



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

July 26, 2022

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

In Reply Refer To:
HSST-1/WZ-431

John Pasakarnis
Dicke Safety Products
1201 Warren Ave
Downers Grove, IL 60515

Dear Mr. Pasakarnis:

This letter is in response to your December 23, 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 WZ-431 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:

- Dicke Safety Products DF3003S Sign Stand w/ 48in x 48in 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: Dicke Safety Products DF3003S Sign Stand w/ 48in x 48in roll-up sign
Type of system: Work Zone
Test Level: TL-3
Testing conducted by: Applus IDIADA KARCO Engineering,
Date of request: December 23, 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 WZ-431 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,

A handwritten signature in blue ink that reads "Michael S. Griffith". The signature is written in a cursive style with a large, stylized "M" and "G".

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

Enclosures

Request for Federal Aid Reimbursement Eligibility of Highway Safety Hardware

Submitter	Date of Request:	February 01, 2022	<input checked="" type="radio"/> New <input type="radio"/> Resubmission
	Name:	John Pasakarnis	
	Company:	Dicke Safety Products	
	Address:	1201 Warren Avenue, Downers Grove, IL 60515	
	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

| - | - |

System Type	Submission Type	Device Name / Variant	Testing Criterion	Test Level
'WZ': Crash Worthy Work Zone Traffic Control Devices	<input checked="" type="radio"/> Physical Crash Testing <input type="radio"/> Engineering Analysis	DF3003S with 48" x 48" Roll-Up Sign	AASHTO MASH	TL3

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:	John Pasakarnis	Same as Submitter <input checked="" type="checkbox"/>
Company Name:	Dicke Safety Products	Same as Submitter <input checked="" type="checkbox"/>
Address:	1201 Warren Avenue, Downers Grove, IL 60515	Same as Submitter <input checked="" type="checkbox"/>
Country:	United States of America	Same as Submitter <input checked="" type="checkbox"/>

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

Dicke Safety 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
 Modification to Existing Hardware

Product Description of DF3003S with 48" x 48" Roll-Up Sign
(Reference Drawing: DF3003S)

The DF3003S is a work-zone traffic control device used to display traffic control signs.

Further Description:

The DICKE Safety Products DF3003S utilized a 48.0 in. (1.2 m) reflective square vinyl roll-up sign mounted at a height of 13.5 in. (4,115 mm) measured to the bottom corner of the sign. The device has a total weight of 29.8 lbs (13.5 kg). The device consists of a steel base with a double torsion spring system. Each of the sign's four (4) legs consist of two (2) telescoping sections constructed of 1.25 in. and 1.0 in. square aluminum tubing with 0.1 in. wall thickness. In the deployed state, the DF3003S has a footprint that measures 58 in. wide by 92 in. long. The vinyl roll-up sign is mounted to the mast via a fiberglass cross brace constructed of 1.25 in. (32 mm) wide fiberglass. The mast was constructed of three (3) sections. The lower section was constructed of 1.0 in. (25.4 mm) sq. aluminum tubing with 0.1 in. (2.54 mm) wall thickness, the middle section was constructed of 0.750 in. (19.05 mm) sq. steel tubing with 0.065 in. (1.65 mm) wall thickness, and the top section was constructed of 1.25 in. (31.75 mm) sq. steel tubing. At the top of the mast 18 by 18 in. vinyl with 3/4 in. round wood dowel flags were mounted. The total sign height measured 81.5 in. (2.07 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:	Antonio Reyes	
Engineer Signature:	Antonio Reyes	Digitally signed by Antonio Reyes Date: 2022.02.01 10:29:20 -08'00'
Address:	9270 Holly Road, Adelanto, CA 92301	Same as Submitter <input type="checkbox"/>
Country:	United States of America	Same as Submitter <input checked="" type="checkbox"/>

A brief description of each crash test and its result:

Required Test Number	Narrative Description	Evaluation Results
3-70 (1100C)	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 lbs (100 kg). The as-tested device weighed 29.8 lbs (13.5 kg) and therefore Test 70 was not performed.	Non-Relevant Test, not conducted

