U.S. Department of Transportation
Federal Highway Administration

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

October 21, 2011

In Reply Refer To:
HSST/ WZ-309

Chris Goode
Bone Safety Signs
6450 Industrial Way
Alpharetta, Georgia 30004

Dear Mr. Goode:

This is in response to your November 22, 2010, correspondence requesting the Federal Highway Administration's (FHWA) acceptance of your company's SZ-BTS Portable Sign Stand as a crashworthy traffic control device for use in work zones and elsewhere on the National Highway System. Accompanying your letter was the FHWA Office of Safety Design form and drawings of the stand. You requested that we find this device 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 and includes the original completed form, the Test Data Summary Sheet, and drawings of the relevant sign stand.

Sincerely yours,

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

Attachments

FHWA: HSST: NArtimovich:ms:x61331:10/17/11
File: h://directory folder/HSST/WZ-309_.docx
cc: HSST (Reader, HSA; Chron File, HSST; NArtimovich, HSST;
, HSST; MGriffith, HSST)

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DATA SHEET 4

SUMMARY OF RESULTS

Test Article: Bone Safety Signs SZ-BTS w/4x4 Rollup SIgn

Project No.: P30093-01

Test Program: NCHRP 350 3-71

Test Date: 08/24/10

Test Vehicle: 1997 Geo Metro

GENERAL INFORMATION		OCCUPANT RISK VALUES	
TEST AGENCY	KARCO Engineering, LLC	FLAIL SPACE VELOCITY (m/sec)	
TEST NO.	3-71	X DIRECTION	*
DATE	8/24/2010	Y DIRECTION	*
TEST ARTICLE		THIV (Optional)	N/A
TYPE	Work Zone Traffic Control Device	RIDEDOWN ACCELERATION (g's)	
INSTALLATION LENGTH		X DIRECTION	*
SIZE AND/OR DIMENSION OF KEY ELEMENTS	16.0 kg (35 lbs)	Y DIRECTION	*
SOIL TYPE AND CONDITION	Concrete	PHD (Optional)	N/A
TEST VEHICLE		ASI (Optional)	N/A
TYPE	Production Model	**TEST ARTICLE DEFLECTIONS (m)**	
DESIGNATION	820C	DYNAMIC	N/A
MODEL	1997Geo Metro	PERMANENT	N/A
MASS (CURB)	802.5 kg (1769 lbs)	**VEHICLE DAMAGE**	
MASS (TEST INERTIAL)	808.5 kg (1783 lbs)	EXTERIOR	
DUMMY MASS	75.0 kg (165 lbs)	VDS	12-FC-1
MASS (GROSS STATIC)	884.5 kg (1950 lbs)	CDC	12FCAW1
IMPACT CONDITIONS		INTERIOR	
VELOCITY (km/h)	98.6 km/h (61.3 mph) / 96.6 km/h (60.0 mph)	OCDI	FS0000000
ANGLE (°)	90 / 0		
IMPACT SEVERITY (kJ)	303.2	**POST-IMPACT VEHICULAR BEHAVIOR**	
EXIT CONDITIONS		MAXIMUM ROLL ANGLE (°)	0.8
VELOCITY (km/h)	87.8 km/h (54.5 mph)	MAXIMUM PITCH ANGLE (°)	1.7
ANGLE (°)	90 / 0	MAXIMUM YAW ANGLE (°)	1.4

*Values not calculated due to occupant not contacting the vehicle's interior.

