



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

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

March 24, 2014

In Reply Refer To:
HSST/WZ-332

Mr. Juan Banuelos
Professional Traffic Solutions
401 South Park Avenue, Suite B
Montebello, CA 90640

Dear Mr. Banuelos:

This letter is in response to your request for the Federal Highway Administration (FHWA) to review a roadside safety system for eligibility for reimbursement under the Federal-aid highway program.

Name of system:	Professional Traffic Solutions Flashing Arrow Sign/ Barricade Combo
Type of system:	Type III Barricade with arrow panel
Test Level:	MASH Test Level 3
Testing conducted by:	KARCO Inc.
Date of request:	October 28, 2013
Date initially acknowledged:	October 28, 2013
Date of completed package:	January 18, 2014

Decision:

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

- Professional Traffic Solutions Flashing Arrow Sign /Type III Barricade Combo

Based on a review of crash test results submitted by the manufacturer certifying the device described herein meets the crash test and evaluation criteria of the American Association of State Highway and Transportation Officials' Manual for Assessing Safety Hardware (MASH), the device is eligible for reimbursement under the Federal-aid highway program. Eligibility for reimbursement under the Federal-aid highway program does not establish approval or endorsement by the FHWA for any particular purpose or use.

The FHWA, the Department of Transportation, and the United States Government do not endorse products or services and the issuance of a reimbursement eligibility letter is not an endorsement of any product or service.

FHWA:HSST:NArtimovich:sf:x61331:3/14/14
File: s://directory folder/HSST/WZ332_Banuelos.docx
cc: HSST: NArtimovich

Requirements

To be found eligible for Federal-aid funding, roadside safety devices should meet the crash test and evaluation criteria contained in the American Association of State Highway and Transportation Officials' Manual for Assessing Safety Hardware (MASH).

Description

The device and supporting documentation are described in the attached form.

Work Zone Traffic Control Devices are typically tested in two orientations – head on, and perpendicular. In the case of your device, the Type III barricade with flashing arrow panel was impacted head-on only, but with the arrow panel deployed, and with the arrow panel lowered as when not in use. This satisfies the need to demonstrate successful performance in two different positions of the device.

In your first series of tests the vehicle impacted between the uprights of the Type III barricade. While this is the worst-case scenario for the barricade with the arrow panel, we requested testing where the vehicle contacts the upright support of the barricade. You had this test run successfully, and also tested your concrete-barrier-mounted arrow panel with successful results.

Summary and Standard Provisions

Therefore, the system described and detailed in the attached form is eligible for reimbursement and may be installed under the range of conditions tested.

Please note the following standard provisions that apply to FHWA eligibility letters:

- This finding of eligibility does not cover other structural features of the systems, nor conformity with the Manual on Uniform Traffic Control Devices.
- Any changes that may influence system conformance with MASH will require a new reimbursement eligibility letter.
- Should the FHWA discover that the qualification testing was flawed, that in-service performance reveals safety problems, or that the system is significantly different from the version that was crash tested, we reserve the right to modify or revoke this letter.
- You are expected to supply potential users with sufficient information on design and installation 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 the MASH.
- To prevent misunderstanding by others, this letter of eligibility is designated as number WZ-332 and 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 at our office 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. The FHWA does not become involved in issues concerning patent law. Patent issues, if any, are to be resolved by the applicant.
- The Professional Traffic Solutions barricade/arrow panel combination is a patented product and considered proprietary. If proprietary systems are specified by a

highway agency for use on Federal-aid projects: (a) they must be supplied through competitive bidding with equally suitable unpatented items; (b) the highway agency must certify that they are essential for synchronization with the 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.

Sincerely yours,

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

Enclosures



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- To prevent misunderstanding by others, this letter of eligibility is designated as number WZ-332 and 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 at our office 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. The FHWA does not become involved in issues concerning patent law. Patent issues, if any, are to be resolved by the applicant.
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Sincerely yours,

A handwritten signature in blue ink that reads "Michael S. Griffith". The signature is written in a cursive style.

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:	October 28, 2013	<input type="radio"/> New <input type="radio"/> Resubmission
	Name:	Juan Banelos	Signature: <i>Juan Banelos</i>
	Company:	Professional Traffic Solutions, LLC	
	Address:	401 S Park Ave, Ste B, Montebello, CA 90640	
	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.

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"/> FEA & V&V Analysis	Flashing Arrow Sign/ Barricade Combo	AASHTO MASH	

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.