Required Test Number	Narrative Description	Evaluation Results
3-71 (1100C)	An 1100C test vehicle approached the test article at a nominal speed of 62 mph. The first DF3003S with 48" x 48" vinyl roll-up sign device was oriented at 0° and was impacted at a velocity of 61.70 mph (99.30 km/h). Upon impact, the DF3003S yielded in a predictable manner and the occupant compartment was not penetrated and deformations into the occupant compartment did not exceed MASH recommended limits. The second device was oriented at 90° and was impacted at a velocity of 60.63 mph (97.57 km/h). Upon impact, the DF3003S yielded in a predictable manner. The occupant compartment was not penetrated and deformations into the occupant compartment did not exceed MASH recommended limits. The DF3003S with 48" x 48" vinyl roll-up sign met all the requirements for MASH Test 3-71.	PASS
3-72 (2270P)	An 2270P test vehicle approached the test article at a nominal speed of 62 mph. The first DF3003S with 48" x 48" vinyl roll-up sign device was oriented at 0° and was impacted at a velocity of 61.16 mph (98.42 km/h). Upon impact, the DF3003S yielded in a predictable manner and the occupant compartment was not penetrated and deformations into the occupant compartment did not exceed MASH recommended limits. The second device was oriented at 90° and was impacted at a velocity of 60.53 mph (97.41 km/h). Upon impact, the DF3003S yielded in a predictable manner and the occupant compartment was not penetrated and deformations into the occupant compartment did not exceed MASH recommended limits. The DF3003S with 48" x 48" vinyl roll-up sign met all the requirements for MASH Test 3-72.	PASS

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.):

Laboratory Name:	Applus IDIADA KARCO Engineering, LLC.	
Laboratory Signature:	Antonio Reyes	Digitally signed by Antonio Reyes Date: 2022.02.01 10:29:42 -08'00'
Address:	9270 Holly Road, Adelanto, CA 92301	Same as Submitter <input type="checkbox"/>
Country:	United States of America	Same as Submitter <input checked="" type="checkbox"/>
Accreditation Certificate Number and Dates of current Accreditation period :	TL 371: July 1, 2019 - July 1, 2022	

Submitter Signature*: 

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.

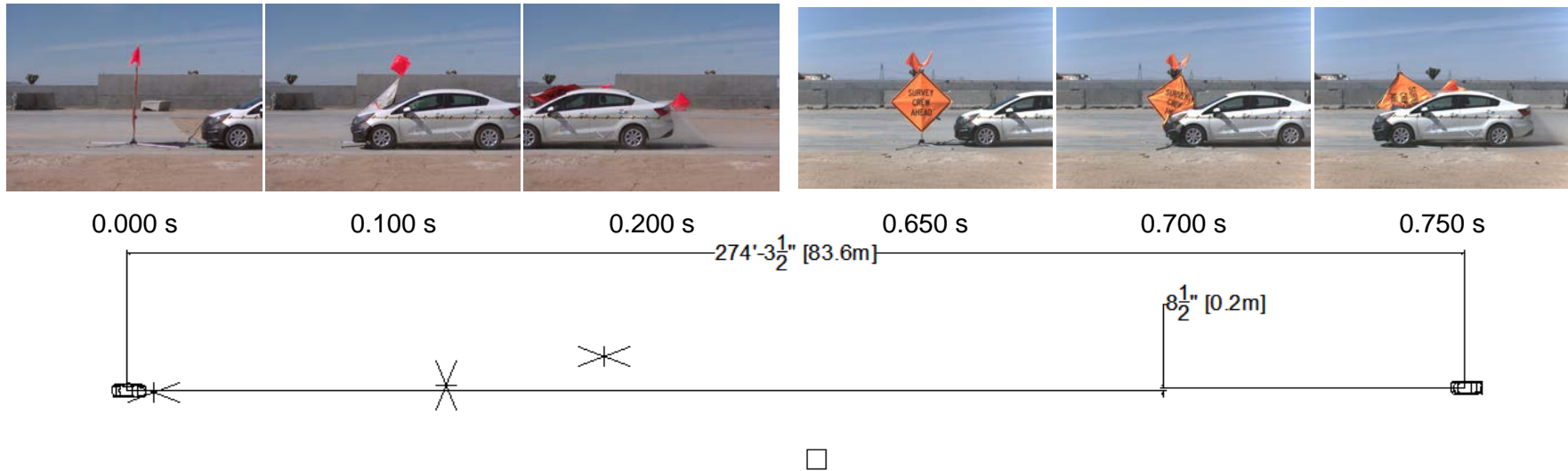
FHWA Official Business Only:

