U.S. Department of Transportation
Federal Highway Administration

1200 New Jersey Ave., S.E.
Washington, DC 20590

September 24, 2008

In Reply Refer To: HSSD/WZ-275

Mr. Chris Goode
Vice President Sales
Bone Safety Signs
2151 Northwest Parkway, SE
Suite 100
Marietta, GA 30067-8726

Dear Mr. Goode:

In your letter of August 18, 2008, received September 2, 2008, you requested the Federal Highway Administration (FHWA) acceptance of the SZ-460-2S and the SZ-484-2S temporary sign stands with the following sign substrate materials: 0.08 inch thick aluminum, 3 mm and 4 mm aluminum composite, fiberglass supported roll-up signs, 6.35 mm solid ABS plastic, 10 mm and 16 mm corrugated plastic, and sign sizes up to the tested limit of 48 inches by 48 inches as crashworthy traffic control devices for use in work zones on the National Highway System (NHS). You requested acceptance of a 48 inch by 48 inch diamond installation and a 48 inch by 60 inch rectangular installation. Accompanying your letter was the FHWA Office of Safety Design form that included a drawing and a detailed description of the barricade, a test report, and videos of the crash test. The drawing is enclosed with the acceptance form for the Type I barricade. 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 acknowledges FHWA's acceptance of your requests. The original completed forms have been modified by the addition of the FHWA acceptance letter number and the date of our review. The form will be posted on our Web site in the near future.

Sincerely yours,

David A. Nicol, P.E.
Director, Office of Safety Design
Office of Safety

Enclosures

MOVING THE AMERICAN ECONOMY

Federal Highway Administration
Office of Safety Design

Category 2 Work Zone Device Acceptance Letter

Letter Number : WZ-275
Date : 07/30/08

CONTACT INFORMATION:	**Petitioner / Developer Name:** *CHRIS GOODE*	
	Title: *VICE PRESIDENT OF SALES*	
	Company: *BONE SAFETY SIGNS*	
	Street: *2151 NORTHWEST PARKWAY, SE, SUITE 100*	
	City, State, and Zip Code: *MARIETTA, GA 30067-8792*	
	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:	
	Telephone Number: *(800) 873-2399*	
	E-mail Address: *chris@bonesafety.com*	
	Engineer Name: *KELSEY CHIU*	
	Laboratory Name: *KARCO ENGINEERING, LLC.*	
	Street: *9270 HOLLY RD.*	
	City, State, and Zipcode: *ADELANTO, CA 92301*	
	Check One:	
	X	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:	

KEYWORDS	**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	**Type of Device:** *X-FOOTPRINT SIGN STAND*

	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) Other (Please describe on form)	
	Please Select from the following Keywords for Composition of Sign or Rail 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	**Composition of Sign or Rail Substrate:** *ALUMINUM - SOLID*
	Thickness of substrate (inches): *0.080 INCHES*	
	Indicate the height of sign from the ground (inches), if applicable:	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 **Height of Sign:** *TALL – 60 TO 71 INCHES ABOVE THE PAVEMENT*
	Flags and or lights present during test? Indicate number of each:	
# of flags: *2*	# of lights: *1*	Weight of lights: ea. *1.5 KG*

MANDATORY ATTACHMENTS:	**Please include those pages as separate electronic files as they will be posted on the FHWA website in lieu of the entire final report.**	
	Attachment #1: Test data summary page(s)	
	Attach. #1a *COMPLETE REPORT*	Test # *3-71*
	Attach. #1b	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) - **Mandatory Attachments: Please include those pages as separate electronic files as they will be posted on the FHWA website in lieu of the entire final report.**	
	Attach. #2a *MANUFACTURER'S DRAWINGS*	Drawing Title: *N/A*
		Drawing #: *N/A*

DATA SHEET 4

SUMMARY OF RESULTS

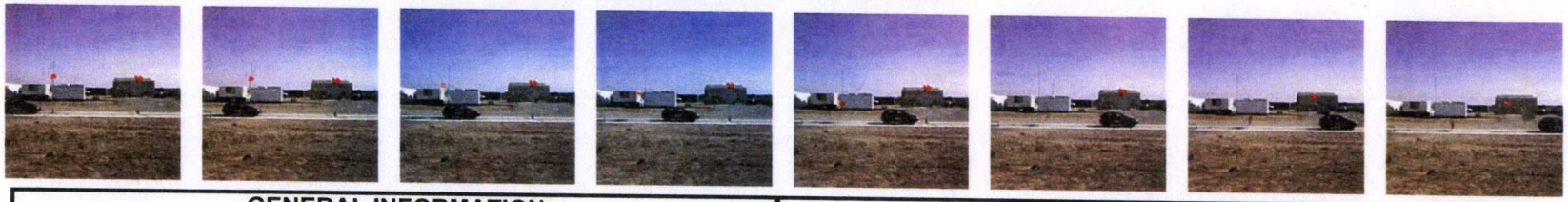
Test Article: Bone Safety Signs SZ-460-2S