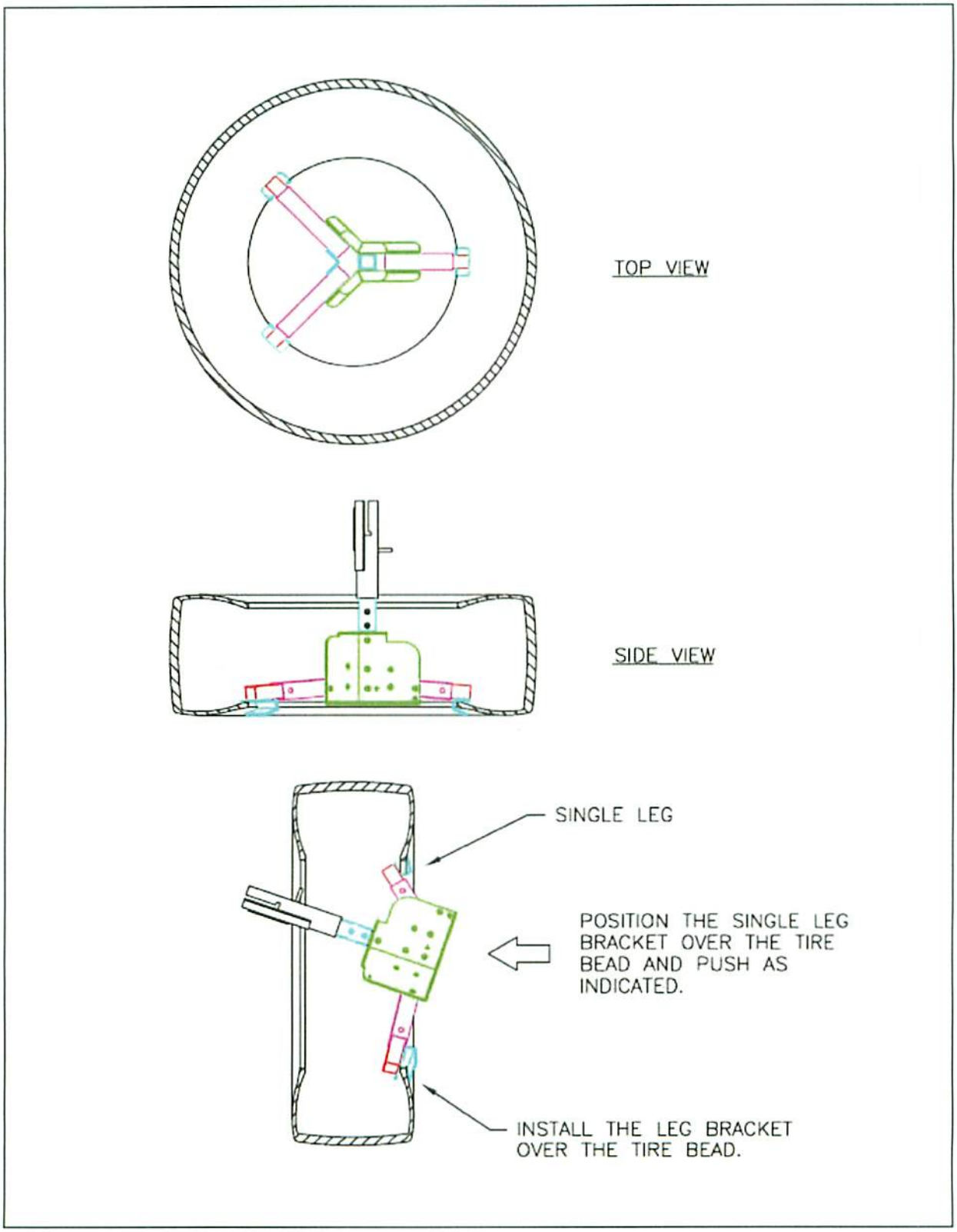
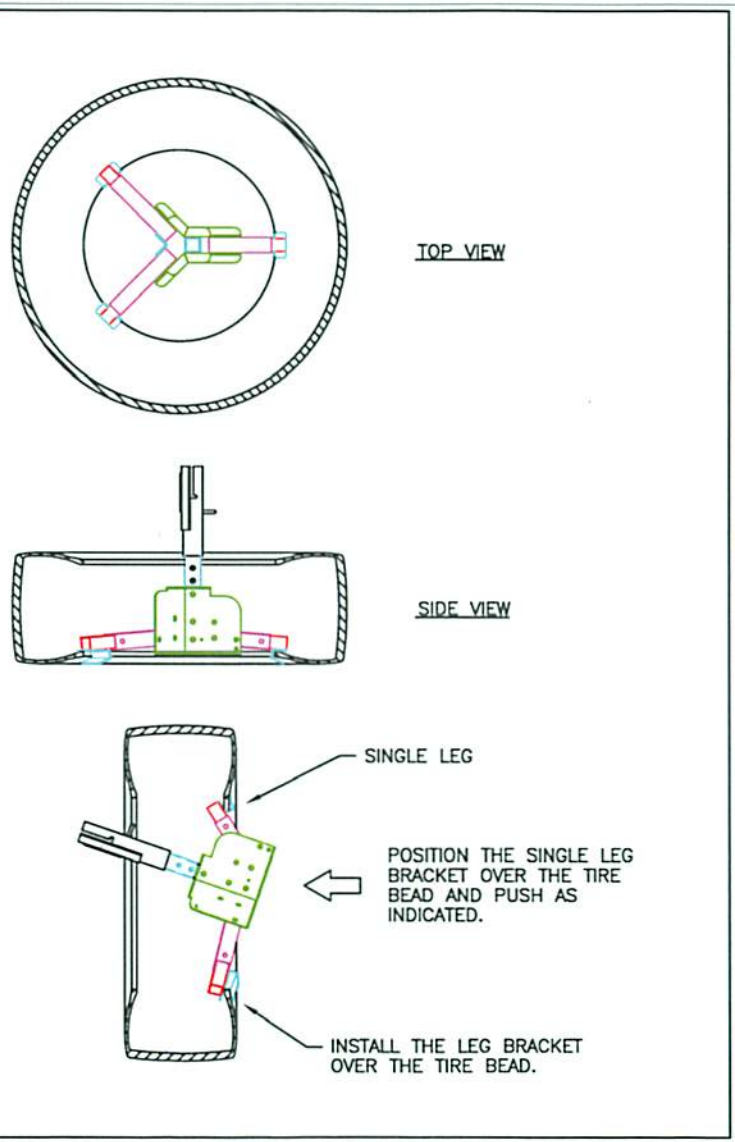
