January 14, 2022

In Reply Refer To:
HSST-1/SS-186

Nate Kolmodin
Allied Tube and Conduit Corporation
16100 S. Lathrop Avenue
Harvey, Illinois 60426
USA

Dear Mr. Kolmodin:

This letter is in response to your October 19, 2021 request for the Federal Highway Administration (FHWA) to review a roadside safety device, hardware, or system for eligibility for reimbursement under the Federal-aid highway program. This FHWA letter of eligibility is assigned FHWA control number SS-186 and is valid until a subsequent letter is issued by FHWA that expressly references this device.

Decision

The following device is eligible with details provided in the form which is attached as an integral part of this letter:

- SafeSign Support System

Scope of this Letter

To be found eligible for Federal-aid funding, new roadside safety devices should meet the crash test and evaluation criteria contained in the American Association of State Highway and Transportation Officials’ (AASHTO) Manual for Assessing Safety Hardware (MASH). However, the FHWA, the Department of Transportation, and the United States Government do not regulate the manufacture of roadside safety devices. Eligibility for reimbursement under the Federal-aid highway program does not establish approval, certification or endorsement of the device for any particular purpose or use.

This letter is not a determination by the FHWA, the Department of Transportation, or the United States Government that a vehicle crash involving the device will result in any particular outcome, nor is it a guarantee of the in-service performance of this device. Proper manufacturing, installation, and maintenance are required in order for this device to function as tested.

This finding of eligibility is limited to the crashworthiness of the system and does not cover other structural features, nor conformity with the Manual on Uniform Traffic Control Devices.
Eligibility for Reimbursement

Based solely on a review of crash test results and certifications submitted by the manufacturer, and the crash test laboratory, FHWA agrees that the device described herein meets the crash test and evaluation criteria of the AASHTO’s MASH. Therefore, the device is eligible for reimbursement under the Federal-aid highway program if installed under the range of tested conditions.

- Name of system: SafeSign Support System
  Type of system: Sign Support
  Test Level: Test Level 3
  Testing conducted by: Texas A&M Transportation Institute
  Date of request: October 19, 2021

FHWA concurs with the recommendation of the accredited crash testing laboratory on the attached form.

Full Description of the Eligible Device

The device and supporting documentation, including reports of the crash tests or other testing done, videos of any crash testing, and/or drawings of the device, are described in the attached form.

Notice

This eligibility letter is issued for the subject device as tested. Modifications made to the device are not covered by this letter. Any modifications to this device should be submitted to the user (i.e., state DOT) as per their requirements.

You are expected to supply potential users with sufficient information on design, installation and maintenance requirements to ensure proper performance.

You are expected to certify to potential users that the hardware furnished has the same chemistry, mechanical properties, and geometry as that submitted for review, and that it will meet the test and evaluation criteria of AASHTO’s MASH.

Issuance of this letter does not convey property rights of any sort or any exclusive privilege. This letter is based on the premise that information and reports submitted by you are accurate and correct. We reserve the right to modify or revoke this letter if: (1) there are any inaccuracies in the information submitted in support of your request for this letter, (2) the qualification testing was flawed, (3) in-service performance or other information reveals safety problems, (4) the system is significantly different from the version that was crash tested, or (5) any other information indicates that the letter was issued in error or otherwise does not reflect full and complete information about the crashworthiness of the system.
Standard Provisions

- To prevent misunderstanding by others, this letter of eligibility designated as FHWA control number SS-186 shall not be reproduced except in full. This letter and the test documentation upon which it is based are public information. All such letters and documentation may be reviewed upon request.

- This letter shall not be construed as authorization or consent by the FHWA to use, manufacture, or sell any patented system for which the applicant is not the patent holder.

- This FHWA eligibility letter is not an expression of any Agency view, position, or determination of validity, scope, or ownership of any intellectual property rights to a specific device or design. Further, this letter does not impute any distribution or licensing rights to the requester. This FHWA eligibility letter determination is made based solely on the crash-testing information submitted by the requester. The FHWA reserves the right to review and revoke an earlier eligibility determination after receipt of subsequent information related to crash testing.

