                                              | <b>WZ-301</b>      |
|             |                                                                                                              |                                              | Date <b>3-8-11</b> |
|             | <b>Mandatory Attachments</b>                                                                                 |                                              |                    |
|             | <b>Attachment # 1: Test data summary page(s)</b>                                                             |                                              |                    |
|             | Attach. #1a                                                                                                  | Test # 76-6273-001 (MASH Test 3-71 modified) |                    |
|             | Attach. #1b                                                                                                  | Test #                                       |                    |
|             | Attach. #1c                                                                                                  | Test #                                       |                    |
|             | Attach. #1d                                                                                                  | Test #                                       |                    |
| Alternative | <b>Attachment # 1: Description and discussion of modification(s) to crash tested and/or accepted device.</b> |                                              |                    |
|             | Date:                                                                                                        |                                              |                    |
|             | <b>Attachment # 2: PDF drawing(s) of device(s)</b>                                                           |                                              |                    |
|             | Attach. #2a                                                                                                  | Drawing Title:                               |                    |
|             |                                                                                                              | Drawing #:                                   |                    |
|             | Attach. #2b                                                                                                  | Drawing Title:                               |                    |
|             |                                                                                                              | Drawing #:                                   |                    |
|             | Attach. #2c                                                                                                  | Drawing Title:                               |                    |
|             |                                                                                                              | Drawing #:                                   |                    |
|             | Attach. #2d                                                                                                  | Drawing Title:                               |                    |
|             |                                                                                                              | Drawing #:                                   |                    |
|             | Attach. #2e                                                                                                  | Drawing Title:                               |                    |
|             |                                                                                                              | Drawing #:                                   |                    |
|             | Attach. #2f                                                                                                  | Drawing Title:                               |                    |
|             |                                                                                                              | Drawing #:                                   |                    |
|             | Attach. #2g                                                                                                  | Drawing Title:                               |                    |
|             |                                                                                                              | Drawing #:                                   |                    |



|        |                                                      |               |
|--------|------------------------------------------------------|---------------|
| Page 3 | <b>FEDERAL HIGHWAY ADMINISTRATION</b>                | Letter Number |
|        | <b>OFFICE OF SAFETY DESIGN</b>                       | WZ-301        |
|        | <b>Category 2 Work Zone Device Acceptance Letter</b> | Date 3-8-17   |
|        |                                                      |               |

**Please select from the following Keywords for “Type of Device”:**

Longitudinal Channelizing Barricade  
 Curb (Curb channelizer system with or without road tubes or other channelizers)  
 Drum  
 H-Footprint Sign Stand  
 X-Footprint Sign Stand  
 Trailer Mounted Signs (Does not include arrow boards or variable message signs or other Category 4 trailer mounted devices.)  
 Automated Flagger Device (not trailer mounted)  
 Tripod Sign Stand  
 Type I Barricade  
 Type II Barricade  
 Type III Barricade  
 Vertical Panel  
 Intrusion Detector  
 Ballast (Action relates to ballast on one or more devices)  
 Channelizer (Individual units unlike cones, road tubes, or drums)

**Please select from the following Keywords for “Sign Substrate”:**

Roll-up / Fabric (with fiberglass spreaders – aluminum or steel spreaders are not allowed.)  
 Plywood  
 Aluminum – Solid  
 Aluminum – Laminate  
 Corrugated Plastic  
 Extruded Plastic  
 Waffleboard Plastic  
 Wood / Lumber

**Please select from the following Keywords for “Height of Sign”:**

The distance to the lowest point on the sign is:

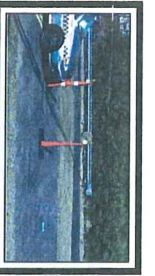
Low 12 to 18 inches above the pavement  
 Mid-A 20 to 24 inches above the pavement  
 Mid-B 25 to 36 inches above the pavement  
 Mid-C 37 to 59 inches above the pavement  
 Tall 60 to 71 inches above the pavement  
 Oversized 72 inches and taller

|        |                                                                                                            |  |  |               |
|--------|------------------------------------------------------------------------------------------------------------|--|--|---------------|
| Page 4 | FEDERAL HIGHWAY ADMINISTRATION<br>OFFICE OF SAFETY DESIGN<br>Category 2 Work Zone Device Acceptance Letter |  |  | Letter Number |
|        |                                                                                                            |  |  | WZ-301        |
|        |                                                                                                            |  |  | Date 3-8-11   |
|        |                                                                                                            |  |  |               |

