



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

July 25, 2007

1200 New Jersey Avenue, SE.  
Washington, DC 20590

In Reply Refer To: HSSD/CC-78D

Mr. Barry D. Stephens  
Sr. Vice President Engineering  
Energy Absorption Systems, Inc.  
3617 Cincinnati Avenue  
Rocklin, CA 95765

Dear Mr. Stephens:

Thank you for your May 8, 2007, letter requesting re-certification of the Federal Highway Administration's (FHWA) acceptance of your company's Safe-Stop<sup>®</sup> Trailer TMA as a test level 3 (TL-3) device for use on the National Highway System (NHS). Accompanying your letter was a report of crash testing conducted by E-Tech Testing Services, Inc. You requested that we continue to find this device acceptable for use on the NHS under the provisions of National Cooperative Highway Research Program (NCHRP) Report 350 "Recommended Procedures for the Safety Performance Evaluation of Highway Features." The FHWA had initially ruled on the Safe-Stop<sup>®</sup> Trailer TMA on July 11, 2002, in FHWA acceptance letter CC-78 and supplemented with three additional letters.

### **Introduction**

The FHWA guidance on crash testing of roadside safety hardware is contained in a memorandum dated July 25, 1997, titled "INFORMATION: Identifying Acceptable Highway Safety Features."

### **Testing**

The FHWA acceptance of the Safe-Stop<sup>®</sup> Trailer TMA was based on successful completion of the "optional" NCHRP Report 350 tests 3-52 and 3-53 as agreed to by Mr. Richard Powers, then of our office. During a review by a neutral third party of the crash testing conducted on another manufacturer's TMA Trailer we reached the conclusion that tests 3-52 and/or 3-53 may not be sufficient to verify that the trailer version of a TMA is crashworthy. At our meeting on April 20, 2007, we requested that EASI conduct test 3-51 on the Safe-Stop<sup>®</sup> Trailer TMA, as we were asking the manufacturer of the competing trailer to do the same. You complied, using a "blocked" shadow vehicle, and submitted the test report and videos for our review.

In your letter you also requested that the FHWA expand the acceptance of the Safe-Stop<sup>®</sup> Trailer TMA by acknowledging the successful results for a modified Test 3-51 and that this unit is capable of being used with an "infinite weight" support vehicle, can have a full-size flashing



arrow panel (48" x 96") installed without compromising impact performance, and fully passes the two standard as well as the two optional NCHRP 350 TL-3 TMA tests.

The flashing arrow panel was installed at the hitch end (tongue) of the unit to evaluate effects on impact performance as well as potential damage to the arrow panel itself. You also stated, and we agree, that all of the recommended NCHRP 350 evaluation criteria were successfully met. We noted that no additional hazards were created and the arrow panel was fully operational after, including operational lights and 90 degree tilting mechanism. In addition we recognized no damage occurred to the back end of the support vehicle or frame.

#### Summary of NCHRP Report 350 Test 3-51

2000P Test Vehicle:	1988 Chevrolet Pickup
Vehicle Mass:	2000 kg
Impact Speed:	99.0 km/hr
Shadow Vehicle:	1975 GMC 7500 Dump Truck
Shadow Vehicle Mass:	8550 kg, blocked against rigid wall
Occupant Impact:	9.6 m/s x-direction
Ridedown:	18.4 g's x-direction

#### **Findings**

Based upon your previous submittal and this new submittal, FHWA reconfirms that the Safe-Stop<sup>®</sup> Trailer TMA fully meets the TMA evaluation criteria in NCHRP Report 350 for Tests 3-50, 51, 52 and 53 at 100 km/h impact conditions. We also acknowledge that the Safe-Stop<sup>®</sup> Trailer TMA can be attached to heavy shadow vehicles weighing more than 9000 kg. Although the FHWA does not specifically endorse the use of arrow panels on trailer TMAs, we acknowledge that you successfully conducted a capacity test (3-51) and the arrow panel was not damaged and remained fully functional after the test.

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

- This acceptance is limited to the crashworthiness characteristics of the device(s).
- 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 the FHWA and the NCHRP Report 350.

