Mr. John Pasakarnis  
Dicke Safety Products  
1201 Waren Ave.  
Downers Grove, IL 60515

Dear Mr. Pasakarnis:

This letter is in response to your July 27, 2020 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 WZ-419 and is valid until a subsequent letter is issued by FHWA that expressly references this device.

**Decision**

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

- SDL 1000W with 48” x 48” Vinyl Roll-Up Sign

**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: SDL 1000W with 48” x 48” Vinyl Roll-Up Sign
  Type of system: Work Zone
  Test Level: MASH Test Level 3 (TL3)
  Testing conducted by: Applus IDIADA KARCO Engineering, LLC.
  Date of request: July 27, 2020

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 WZ-419 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: July 27, 2020

Name: Bruno Haesbaert

Company: Applus IDIADA KARCO Engineering, LLC.

Address: 9270 Holly Rd, Adelanto, CA 92301

Country: United States of America

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: I - I - I

<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>'WZ': CrashWorthy Work Zone</td>
<td>Physical Crash Testing</td>
<td>SDL1000W with 48&quot; x 48&quot; Vinyl Roll-Up Sign</td>
<td>AASHTO MASH</td>
<td>TL3</td>
</tr>
<tr>
<td></td>
<td>Engineering Analysis</td>
<td></td>
<td></td>
<td></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:**

<table>
<thead>
<tr>
<th>Contact Name</th>
<th>Company Name</th>
<th>Address</th>
<th>Country</th>
</tr>
</thead>
<tbody>
<tr>
<td>John Pasakarnis</td>
<td>DICKESafety Products</td>
<td>1201 Warren Ave., Downers Grove, IL 60515</td>
<td>United States of America</td>
</tr>
</tbody>
</table>

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

DICKESafety Products is the manufacturer and marketer of device.

Applus IDIADA KARCO Engineering, LLC (IDIADA KARCO) is an independent research and testing laboratory having no affiliation with any other entity. IDIADA KARCO is actively involved in data acquisition and compliance/certification testing for a variety of government agencies and equipment manufacturers. The principals and staff of IDIADA KARCO have no past or present financial, contractual or organizational interest in any company or entity directly or indirectly related to the products that KARCO tests. If any financial interest should arise, other than receiving fees for testing, reporting, etc., with respect to any project, the company will provide, in writing, a full and immediate disclosure to the FHWA.
PRODUCT DESCRIPTION

New Hardware or Significant Modification  Existing Hardware

The DICKESafety Products SDL1000W sign stand is a work-zone traffic control device. The as-tested device consisted of one (1) 48.0 in. (1.2 m) square vinyl roll up sign, one (1) fiberglass cross brace assembly, one (1) carbon steel Speedclamp bracket, and one (1) base assembly. The as-tested device weighed approximately 24.8 lbs (11.3 kg). The device had a height of 80.75 in. (2.1 m) measured to the top of the sign. The SDL1000W sign stand was tested with four (4) 25.0 lb. (11.3 kg) sand bags; one (1) for each of its legs.

The square vinyl roll-up sign was attached to a fiberglass cross brace and was set at a mounting height of 12.75 in. (324 mm) measured to the bottom corner. The vertical cross brace member was constructed of 1.25 in. (32 mm) wide by 66.25 in. (1683 mm) long fiberglass and extended from the top to bottom corners of the roll up sign. The horizontal cross brace member consisted of 1.25 in. (32 mm) wide by 66.25 in. (1683 mm) long fiberglass and extended from the left to the right corners of the roll up sign. The sign was attached to the base with an ascrew lock on the Speedclamp bracket.

The base assembly consisted of one (1) carbon steel base and four (4) telescoping legs. The carbon steel base mounted both the Speedclamp and four (4) telescoping leg via a base tube and side plate assembly, respectively. The legs consisted of two (2) portions: one (1) 1.25 in. (32 mm) steel square tube piece and one (1) 1.0 in. (25 mm) steel square extension tube piece. In its deployed state, the base assembly had a footprint measuring 43.5 in. (1.1 m) by 68.3 in. (1.7 m).