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, or 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 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.
- If the subject of this letter is a patented device it 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 by a highway agency* for use on Federal-aid 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 Federal Highway Administration 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.





t = 0.000 sec

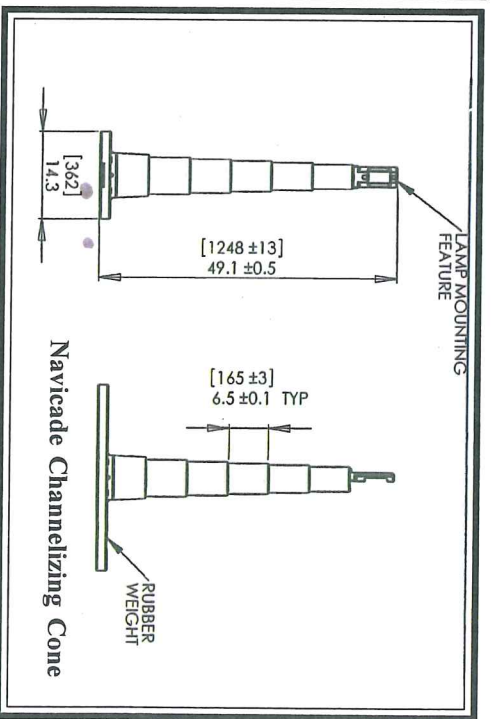
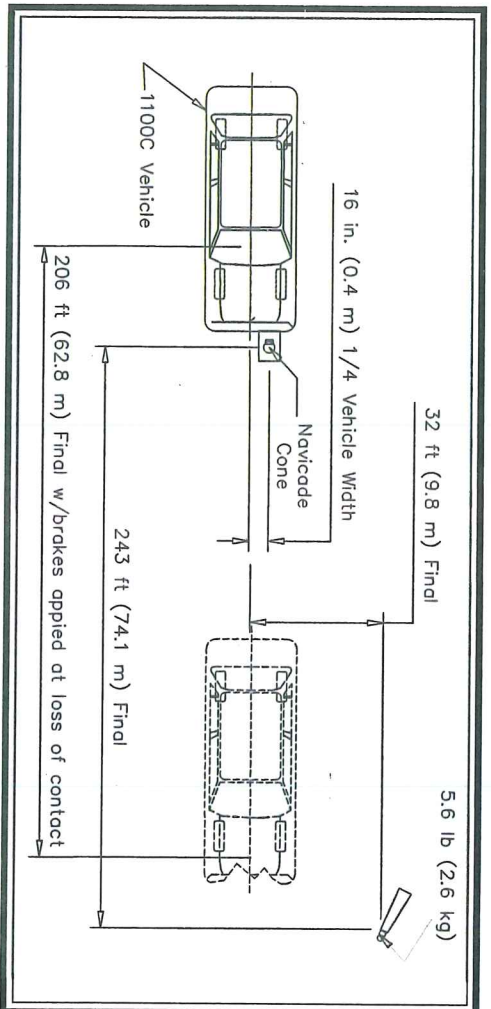
t = 0.020 sec

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**General Information**

Test Agency ..... E-TECH Testing Services, Inc.  
 Test Designation ..... MASH Test 3-71 (modified)  
 Test No. .... 76-6273-001  
 Date ..... 8/11/10  
 Test Article .....

**Test Vehicle**

Type .....  
 Designation .....  
 Model .....  
 Dimensions .....  
 Material and key elements .....  
 Foundation Type and Condition .....  
 Production Model .....  
 Type .....  
 Designation .....  
 Model .....

**Mass**

Curb ..... 2476 lb (1123 kg)  
 Test Inertial ..... 2480 lb (1125 kg)  
 Dummy ..... Not Used  
 Gross Static ..... 2480 lb (1125 kg)

**Impact Conditions**

Speed ..... 62.8 mi/h (101.1 km/h)  
 Angle (deg) ..... 0 at 1/4 Vehicle Width  
 Impact Severity ..... 327.2 ft-kip (443.6 kJ)  
 Exit conditions .....

**Occupant Risk Values\*\***

Post-Impact Vehicular Behavior (deg) \*\*  
 Vehicle Damage (Normal Orientation Impact)  
 Exterior .....