- To prevent misunderstanding by others, this letter of acceptance, designated as number CC-78D, 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 Safe-Stop<sup>®</sup> Trailer TMA is a patented product and considered proprietary. If proprietary devices are specified by a highway agency for use on Federal-aid projects, except exempt, non-NHS 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 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.
- This acceptance letter shall not be construed as authorization or consent by the FHWA 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.

Sincerely yours,

A handwritten signature in blue ink that reads "George E. Rice, Jr." with a stylized flourish at the end.

George E. Rice, Jr.  
Acting Director, Office of Safety Design  
Office of Safety

Enclosure

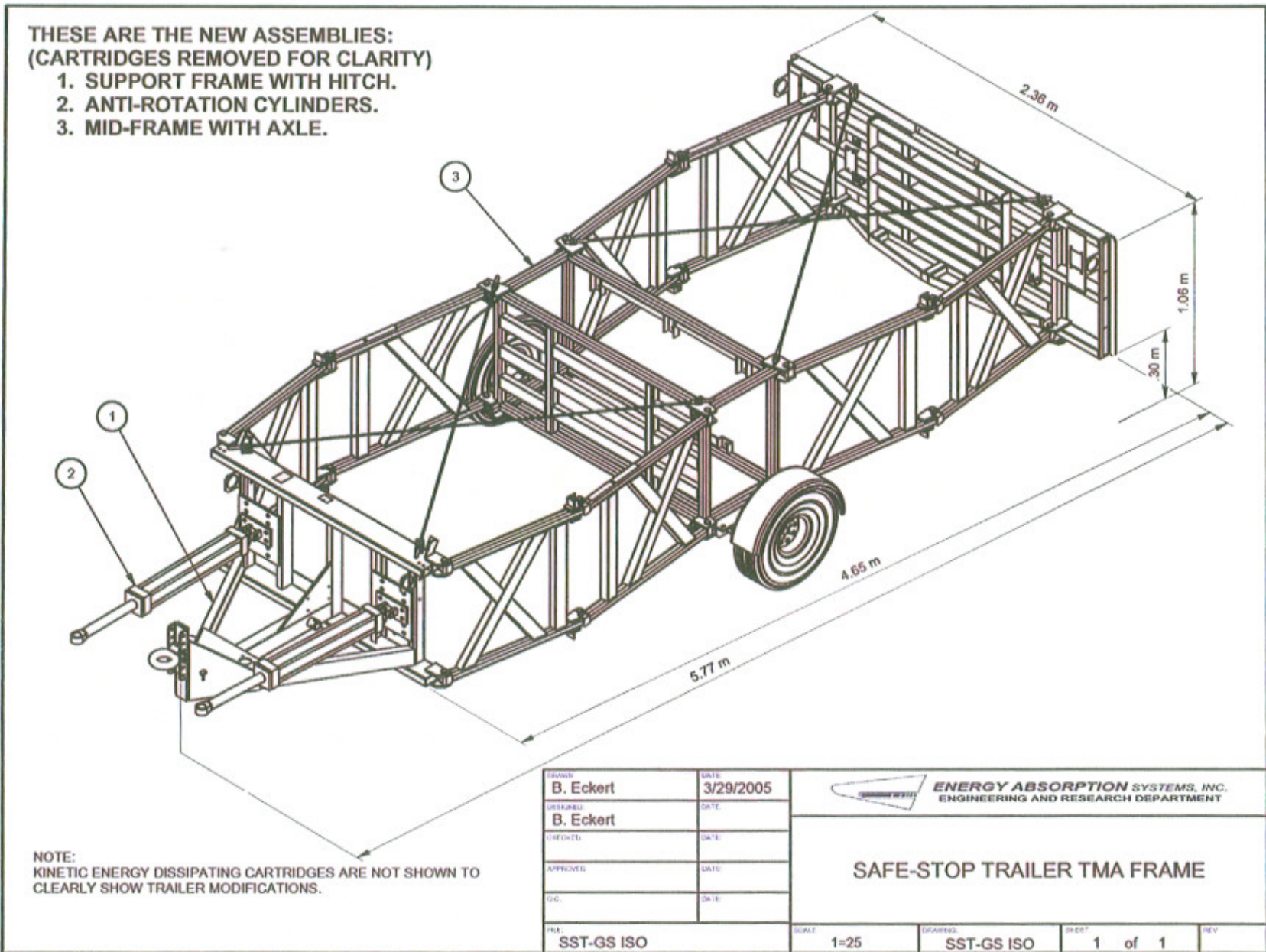


Illustration D-1. Safe-Stop Trailer TMA (1 of 1)



PARTS LIST			
ITEM	STOCK NO.	DESCRIPTION	QTY.
1	2751782-0000	WORM DRIVE ASSY MANUAL TILT ARROW BOARD	1
2	2751785-0000	DRIVE GEAR/MANUAL TILT ARROW BOARD/PT	1
3	2751784-0000	STOP ASSY MANUAL TILT ARROW BOARD	1
4	2751781-0000	BRACKET ASSY ADJ ARROWBOARD MOUNT L	1
5	2751788-0000	BRACKET ASSY ADJ ARROWBOARD MOUNT R	1
6	2751783-0000	HANDLE WORM DRIVE MANUAL TILT ARROWBD/PT	1
7	2702552-0100	PK. SNAP RING RETAINER, 1/4X3 3/4 P	2
8	2520846-INST	INSTRUCTIONS, TILT ASSY MANUAL ARROWBOARD	1