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: Bruno Haesbaert

Engineer Signature: Bruno Haesbaert

Address: 9270 Holly Rd, Adelanto, CA 92301

Country: United States of America

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>3-70 (1100C)</td>
<td>Designed to evaluate the ability of a small vehicle to activate any breakaway, fracture, or yielding mechanism. Is considered optional for work-zone traffic control devices weighing less than 220 lb (100 kg). The SDL1000W weighed approximately 24.8 lbs (11.3 kg) and therefore the test was non-relevant and not conducted.</td>
<td>Non-Relevant Test, not conducted</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>3-71 (1100C)</td>
<td>The test vehicle impacted the 0° test sign at a speed of 64.18 mph (103.29 km/h) and proceeded to impacted the 90° test sign at a speed of 61.14 mph (98.40 km/h). Upon impact the SDL1000W yielded from the base assembly in a predictable manner. The occupant compartment was not penetrated and the deformation limits were not exceeded. Debris from the test articles did not cause a hazard to the driver’s vision. The vehicle remained stable and upright throughout the test. The SDL1000W met all the requirements for MASH Test 3-71.</td>
<td>PASS</td>
</tr>
<tr>
<td>3-72 (2270P)</td>
<td>The test vehicle impacted the 0° test sign at a speed of 63.99 mph (102.98 km/h) and proceeded to impacted the 90° test sign at a speed of 62.20 mph (100.10 km/h). Upon impact the SDL1000W yielded from the base assembly in a predictable manner. The occupant compartment was not penetrated and the deformation limits were not exceeded. Debris from the test articles did not cause a hazard to the driver’s vision. The vehicle remained stable and upright throughout the test. The SDL1000W met all the requirements for MASH Test 3-72.</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>Applus IDIADA KARCOEngineering, LLC.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Laboratory Signature:</td>
<td>Bruno Haesbaert</td>
</tr>
<tr>
<td>Address:</td>
<td>9270 Holly Rd, Adelanto, CA 92301</td>
</tr>
<tr>
<td>Country:</td>
<td>United States of America</td>
</tr>
<tr>
<td>Accreditation Certificate Number and Dates of current Accreditation period:</td>
<td>TL 371: July 1, 2019 - July 1, 2022</td>
</tr>
</tbody>
</table>

Submit Signature*: Bruno Haesbaert, Date: 2020.07.27 11:13:39 -07'00'

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>
MASH 2016 Test 3-71 Summary

**Impact Conditions**
- Impact Velocity Device 1: 64.18 mph (103.29 km/h)
- Impact Velocity Device 2: 61.14 mph (98.40 km/h)
- Device 1 Angle: 0.0°
- Device 2 Angle: 90.0°
- Device 1 Kinetic Energy: 335.5 kip-ft (454.8 kJ)
- Device 2 Kinetic Energy: 304.4 kip-ft (412.8 kJ)

**Exit Conditions**
- Device 1 Exit Velocity: 62.82 mph (101.1 km/h)
- Device 2 Exit Velocity: 59.96 mph (96.5 km/h)
- Vehicle Resting Position: 289.0 ft. (88.1 m) Downstream

**Vehicle Stability**: Satisfactory
- Maximum Roll Angle: N/A
- Maximum Pitch Angle: N/A
- Maximum Yaw Angle: N/A

**Vehicle Damage Scale**: 12-FD-1

**Test Inertial Mass**: 2,436.1 lbs (1,105.0 kg)

**Gross Static Mass**: 2,590.4 lbs (1,175.0 kg)

**Curb Mass**: 2,556.2 lbs (1,159.5 kg)

**Occupant Risk**
- Longitudinal OIV: N/A
- Lateral OIV: N/A
- Longitudinal RA: N/A
- Lateral RA: N/A
- THIV: N/A
- PHD: N/A
- ASI: N/A

**Test Article Deflections**
- 0° Sign Debris Field (longitudinal): 1.5 ft. (0.5 m)
- 0° Sign Debris Field (lateral): 22.3 ft. (6.8 m)
- 90° Sign Debris Field (longitudinal): 152.8 ft. (46.6 m)
- 90° Sign Debris Field (lateral): 4.3 ft. (1.3 m)