Sincerely,

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

Enclosures
Request for Federal Aid Reimbursement Eligibility of Highway Safety Hardware

Date of Request: October 19, 2021
Name: Nate Kolmodin
Company: Allied Tube and Conduit Corporation
Address: 16100 S. Lathrop Avenue, Harvey, Illinois 60426
Country: USA
To: Michael S. Griffith, Director
FHWA, Office of Safety Technologies

I request the following devices be considered eligible for reimbursement under the Federal-aid highway program.

**Device & Testing Criterion** - Enter from right to left starting with Test Level

<table>
<thead>
<tr>
<th>System Type</th>
<th>Submission Type</th>
<th>Device Name / Variant</th>
<th>Testing Criterion</th>
<th>Test Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>'SS': Breakaway Sign Supports, Mailboxes, other small sign supports</td>
<td>Physical Crash Testing Chamber, Engineering Analysis</td>
<td>SafeSign Support System</td>
<td>AASHTO MASH</td>
<td>TL3</td>
</tr>
</tbody>
</table>

By submitting this request for review and evaluation by the Federal Highway Administration, I certify that the product(s) was (were) tested in conformity with the AASHTO Manual for Assessing Safety Hardware and that the evaluation results meet the appropriate evaluation criteria in the MASH.

**Individual or Organization responsible for the product:**

- Contact Name: Nate Kolmodin
- Company Name: Allied Tube and Conduit Corporation
- Address: 16100 S. Lathrop Avenue, Harvey, Illinois 60426
- Country: USA

Enter below all disclosures of financial interests as required by the FHWA `Federal-Aid Reimbursement Eligibility Process for Safety Hardware Devices' document.

Texas A&M Transportation Institute (TTI) was contracted by Allied Tube & Conduit Corporation to perform full-scale crash testing of the SafeSign Support System. There are no shared financial interests in the SafeSign Support System, or between Allied Tube & Conduit Corporation and TTI, other than the costs involved in the actual crash tests and reports for this submission to FHWA.

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**690900-ATC 21-22-23***
PRODUCT DESCRIPTION

New Hardware or Modification to

Significant Modification Existing Hardware

The SafeSign Support System test installation consisted of a 72-inch x 144-inch extruded aluminum sign mounted 84 inches above grade on two sign post assemblies spaced 88 inches center to center. The post assemblies were constructed of 4-inch, 8-gauge ASTM 500 Gr C square steel tubing with a hinge connection joining the upper square tubing (attached to the sign) with the lower square tubing that extended upward from the slip base that was located near grade. The interface of the slip base was located approximately 3 inches above grade. From the slip base, a 96-inch long section of 4½-inch, 7 gauge ASTM 500 Gr B square tubing was embedded into the soil.

The SafeSign Support Hinge Post Receivers and Cylinder Sleeve are fabricated from ASTM A153 steel, and are galvanized in accordance with ASTM A653.

The SafeSign Support Slip Bases are fabricated from ASTM A1011 steel and are galvanized in accordance with ASTM A653.

CRASH TESTING

By signature below, the Engineer affiliated with the testing laboratory, agrees in support of this submission that all of the critical and relevant crash tests for this device listed above were conducted to meet the MASH test criteria. The Engineer has determined that no other crash tests are necessary to determine the device meets the MASH criteria.

Engineer Name: Roger P. Bligh

Engineer Signature: Roger Bligh

Address: 1254 Avenue A, Bldg 7091, Bryan, Texas 77807

Country: USA

A brief description of each crash test and its result:

