



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

November 20, 2006

400 Seventh St., S.W.
Washington, D.C. 20590

In Reply Refer To:
HSA-10/WZ-246

Mr. Barry Stephens, P.E.
Sr. Vice President, Engineering
Energy Absorption Systems, Inc.
3617 Cincinnati Avenue
Rocklin, CA 95678

Dear Mr. Stephens:

Thank you for your October 16 letter requesting Federal Highway Administration (FHWA) acceptance of your company's RubberTough double vertical panel as a crashworthy traffic control device for use in work zones on the National Highway System (NHS). Accompanying your letter was the FHWA Office of Safety Design form and test report documentation including a DVD compilation of relevant crash tests conducted by E-Tech Testing Services. You requested that we find this double vertical panel acceptable for use on the NHS under the provisions of National Cooperative Highway Research Program Report 350 "Recommended Procedures for the Safety Performance Evaluation of Highway Features."

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, along with minor editorial changes. The form, of which a copy is enclosed for reference, will be posted on our website in the near future.

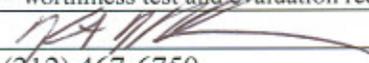
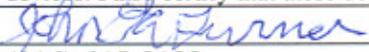
Thank you for working with us as we institute this new review and acceptance process.

Sincerely yours,

John R. Baxter, P.E.
Director, Office of Safety Design
Office of Safety

Enclosures



Page 1	FEDERAL HIGHWAY ADMINISTRATION OFFICE OF SAFETY DESIGN	Letter Number
	Category 2 Work Zone Device Acceptance Letter	WZ-246
		Date
		11/7/2006
Contact Info	Petitioner / Developer Name and Address: SAFE-HIT, a Division of Energy Absorption Systems 35 East Wacker Drive, 11 th Floor Chicago, IL 60601-2076	
	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	 KENT KEKEIS	
Telephone #	(312) 467-6750	
Email Address	kkekeis@quixtrans.com	
	Laboratory / Engineer Name and Address John F. LaTurner, P.E. E-TECH Testing Services, Inc. 3617 Cincinnati Ave. 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 NCHRP Report 350 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 NCHRP Report 350 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		
Telephone #	(916) 645-8188	
Email Address	jlaturner@etechtesting.com	
Keywords:		
	Type of Device (See page 3)	
	Vertical Panel	
	Composition of Sign or Rail substrate (See Page 3)	
	Panel: Plastic Sheet	
	Thickness of substrate (inches): 0.156"	
	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: N/A # of lights: N/A Weight of lights: N/A ea.	
Device Name	RubberTough 360 Double Vertical Panel	

<p>Detailed Desc. Of Device, Materials, sizes, Fasteners, Substrates Foundation, Aux. Features Ballast, etc.</p>	<p>(May be attached on separate page(s) See E-TECH Testing Report #299 pages 6-7</p>
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Page 2	FEDERAL HIGHWAY ADMINISTRATION OFFICE OF SAFETY DESIGN Category 2 Work Zone Device Acceptance Letter		Letter Number WZ-246
			Date 11/7/2006
	Mandatory Attachments		
	Attachment # 1: Test data summary page(s)		
	Attach. #1a	Test #3-71	
	Attach. #1b	Test #	
	Attach. #1c	Test #	
	Attach. #1d	Test #	
Alternative	Attachment # 1: Description and discussion of modification(s) to crash tested and/or accepted device.		
	Date:		
	Attachment # 2: PDF drawing(s) of device(s)		
	Attach. #2a	Drawing Title: RubberTough 360 Double Vertical Panel Drawing	
		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	FEDERAL HIGHWAY ADMINISTRATION OFFICE OF SAFETY DESIGN Category 2 Work Zone Device Acceptance Letter	Letter Number
		WZ-246
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Please select from the following Keywords for “Type of Device”:

Vertical Panel
Channelizer

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

Extruded Plastic

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

The distance to the lowest point on the sign is:

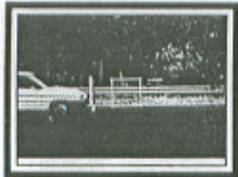
6 inches – N/A.

Page 4	FEDERAL HIGHWAY ADMINISTRATION		Letter Number
	OFFICE OF SAFETY DESIGN		WZ-246
	Category 2 Work Zone Device Acceptance Letter		Date
			11/7/2006

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, designated as number WZ-246 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.
- The subject double vertical panel 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.