Identification of the individual or organization responsible for the product:

Contact Name:	Juan Banelos	Same as Submitter <input checked="" type="checkbox"/>
Company Name:	Professional Traffic Solutions, LLC	Same as Submitter <input checked="" type="checkbox"/>
Address:	401 S Park Ave, Ste B, Montebello, CA 90640	Same as Submitter <input checked="" type="checkbox"/>
Country:	USA	Same as Submitter <input checked="" type="checkbox"/>

PRODUCT DESCRIPTION

New Hardware
Light weight Flashing Arrow Sign for temporary traffic control in and around an active work zone

CRASH TESTING

A brief description of each crash test and its result:

Required Test Number	Narrative Description	Evaluation Results
3-71	The overall test assessment for the Professional Traffic Solutions 4'x8' FAS/Barricade Combo to Test 3-71 is a pass. The impact with the work zone traffic control device did not cause significant hazard to the driver. The test vehicle remained upright and did not leave its lane.	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:	KARCO Engineering, INC	
Laboratory Contact:	Director, Michael L Dunlop	Same as Submitter <input type="checkbox"/>
Address:	9270 Holly Rd, Adelanto, CA 92301	Same as Submitter <input type="checkbox"/>
Country:	USA	Same as Submitter <input type="checkbox"/>
Accreditation Certificate Number and Date:	TL-371 July 1, 2008	

ATTACHMENTS

Attach to this form:

- 1) A copy of the full test report, video, and a Test Data Summary Sheet for each test conducted in support of this request.
- 2) A drawing or drawings of the device(s) that conform to the Task Force-13 Drawing Specifications []. 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 key to understanding the performance of the device should also be submitted to facilitate our review.

FHWA Official Business Only:

Eligibility Letter		AASHTO TF13	
Number	Date	Designator	Key Words

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A brief description of each crash test and its result:

Required Test Number	Narrative Description	Evaluation Results
3-72	The overall test assessment for the Professional Traffic Solutions 4'x8' FAS/Barricade Combo to Test 3-72 is a pass. The impact with the work zone traffic control device did not cause significant hazard to the driver. The test vehicle remained upright and did not leave its lane. The test device remained upright and did not change position.	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:	KARCO Engineering, INC	
Laboratory Contact:	Director, Michael L Dunlop	Same as Submitter <input type="checkbox"/>
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CRASH TESTING

A brief description of each crash test and its result:

Required Test Number	Narrative Description	Evaluation Results
3-71	The overall test is an assessment for the Professional Traffic Solutions 4'x8' Flashing Arrow Sign/Barricade Combo test 3-71 is a pass. The Impact with Work Zone Traffic Control Device did not cause any significant damage to the vehicle and did not create a significant hazard to the driver. The test vehicle remained upright and did not leave its lane. The test device remained upright and did not leave its original position.	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:	KARCO Engineering, INC	
Laboratory Contact:	Michael L. Dunlop, Director of Operations	Same as Submitter <input type="checkbox"/>
Address:	9270 Holly Rd, Adelanto, CA 92301	Same as Submitter <input type="checkbox"/>
Country:	USA	Same as Submitter <input type="checkbox"/>
Accreditation Certificate Number and Date:	CD-R SN# 2013-2837	

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A brief description of each crash test and its result:

Required Test Number	Narrative Description	Evaluation Results
3-72	The overall test assessment for the Professional Traffic Solutions 4'x8' FAS/Barricade Combo to Test 3-72 is a pass. The impact with the work zone traffic control device did not cause significant hazard to the driver. The vehicle's trajectory changed after the break abort system was activated bringing the vehicle to stop.	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:	KARCO Engineering, INC	
Laboratory Contact:	Director, Michael L Dunlop	Same as Submitter <input type="checkbox"/>
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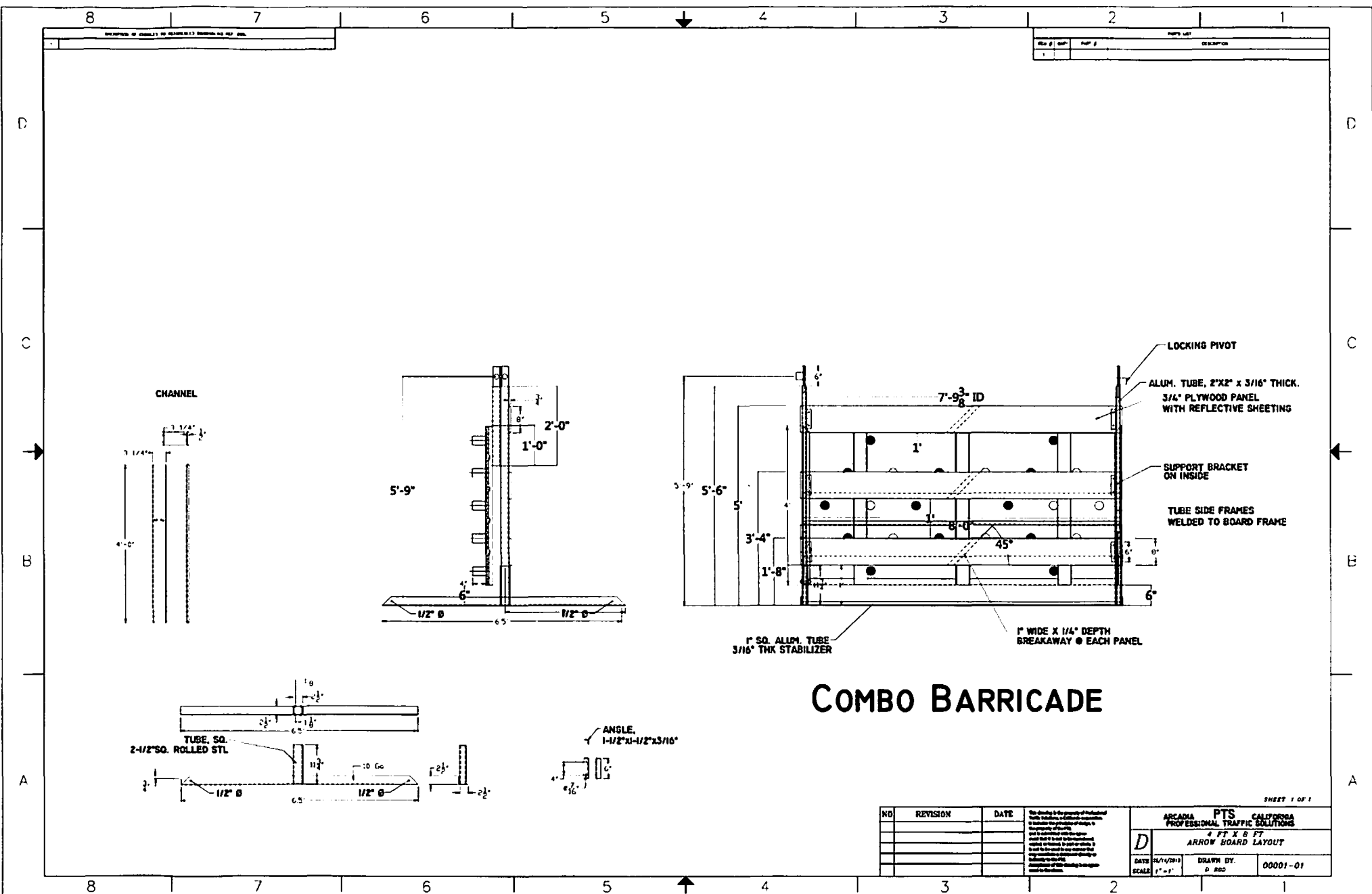
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Eligibility Letter		AASHTO TF13	Key Words
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REV #	DATE	DESCRIPTION