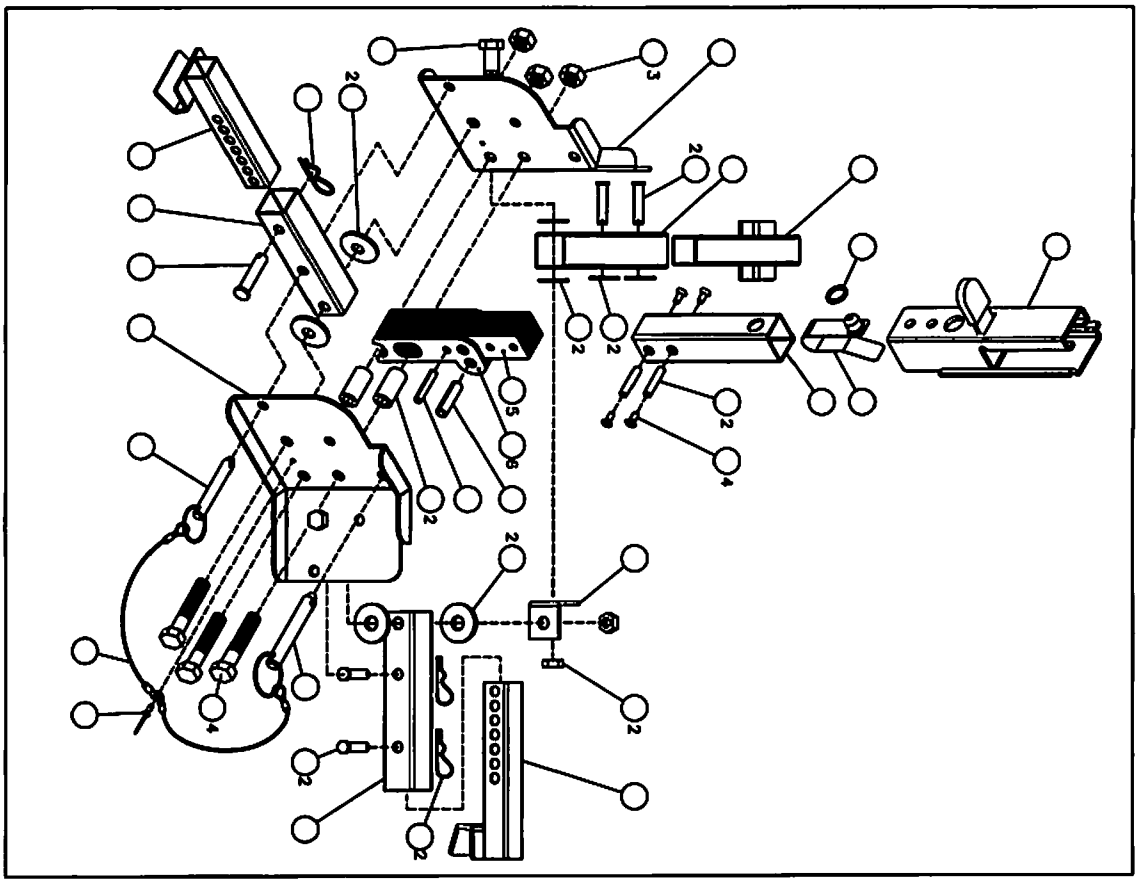