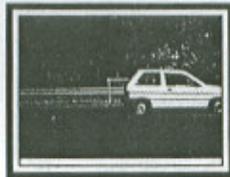
Normal Impact



t = 0.000 sec



t = 0.048 sec



t = 0.096 sec

Perpendicular Impact



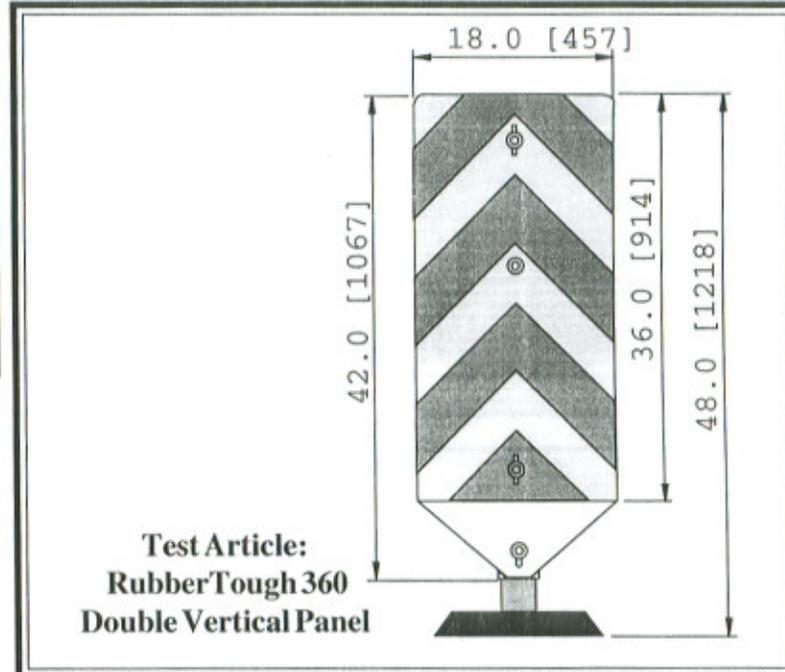
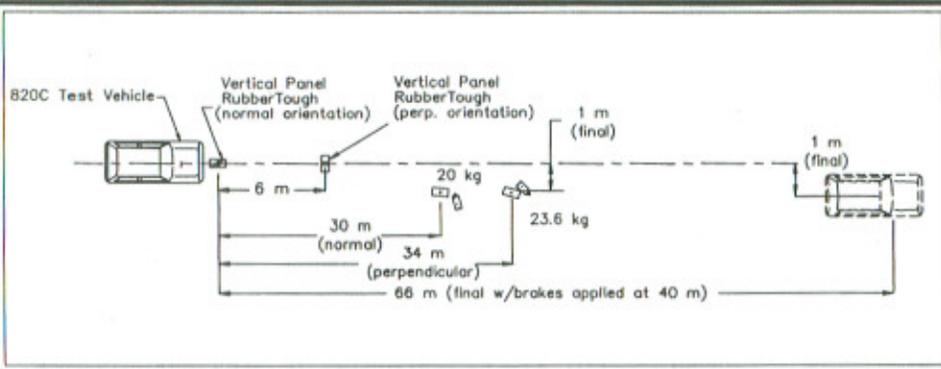
t = 0.000 sec



t = 0.145 sec



t = 0.280 sec



General Information

Test Agency E-TECH Testing Services, Inc.
 Test Designation NCHRP 350 Test 3-71
 Test No. 01-4313-001
 Date 09/12/06

Test Article

Type RubberTough®360
 Double Vertical Panel
 Impact Orientation Normal and Perpendicular
 Size and/or dimension and material
 of key elements Upright: 42" tall by
 3 1/2" dia. by 0.156" thick
 (1067 x 88.9 x 3.9 mm)
 polyethylene tube
 Panel: 18" wide x 42" tall
 by 0.125" thick
 (457 x 1067 x 3 mm)
 flat polyethylene
 Mass: 53 lb (24.0 kg) total

Test Vehicle

Type Production Model
 Designation 820C
 Model 1993 Ford Festiva
 Mass lb (kg)
 Curb 1792 (813)
 Test inertial 1797 (815)
 Dummy 165 (75)
 Gross Static 1962 (890)

Impact Conditions (Normal/Perpendicular)

Speed mi/hr (km/h) 62.4 (100.4) / 60.7 (97.7)
 Angle (deg) 0 / 0
 Impact Severity ft-kip (kJ) 233.6 (316.7) / 221.2 (299.9)

Exit conditions (Normal/Perpendicular)

Speed mi/hr (km/h) 60.7 (97.7) / 59.0 (95.0)
 Angle (deg) 0 / 0

Vehicle Damage (Normal/Perpendicular)