Eligibility Letter		Key Words
Number	Date	

MASH 2016 Test 3-71 Summary

0° CIA

90° CIA



General Information	
Test Agency.....	Applus IDIADA KARCO
Test No.....	P41102-01
Test Designation.....	3-71
Test Date.....	4/30/21
Test Article	
Name / Model.....	DF3003S
Type.....	Work-Zone Device
Device Height	6.8 ft. (2.1 m)
Key Elements.....	Base assembly, legs, vinyl roll-up sign
Road Surface.....	Smooth, clean concrete
Test Vehicle	
Type / Designation.....	1100C
Year, Make, and Model.....	2015 Kia Rio
Curb Mass.....	2,522.0 lbs (1,144.0 kg)
Test Inertial Mass.....	2,470.2 lbs (1,120.5 kg)
Gross Static Mass.....	2,609.1 lbs (1,183.5 kg)

Impact Conditions	
Impact Velocity Device 1.....	61.70 mph (99.30 km/h)
Impact Velocity Device 2.....	60.63 mph (97.57 km/h)
Device 1 Angle.....	0.0°
Device 2 Angle.....	90.0°
Location / Orientation Device 1....	478 mm (18.8 in.) Driver Side from Centerline
Location / Orientation Device 2....	329 mm (13.0 in.) Passenger Side of Centerline
Device 1 Kinetic Energy.....	314.4 kip-ft (426.3 kJ)
Device 2 Kinetic Energy.....	303.5 kip-ft (411.5 kJ)
Minimum KE Required.....	288 kip-ft (390 kJ)
Exit Conditions	
Device 1 Exit Velocity.....	61.62 mph (99.2 km/h)
Device 2 Exit Velocity.....	57.38 mph (92.3 km/h)
Vehicle Resting Position.....	274.3 ft. (83.6 m) Downstream
	0.7 ft. (0.2 m) Left
Vehicle Stability	Satisfactory
Maximum Roll Angle.....	N/A*
Maximum Pitch Angle.....	N/A*
Maximum Yaw Angle.....	N/A*

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° Device Debris Field (longitudinal) ...	92.2 ft. (28.1 m)
0° Device Debris Field (lateral)...	6.9 ft. (2.1 m)
90° Device Debris Field (longitudinal)...	75.8 ft. (23.1 m)
90° Device Debris Field (lateral).....	15.8 ft. (4.8 m)
Vehicle Damage	
Vehicle Damage Scale.....	12-FC-2
CDC.....	12FDEN1
Maximum Deformation.....	0.2 in. (5 mm) Windshield

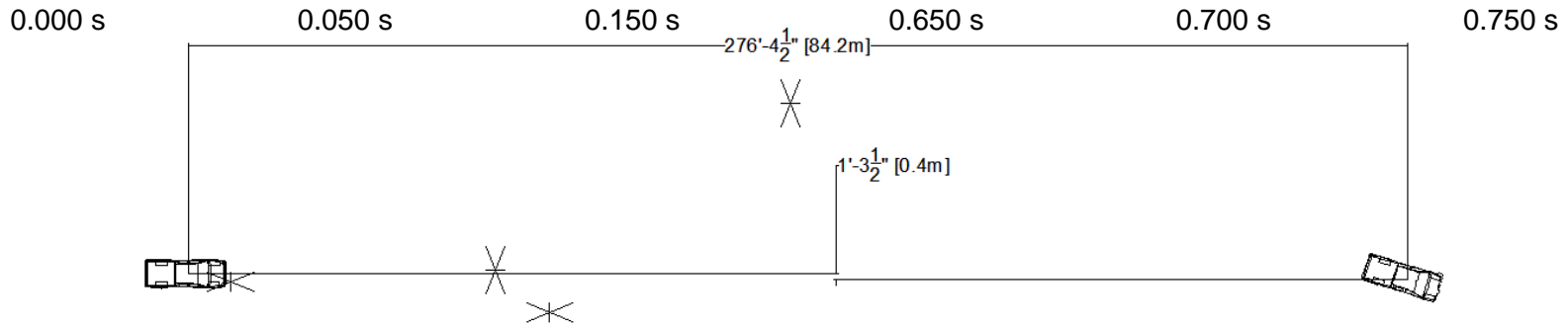
*Occupant risk values are N/A because Occupant Impact Velocity (OIV) event did not occur as defined by Flail Space Model.