**Vehicle Damage**: TR-P40063-01-NC

**Figure 2. Summary of Test 3-71**
MASH 2016 Test 3-72 Summary

**Impact Conditions**

| Impact Velocity Device 1       | 63.99 mph (102.98 km/h) |
| Impact Velocity Device 2       | 62.20 mph (100.10 km/h) |
| Device 1 Angle                | 0.0°                    |
| Device 2 Angle                | 90.0°                   |
| Device 1 Kinetic Energy       | 686.8 kip-ft (931.2 kJ) |
| Device 2 Kinetic Energy       | 648.9 kip-ft (879.8 kJ) |

**Exit Conditions**

| Device 1 Exit Velocity         | 63.26 mph (101.8 km/h) |
| Device 2 Exit Velocity         | 61.83 mph (99.5 km/h)  |
| Vehicle Resting Position       | 267.5 ft. (81.5 m) Downstream |
| Vehicle Stability              | Satisfactory            |

**Occupant Risk**

- Longitudinal OIV: N/A*
- Lateral OIV: N/A*
- Longitudinal RA: N/A*
- Lateral RA: N/A*
- THIV: N/A*
- PHD: N/A*
- ASI: N/A*

**General Information**

- Test Agency: Applus IDIADA KARCO
- Test No.: P40064-01
- Test Designation: 3-72
- Test Date: 4/7/20

**Test Article**

- Name / Model: SDL1000W Sign Stand
- Type: Work-Zone Device
- Device Height: 6.7 ft. (2.1 m)
- Key Elements: Steel, Vinyl, Fiberglass
- Road Surface: Smooth, clean concrete

**Test Vehicle**

- Year, Make, and Model: 2015 RAM 1500
- Curb Mass: 5,132.3 lbs (2,328.0 kg)
- Test Inertial Mass: 5,017.6 lbs (2,276.0 kg)
- Gross Static Mass: 5,017.6 lbs (2,276.0 kg)

**Test Article Deflections**

- 0° Sign Debris Field (longitudinal): 0.6 ft. (0.2 m) Left
- 0° Sign Debris Field (lateral): 0.2 ft. (0.0 m)
- 90° Sign Debris Field (longitudinal): 13.6 ft. (4.1 m)
- 90° Sign Debris Field (lateral): 1.0 ft. (0.3 m)

**Vehicle Damage**

- Vehicle Damage Scale: 12-FD-1
- CDC: 12FDAW1
- Maximum Deformation: No measureable deformation

* Not Applicable; device weighs less than 220 lbs (100 kg)

---

Figure 2. Summary of Test 3-72
**SDL1000W STAND**
- Base: Steel, no-spring
- Legs: Telescopic 1-1/4" and 1" sq. steel tubing

**VINYL ROLL-UP SIGN**
- Panel: vinyl, 48" x 48"
- Crossbrace: Vertical member is 1-1/4" wide x 66-1/4" long fiberglass
- Crossbrace: Horizontal member is 1-1/4" wide x 66-1/4" long fiberglass

**Weight: SDL1000W**

<table>
<thead>
<tr>
<th>Item</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sign (w/Crossbrace)</td>
<td>5.0 lb.</td>
</tr>
<tr>
<td>Sign Stand</td>
<td>19.8 lb.</td>
</tr>
<tr>
<td>Total</td>
<td>24.8 lb.</td>
</tr>
</tbody>
</table>

DICKE SAFETY PRODUCTS
Illinois - 1201 Warren Avenue • Downers Grove, IL 60515 • Ph: 630.969.0050 • Fax: 630.969.3973
Oregon - 1845 Anunsen Street N.E. • Salem, OR 97301 • Ph: 800.333.5641 • Fax: 503.364.0340
ATTACHMENT METHODS

REF: DETAIL 3 (TELESCOPING TUBES)

- SQUARE STEEL OR ALUMINUM TUBE
- BUTTON HOLE
- STEEL, SPRING-LOADED ROUND HD. BUTTON
- BUTTON, LOCKED POSITION

SIDE VIEW A
SIDE VIEW B
FRONT VIEW

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ATTACHMENT METHODS
REF: DETAIL 5A (KICK RELEASE)