Exterior
 VDS FC-1 / FC-1
 CDC 12CEW1/12FCEN1
 Interior
 OCDI AS0000000
 Windshield
 per FHWA Pass: no windshield
 contact



E-TECH Testing Services, Inc.
 3617 B Cincinnati Avenue
 Rocklin, CA 95765
 PHONE (916) 645-8188
 FAX (916) 645-3833

Figure 1. Summary of Results - RubberTough 360 Double Vertical Panel Test 01-4313-001

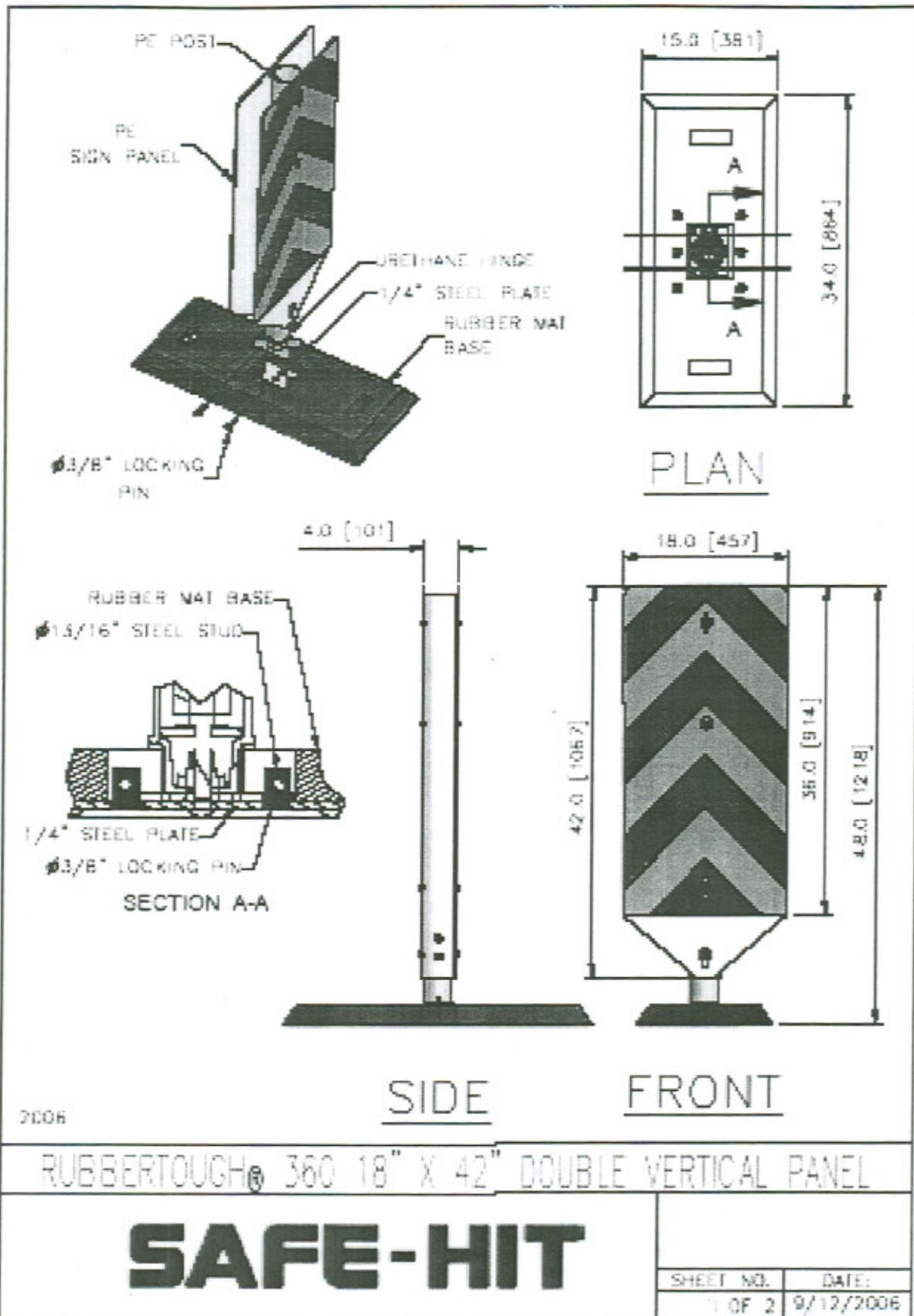


Illustration 1. RubberTough 360 Double Vertical Panel Drawing and Specification (1 of 2)