Figure 35: Manufacturer's Drawing


TOP VIEW
SIDE VIEW
SINGLE LEG
POSITION THE SINGLE LEG BRACKET OVER THE TIRE BEAD AND PUSH AS INDICATED.
INSTALL THE LEG BRACKET OVER THE TIRE BEAD.



Attachment 1

Page 1	**FEDERAL HIGHWAY ADMINISTRATION** **OFFICE OF SAFETY DESIGN** **Category 2 Work Zone Device Acceptance Letter**	Letter Number WZ-309 Date
Contact Info	Petitioner / Developer Name and Address:	
	BONE SAFETY SIGNS CHRIS GOODE 6450 INDUSTRIAL WAY ALPHARETTA GA. 30004	
	I herby 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	Chris Goode Digitally signed by Chris Goode DN: CN = Chris Goode, C = US, O = EEI, Inc., OU = Bone Safety Signs Date: 2010.11.19 12:46:17 -05'00'	
Telephone #	(770) 333-1635	
Email Address	CHRIS@BONESAFETY.COM	
	Laboratory / Engineer Name and Address	
	KARCO ENGINEERING, LLC MR. KELSEY CHIU 9270 HOLLY ROAD ADELANTO, CA 92301	
☑	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.	
☐	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	Chris Goode Digitally signed by Chris Goode DN: CN = Chris Goode, C = US, O = EEI, Inc., OU = Bone Safety Signs Date: 2010.11.19 12:46:17 -05'00'	
Telephone #	(770) 333-1635	
Email Address	CHRIS@BONESAFETY.COM	
Keywords:	PORTABLE SIGN STAND	
	Type of Device (See page 3)	
	Ballast(Action relates to ballast on one or more devices)	
	Composition of Sign or Rail substrate (See Page 3)	
	Roll-up / Fabric (with fiberglass spreaders – aluminum or steel spreaders are not allowed	
	Thickness of substrate (inches): 0.50	
	Height of sign from the ground (inches), if applicable: (See Page 3)	
	Low: 12 to 18 inches above the pavement	
	Flags and or lights present during test? Indicate number of each:	
	# of flags: 0 # of lights: 0 Weight of lights: 0.00 ea.	
Device Name		
Detailed Desc. Of Device, Materials, sizes, Fasteners, Substrates Foundation, Aux. Features Ballast, etc.	(May be attached on separate page(s)	

Page 2	**FEDERAL HIGHWAY ADMINISTRATION** **OFFICE OF SAFETY DESIGN** **Category 2 Work Zone Device Acceptance Letter**		Letter Number WZ-309 Date
	Mandatory Attachments		
	Attachment # 1: Test data summary page(s)		
	Attach. #1a	Test # ATTACHED	
	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: 11/19/2010		
	Attachment # 2: PDF drawing(s) of device(s)		
	Attach. #2a	Drawing Title: ATTACHEDDuplicate Entity Contact Inf	
		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-309 Date

Please select from the following Keywords for "Type of Device":

Longitudinal Channelizing Barricade
Curb (Curb channelizer system with or without road tubes or other channelizers)
Drum
H-Footprint Sign Stand
X-Footprint Sign Stand
Trailer Mounted Signs (Does not include arrow boards or variable message signs or other Category 4 trailer mounted devices.)
Automated Flagger Device (not trailer mounted)
Tripod Sign Stand
Type I Barricade
Type II Barricade
Type III Barricade
Vertical Panel
Intrusion Detector
Ballast (Action relates to ballast on one or more devices)
Channelizer (Individual units unlike cones, road tubes, or drums)

Please select from the following Keywords for "Sign Substrate":

Roll-up / Fabric (with fiberglass spreaders – aluminum or steel spreaders are not allowed.)
Plywood
Aluminum – Solid
Aluminum – Laminate
Corrugated Plastic
Extruded Plastic
Waffleboard Plastic
Wood / Lumber

Please select from the following Keywords for "Height of Sign":

The distance to the lowest point on the sign is:

Low	12 to 18 inches above the pavement
Mid-A	20 to 24 inches above the pavement
Mid-B	25 to 36 inches above the pavement
Mid-C	37 to 59 inches above the pavement
Tall	60 to 71 inches above the pavement
Oversized	72 inches and taller

Page 4	FEDERAL HIGHWAY ADMINISTRATION OFFICE OF SAFETY DESIGN Category 2 Work Zone Device Acceptance Letter	Letter Number WZ 309 Date

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 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.
- If the subject of this letter 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.