<table>
<thead>
<tr>
<th>Required Test Number</th>
<th>Narrative Description</th>
<th>Evaluation Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>3-60 (1100C)</td>
<td>MASH Test 3-60 was successfully performed on the SafeSign Support System at 0 degrees. In this test (690900-ATC 21), the support readily activated by slipping away and allowing the vehicle to pass. The vehicle remained stable and upright. The sign rotated 25 degrees about the non-impact post, but the components of the sign support system remained intact other than one of the brackets connecting the sign to the impacted support post becoming detached. The vehicle sustained a small indentation in the bumper at the at the location of impact, but it was so minimal as to be not measurable. Occupant risk indices (occupant impact velocity and ridedown acceleration) were within MASH thresholds. No occupant compartment deformation or intrusion was observed.</td>
<td>PASS</td>
</tr>
<tr>
<td>Required Test Number</td>
<td>Narrative Description</td>
<td>Evaluation Results</td>
</tr>
<tr>
<td>----------------------</td>
<td>-----------------------</td>
<td>--------------------</td>
</tr>
<tr>
<td>3-61 (1100C)</td>
<td>MASH Test 3-61 was successfully performed on the SafeSign Support System at 0 degrees. In this test (690900-ATC 22) the support readily activated by slipping away and allowing the vehicle to pass. The vehicle remained stable and upright. The impacted support post separated from its base and the sign panel, but the components of that sign post remained intact. The non-impact post remained intact, vertical, and attached to its base. The sign panels detached from the posts. The vehicle sustained bumper and hood damage, including an 8-inch deep indentation in the hood. Occupant risk indices (occupant impact velocity and ridedown acceleration) were within MASH thresholds. No occupant compartment deformation or intrusion was observed.</td>
<td>PASS</td>
</tr>
<tr>
<td>3-62 (2270P)</td>
<td>MASH Test 3-62 was successfully performed on the SafeSign Support System at 0 degrees. In this test (690900-ATC 23) the support readily activated by slipping away and allowing the vehicle to pass. The vehicle remained stable and upright. The impacted support post separated from its base and the sign panel, but the components of that sign post remained intact. The non-impact post remained intact, vertical, and attached to its base. The sign panels detached from the impact post, and one section remained connected to the non-impact post. The vehicle sustained bumper and hood damage, with a 6-inch deep indentation in the bumper and a 4-inch deep indentation in the hood. Occupant risk indices (occupant impact velocity and ridedown acceleration) were within MASH thresholds. No occupant compartment deformation or intrusion was observed.</td>
<td>PASS</td>
</tr>
</tbody>
</table>

Full Scale Crash Testing was done in compliance with MASH by the following accredited crash test laboratory (cite the laboratory’s accreditation status as noted in the crash test reports):
<table>
<thead>
<tr>
<th>Laboratory Name:</th>
<th>Texas A&amp;M Transportation Institute</th>
</tr>
</thead>
</table>
| Laboratory Signature: | Digitally signed by Darrell L. Kuhn  
'Date: 2021.10.19 12:40:12 -05'00' |
| Address: | 1254 Avenue A, Bldg 7091, Bryan, Texas 77807  
Same as Submitter ☐ |
| Country: | USA  
Same as Submitter ☐ |
| Accreditation Certificate Number and Dates of current Accreditation period: | ISO 17025-2017 Laboratory 
A2LA Certificate Number: 2821.01  
Valid To: April 30, 2023 |

Submit Form

ATTACHMENTS

Attach to this form:

1) Additional disclosures of related financial interest as indicated above.

2) A copy of the full test report, video, and a Test Data Summary Sheet for each test conducted in support of this request.

3) A drawing or drawings of the device(s) that conform to the Task Force-13 Drawing Specifications [Hardware Guide Drawing Standards]. For proprietary products, a single isometric line drawing is usually acceptable to illustrate the product, with detailed specifications, intended use, and contact information provided on the reverse. Additional drawings (not in TF-13 format) showing details that are relevant to understanding the dimensions and performance of the device should also be submitted to facilitate our review.

FHWA Official Business Only:

<table>
<thead>
<tr>
<th>Eligibility Letter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>
Figure 5.6. Summary of Results for MASH Test 3-60 on SafeSign™ Support System.
Figure 6.6. Summary of Results for MASH Test 3-61 on SafeSign™ Support System.
Figure 7.5. Summary of Results for MASH Test 3-62 on SafeSign™ Support System.
Note: Torque all hinge hardware to 40 ft-lbs

<table>
<thead>
<tr>
<th>ITEM</th>
<th>DESCRIPTION</th>
<th>QTY</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>1&quot; X 9&quot; Bolt, 304 Stainless Steel</td>
<td>1</td>
</tr>
<tr>
<td>B</td>
<td>1&quot; Washer 304 Stainless Steel</td>
<td>2</td>
</tr>
<tr>
<td>C</td>
<td>5/8&quot; x 1-3/8 AR400 Washer</td>
<td>6</td>
</tr>
<tr>
<td>D</td>
<td>5/8&quot; x 1-3/4 AR400 Washer</td>
<td>6</td>
</tr>
<tr>
<td>E</td>
<td>5/8&quot; x 5-3/4&quot; Hex Bolt, A325</td>
<td>6</td>
</tr>
<tr>
<td>F</td>
<td>1&quot; Hex Nut, 304 Stainless Steel</td>
<td>1</td>
</tr>
<tr>
<td>G</td>
<td>5/8&quot; Hex Nut, A563DH</td>
<td>1</td>
</tr>
<tr>
<td>H</td>
<td>Hinge Post Receiver ASTM A153</td>
<td>2</td>
</tr>
<tr>
<td>I</td>
<td>Cylinder Sleeve ASTM A153</td>
<td>1</td>
</tr>
</tbody>
</table>