9	2701998-0100	BOLT CR, 1/2X3 P	1
10	2701998-0100	NUT LOCK, 1/2-13 P	2
11	2700011-0100	WASHER/UT, 1/2X1 3/8 P	6
12	2701997-0100	BOLT CR, 1/2X4 P	1

ARROWBOARD ORDERED SEPARATELY

**STEP 1**  
DRILL HOLES IN ARROWBOARD AS SHOWN  
(PILOT HOLES ARE HIGHLY RECOMMENDED)

ASSEMBLY NO. 3520846-0000	
ENERGY ABSORPTION SYSTEMS, INC. ELECTROSTATIC AIR RESISTANCE INDEPENDENT	
<b>TILT ASSY MANUAL ARROWBOARD</b>	
INSTRUCTION NO. 3520846-INST	
REV. N.T.S.	REV. 1 of 5

D. Hayes Jr. DESIGNED	31130007 REV.
A. Cox CHECKED	30620007 REV.
J. Elphinstone DESIGNED	31152007 REV.
A. Cox CHECKED	31152007 REV.
3520846-0000.dwg	

Revision	Date	Rev	By	CHK	APP
A	3/30/07	A	DHS	STT	AJC
B	4/27/07	B	DDG	JME	AJC

Illustration D-2. Arrow Board Option (1 of 2)



PARTS LIST			
ITEM	STOCK NO.	DESCRIPTION	QTY
1	3526847-0000	MOUNTING ASSY, ARROW BRD, UNIV, SST, WIDE	1
2	3526848-0000	SUPPORT BRACKET ASSY, ARWRBD, SST	1
3	3526849-INST	INSTRUCTIONS, ARWRBD, UNIV, PLATFRM, W/BRKTS	1

ASSEMBLY NO. 3526849-0000

ENERGY ABSORPTION SYSTEMS, INC.  
ENGINEERING AND RESEARCH DEPARTMENT

MOUNTING ASSY, ARWRBD, UNIV  
PLTFRM, SST, WIDE, W/SUPPORT BRACKETS  
INSTRUCTION: 3526849-INST

SCALE: N.T.S. DRAWING: 3526849-0000 SHEET: 1 of 1

DATE	3/7/2007
DESIGNED BY	D. Hayes Jr
CHECKED BY	A. Cox
DATE	2/26/2007
DESIGNED BY	J. Espartero
CHECKED BY	A. Cox
DATE	3/9/2007
DESIGNED BY	3526849-0000.kw

Illustration D-2. Arrow Board Option (2 of 2)