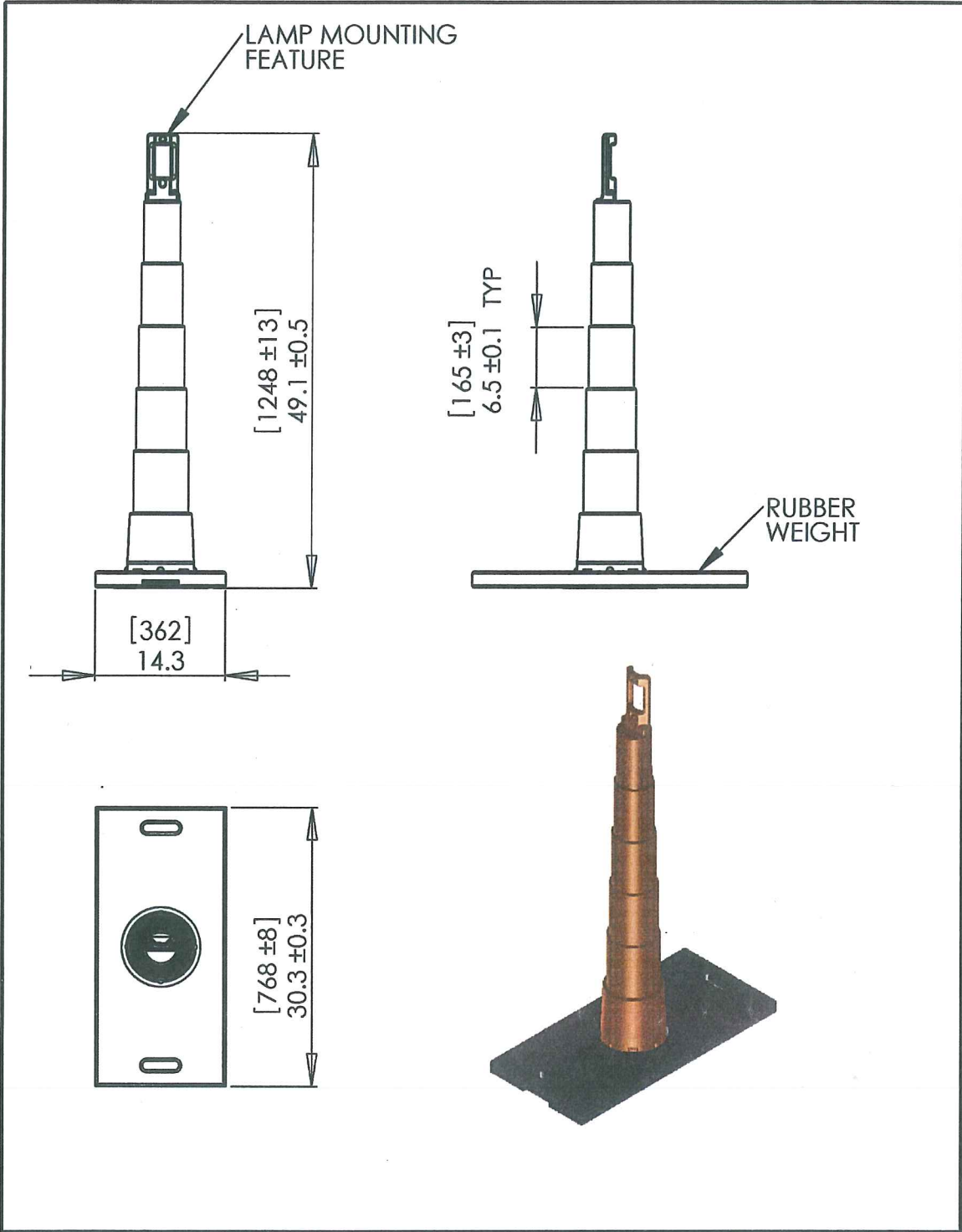
VDS .....  
 CDC .....  
 Interior .....

VCDI .....  
 Maximum Deformation .....  
 Windshield .....

\* Not Applicable, device weighs less than 220 lb (100 kg).  
 \*\* Negligible roll, pitch and yaw.



Figure 1. Summary of Results - Navicade Channelizing Cone Test 76-6273-001



### NAVICADE™ CHANNELIZER



AMERICAN LOUVER COMPANY

7700 N. Austin Avenue • Box 206 • Skokie, IL 60077  
(847) 470-3300 • Fax (847) 470-0420

**650R1-O-4-EG-A**

| SHEET NUMBER | DATE:      |
|--------------|------------|
| 1 OF 2       | 09/14/2010 |

Illustration A2. Navicade Channelizing Cone Drawing (1 of 2)