Figure 2 Summary of Test 3-71

MASH 2016 Test 3-72 Summary

0° CIA

90° CIA



General Information	
Test Agency.....	Applus IDIADA KARCO
Test No.....	P41101-01
Test Designation.....	3-72
Test Date.....	5/3/21
Test Article	
Name / Model.....	DF3003S
Type.....	Work-Zone Device
Device Height	6.8 ft. (2.1 m)
Key Elements.....	Base assembly, legs, vinyl roll-up sign
Road Surface.....	Smooth, clean concrete
Test Vehicle	
Type / Designation.....	2270P
Year, Make, and Model.....	2016 RAM 1500
Curb Mass.....	5,086.0 lbs (2,307.0 kg)
Test Inertial Mass.....	5,027.5 lbs (2,280.5 kg)
Gross Static Mass.....	5,027.5 lbs (2,280.5 kg)

Impact Conditions	
Impact Velocity Device 1.....	61.16 mph (98.42 km/h)
Impact Velocity Device 2.....	60.53 mph (97.41 km/h)
Device 1 Angle.....	0.0°
Device 2 Angle.....	90.0°
Location / Orientation Device 1..	21.7 in. (550 mm) From Veh. C/L on Pass. Side
Location / Orientation Device 2..	23.0 in. (583 mm) From Veh. C/L on Dr. Side
Device 1 Kinetic Energy.....	628.6 kip-ft (852.2 kJ)
Device 2 Kinetic Energy.....	615.7 kip-ft (834.8 kJ)
Minimum KE Required.....	594 kip-ft (806 kJ)
Exit Conditions	
Device 1 Exit Velocity.....	60.94 mph (98.1 km/h)
Device 2 Exit Velocity.....	0.00 mph (0.0 km/h)
Vehicle Resting Position.....	276.3 ft. (84.2 m) Downstream
	1.3 ft. (0.4 m) Left
Vehicle Stability	Satisfactory
Maximum Roll Angle.....	N/A*
Maximum Pitch Angle.....	N/A*
Maximum Yaw Angle.....	N/A*