Test Program: NCHRP 350 3-71

Test Vehicle: 1996 Geo Metro LSi

Project No.: P28106-01

Test Date: 05/29/08



GENERAL INFORMATION	
TEST AGENCY	KARCO Engineering, LLC
TEST NO.	3-71
DATE	4/10/2008
TEST ARTICLE	
TYPE	Work Zone Traffic Control Device
INSTALLATION LENGTH	N/A
SIZE AND/OR DIMENSION OF KEY ELEMENTS	31.0 kg (68.3 lbs)
SOIL TYPE AND CONDITION	Concrete
TEST VEHICLE	
TYPE	Production Model
DESIGNATION	820C
MODEL	1996 Geo Metro
MASS (CURB)	804.0 kg (1772 lbs)
MASS (TEST INERTIAL)	814.5 kg (1795 lbs)
DUMMY MASS	75.0 kg (165 lbs)
MASS (GROSS STATIC)	894.0 kg (1971 lbs)
IMPACT CONDITIONS	
VELOCITY (km/h)	100.6 km/h (62.5 mph) / 97.6 km/h (60.7 mph)
ANGLE (°)	90 / 0
IMPACT SEVERITY (kJ)	317.9
EXIT CONDITIONS	
VELOCITY (km/h)	94.7 km/h (58.9 mph)
ANGLE (°)	90 / 0

OCCUPANT RISK VALUES	
FLAIL SPACE VELOCITY (m/sec)	
X DIRECTION	*
Y DIRECTION	*
THIV (Optional)	N/A
RIDEDOWN ACCELERATION (g's)	
X DIRECTION	*
Y DIRECTION	*
PHD (Optional)	N/A
ASI (Optional)	N/A
TEST ARTICLE DEFLECTIONS (m)	
DYNAMIC	N/A
PERMANENT	N/A
VEHICLE DAMAGE	
EXTERIOR	
VDS	12FCAW1
CDC	12-FC-1
INTERIOR	
OCDI	FS0100000
POST-IMPACT VEHICULAR BEHAVIOR	
MAXIMUM ROLL ANGLE (°)	0.3
MAXIMUM PITCH ANGLE (°)	1.4
MAXIMUM YAW ANGLE (°)	0.0

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

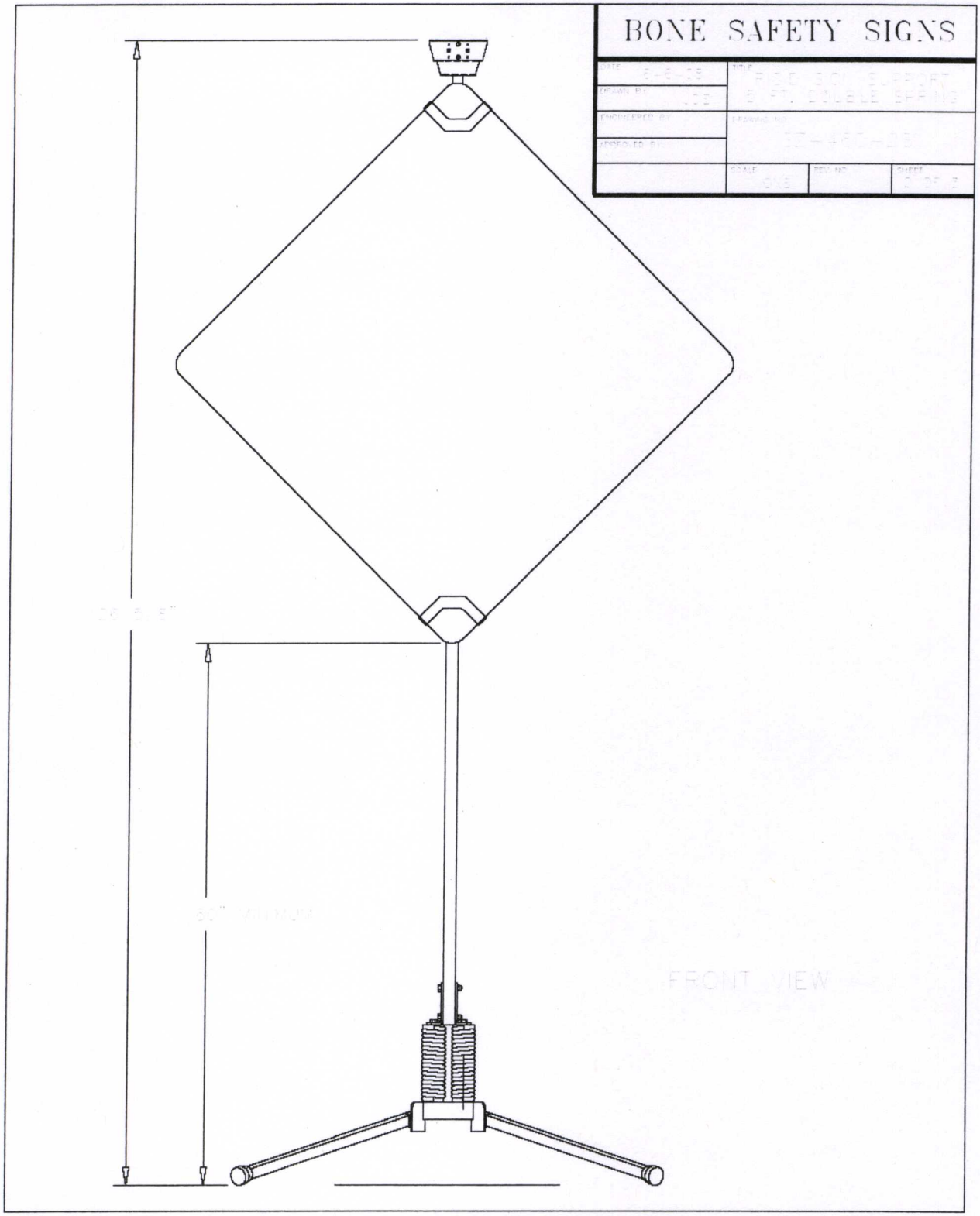


Figure 34: Manufacturer's Drawing