COMBO BARRICADE

NO.	REVISION	DATE	DESCRIPTION

The drawing is the property of Professional Traffic Solutions, a California corporation. It contains the professional design and is intended for use only for the project and location specified. It is not to be used for any other project or location without the written consent of Professional Traffic Solutions. The user of this drawing is responsible for obtaining all necessary permits and approvals from the appropriate authorities.

PTS CALIFORNIA PROFESSIONAL TRAFFIC SOLUTIONS 4 FT X 8 FT ARROW BOARD LAYOUT	
DATE: 04/14/2011 SCALE: 1" = 1'	DRAWN BY: D. ROO 00001-01

SHEET 1 OF 1



Professional Traffic Solutions
630 West Duarte Road #202
Arcadia, CA 91007

Attention: Juan Banuelos

Date: 12/30/13

Mr. Banuelos,

On December 23, 2013, one (1) full scale impact test was performed on two (2) Professional Traffic Solutions Work-Zone Traffic Control Devices: one (1) 4 ft. x 8 ft. FAS / Barricade Combo and one (1) 4 ft. x 8 ft. FAS / K-Rail Combo. The impact involved a 1082.0 kg (2,385.4 lbs) 2007 Kia Rio 4-door sedan traveling at a nominal velocity of 100 km/h (62.0 mph). The test articles were oriented at a critical angle of 0° and 25.0° to the normal direction of vehicle motion.

The test was conducted with both the 4 ft. x 8 ft. FAS / Barricade Combo and the 4 ft. x 8 ft. FAS / K-Rail Combo spaced 20 m (65.6 ft.) apart with the test vehicle impacting the 4 ft. x 8 ft. FAS / Barricade Combo first. The test vehicle engaged the left support post of the 4 ft. x 8 ft. FAS / Barricade Combo. The test vehicle remained in its lane and continued to impact the second test article. The 4 ft. x 8 ft. FAS / K-Rail combo was mounted on a K-Rail set at an angle of 25.0° to the direction of vehicle travel. The vehicle impacted the K-rail and the arrow board bracket before coming to a stop.

The test vehicle's right front end was crushed as a result of the impact with the K-Rail. The vehicle windshield also cracked as a result of the K-Rail impact. The vehicle was redirected and came to a stop after the second impact. The vehicle was not penetrated by any test article components, and there was no intrusion to any of the vehicle's sections that exceeded their allowable limits.

The first impacted article's support posts were separated from the arrow board. The bottom two (2) support panels' breakaways were activated and they broke along the center of the width. The second article's support bracket was broken at its base where it attached to the K-rail.

Complete information relating to the test can be found in CD serial number 2013-2888 from KARCO Engineering, LLC. including Pre- and Post-Test article conditions, vehicle condition, manufacturer drawings, and impact video documentation.

Sincerely yours,

Frank D. Richardson
President
KARCO Engineering, LLC.