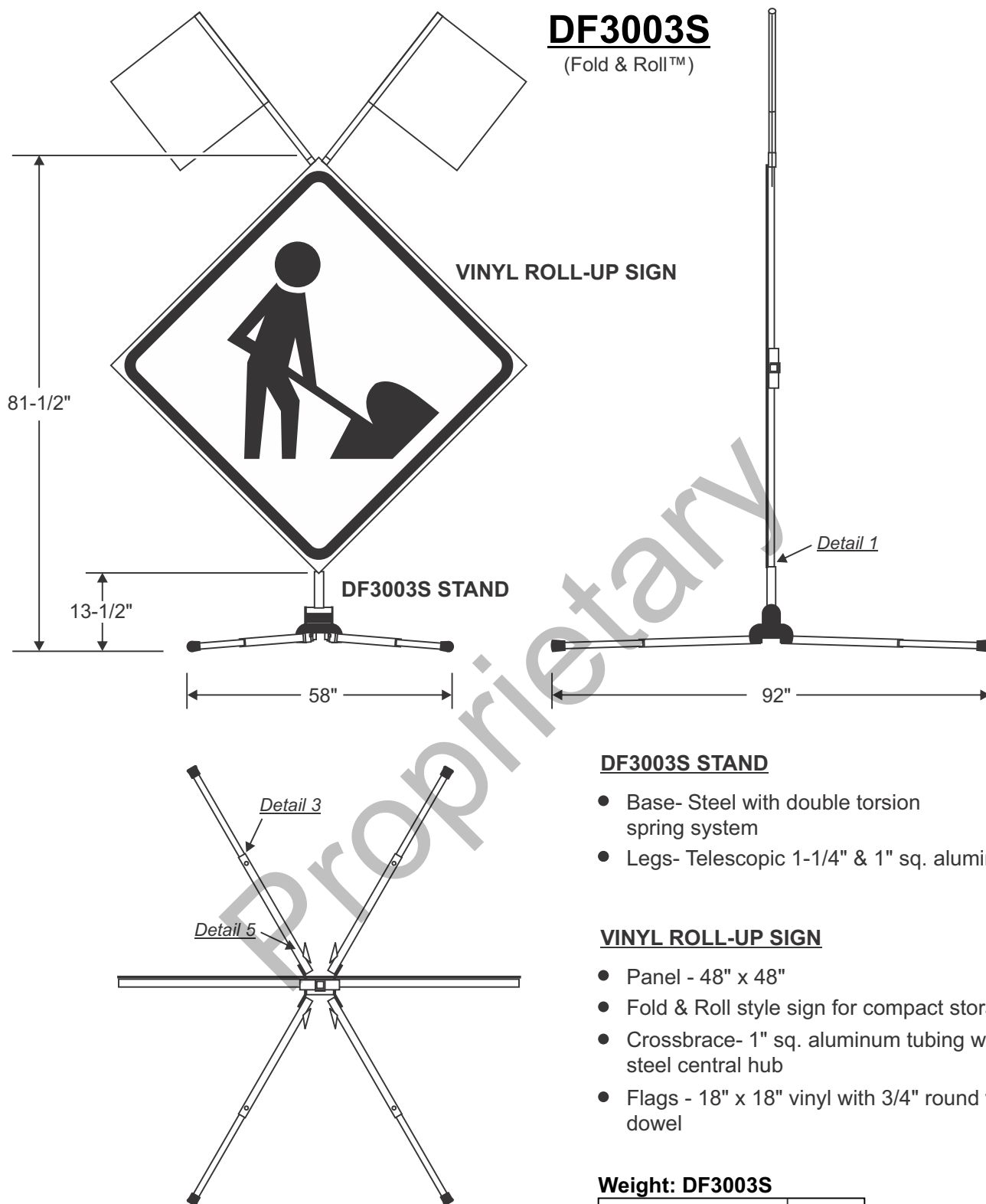
Occupant Risk	
Longitudinal OIV.....	N/A*
Lateral OIV.....	N/A*
Longitudinal RA.....	N/A*
Lateral RA.....	N/A*
THIV.....	N/A*
PHD.....	N/A*
ASI.....	N/A*
Test Article Deflections	
0° Device Debris Field (longitudinal) ...	72.5 ft. (22.1 m)
0° Device Debris Field (lateral)...	6.9 ft. (2.1 m)
90° Device Debris Field (longitudinal)...	66.9 ft. (20.4 m)
90° Device Debris Field (lateral).....	37.7 ft. (11.5 m)
Vehicle Damage	
Vehicle Damage Scale.....	12-FC-1
CDC.....	12FDEN1
Maximum Deformation.....	0.0 in. (0 mm)

*Occupant risk values are N/A because Occupant Impact Velocity (OIV) event did not occur as defined by Flail Space Model.

Figure 2 Summary of Test 3-72

DF3003S

(Fold & Roll™)



DF3003S STAND

- Base- Steel with double torsion spring system
- Legs- Telescopic 1-1/4" & 1" sq. aluminum

VINYL ROLL-UP SIGN

- Panel - 48" x 48"
- Fold & Roll style sign for compact storage
- Crossbrace- 1" sq. aluminum tubing with steel central hub
- Flags - 18" x 18" vinyl with 3/4" round wood dowel

Weight: DF3003S

Sign and Flags	10.1 lbs.
Sign Stand	19.7 lbs.
Total	29.8 lbs.



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