GRADE
3.00" PREFERRED HEIGHT TO GRADE & 4.00" MAXIMUM

4" SQ TUBE
84"
84"
A (Torque until break off head snaps off)

NOTE: ITEM E TORQUE IS 40 FT-LBS

<table>
<thead>
<tr>
<th>ITEM</th>
<th>DESCRIPTION</th>
<th>QTY</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>3/4&quot;-10 X 3-1/2&quot; GRADE 8 DOUBLE HEADED FLANGE BOLT</td>
<td>3</td>
</tr>
<tr>
<td>B</td>
<td>5/8&quot; X 1-3/8&quot; WASHER, AR400</td>
<td>3</td>
</tr>
<tr>
<td>C</td>
<td>5/8&quot; X 1-3/4&quot; WASHER, AR400</td>
<td>3</td>
</tr>
<tr>
<td>D</td>
<td>5/8-11 X 5-3/4&quot; HEX BOLT, A325</td>
<td>3</td>
</tr>
<tr>
<td>E</td>
<td>5/8&quot; FLAT WASHER F436</td>
<td>3</td>
</tr>
<tr>
<td>F</td>
<td>5/8&quot; HEX NUT, A563DH</td>
<td>3</td>
</tr>
<tr>
<td>G</td>
<td>7/8&quot; USS BLUE TEFLOON COATED WASHER</td>
<td>3</td>
</tr>
<tr>
<td>H</td>
<td>3/4&quot;-10 GRADE 8 FLANGE NUT</td>
<td>3</td>
</tr>
</tbody>
</table>
7 Sign Clamps
Per Post. Each Clamp Uses 2 Bolts

4" SQ 8GA Tube 66.5" Length
ASTM 500 GR C Steel

4 1/2" x 96" 7GA Soil Anchor
A500 Grade B Tube
Welded to 1" Thick A572 Slip Plate

4SQ 8GA 78" Length
ASTM 500 GR C Steel
BILL OF MATERIALS

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>3/8&quot;-19 x 2-1/2&quot; Stainless Carriage Bolt</td>
<td>1 each</td>
</tr>
<tr>
<td>2</td>
<td>Post Clamp for 4&quot; Square Post</td>
<td>2 each</td>
</tr>
<tr>
<td>3</td>
<td>Case Hardened 3/8&quot;-19 Flange Nut, Zinc Cleared</td>
<td>1 each</td>
</tr>
</tbody>
</table>

*Do not scale drawing work to dimensions
*All tolerances ± .164" unless otherwise noted
*Unit of Measure - Inches

PROPERTY OF ACCESSORIES SQUARED Development & MFG., Inc.

SBPCS400SQ-C

REV. A

10-4-16

Changed bolt length

TR No. 690900-ATC21-23  44  2021-10-12
STITCH BOLTS
• 24\* O.C.

SLOTTED HOLES DRILLED
12\* O.C. END HOLES
6\* FROM ENDS OF PANEL. (SEE DETAIL A)

SIGN PANEL ASSEMBLY

SHARP SERRATIONS

SECTION B-B

POST CLIP (TYP.)

BOLT INTERIOR SLOTS ON A STAGGERED ALTERNATE BASIS:

FIRST SLOTS IN FROM BOTH EDGES ARE BOLTED.

ALUMINUM FLAT WASHER SHALL BE \( \frac{3}{16} \)" O.D. x \( \frac{3}{16} \)" I.D. x .091" THICK

BOLTS
FLAT WASHERS
PIVETS
NUTS
POST CLIPS

8211, ALLOY 2024-T4, 6262-T9 OR 6061-T6
8209, ALLOY 2024-T4
ALLOY 5052
8211, ALLOY 2017-T4
8108, ALLOY 356-T6

POST CLIP BOLT (TYP.)

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES

EXTRUDED ALUMINUM DETAILS
SIGN PANEL ASSEMBLY

STANDARD NO. MD 813.06