TOP VIEW (Locked Position)

LOCKING PIN (STEEL)
3/8-16 BOLT AND NUT
LEG BRACE .125 STEEL
FLAT SPRING .015 STAINLESS STEEL
LEG BRACKET .090 STEEL
LEG FLANGE .188-.250 STEEL

LEG-1.250 SQ. STEEL OR ALUMINUM TUBE
LEG RELEASE LEVER .125 STEEL

TOP VIEW (Un-Locked Position)

SIDE VIEW

DICKE SAFETY PRODUCTS
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www.dicketool.com
ATTACHMENT METHODS

REF: DETAIL 7 (SCREWLOCK)

FRONT VIEW

SIDE VIEW

VERITCAL FIBERGLAS RIB

0.090 STEEL L BRACKET

SCREW CLAMP ASSEMBLY

0.065" X 1-1/2" SQ. STEEL TUBE

SCREW CLAMP HANDLE

PANEL STOP

DICKE SAFETY PRODUCTS

Illinois - 1201 Warren Avenue • Downers Grove, IL 60515 • Ph: 630.969.0050 • Fax: 630.969.3973
Oregon - 1845 Anunsen Street N.E. • Salem, OR 97301 • Ph: 800.333.5641 • Fax: 503.364.0340

www.dicketool.com
# SDL1000W Sign Stand

## Parts List

<table>
<thead>
<tr>
<th>Description (Quantity per Stand.)</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plastic Cap (1)</td>
<td>43-006</td>
</tr>
<tr>
<td>Screwlock Handle (1)</td>
<td>20-027-01</td>
</tr>
<tr>
<td>Screwlock Bracket (1)</td>
<td>20-030-01</td>
</tr>
<tr>
<td>Screwlock Sign Holder - Complete w/#1,2,3 (1)</td>
<td>UFSPEEDCLAMP</td>
</tr>
<tr>
<td>Sign Support (1)</td>
<td>20-023-01</td>
</tr>
<tr>
<td>Bolt (2)</td>
<td>91-007</td>
</tr>
<tr>
<td>Nut (2)</td>
<td>92-021</td>
</tr>
<tr>
<td>Leg Brace (2)</td>
<td>20-003-01</td>
</tr>
<tr>
<td>Leg Bolt (4)</td>
<td>91-012</td>
</tr>
<tr>
<td>Lock Nut (4)</td>
<td>92-006</td>
</tr>
<tr>
<td>Flat Washer (4)</td>
<td>92-041</td>
</tr>
<tr>
<td>Split Washer (4)</td>
<td>92-036</td>
</tr>
<tr>
<td>Base - Complete w/Tube and Sideplates (1)</td>
<td>SDL1000-BASE</td>
</tr>
<tr>
<td>Base Tube (1)</td>
<td>24-014-02</td>
</tr>
<tr>
<td>Sideplate (2)</td>
<td>20-045-01A</td>
</tr>
<tr>
<td>Bolt (1)</td>
<td>91-026</td>
</tr>
<tr>
<td>Nut (1)</td>
<td>92-021</td>
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<tr>
<td>Leg - Complete w/Leg Release (4)</td>
<td>SL-22-STEEL</td>
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<td>20-039-01</td>
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<td>Leg Release Spring (4)</td>
<td>11-096</td>
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<tr>
<td>Leg Release Pin (4)</td>
<td>11-102-01</td>
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<td>Leg Support (4)</td>
<td>20-001-06</td>
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<td>Leg Extension - Complete w/Button &amp; Leg Tip (4)</td>
<td>UEL-19-STEEL</td>
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<tr>
<td>Leg Tip (4)</td>
<td>43-019</td>
</tr>
<tr>
<td>Button (4)</td>
<td>93-028</td>
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<tr>
<td>Rivet (4)</td>
<td>95-008</td>
</tr>
<tr>
<td>Washer (4)</td>
<td>92-001</td>
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</tbody>
</table>