U.S. Department of Transportation
Federal Highway Administration

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

May 8, 2006

In Reply Refer To: HSA-10/CC-73C

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

Dear Mr. Stephens:

Mr. Douglas Bernard recently delivered your April 19, 2006, letter to Mr. Richard Powers of my staff. In this letter you requested the Federal Highway Administration (FHWA) acceptance of a low-speed Wide REACT at NCHRP Report 350 test level 1 (TL-1). The configuration of this unit is similar to your TL-3 and TL-2 Wide REACT designs that have been previously reviewed and accepted by the FHWA (reference acceptance letters HSA-10/CC-73, CC-73A and CC-73B). To support your request, you included drawings of the new unit with widths of 60" and 96", a chart listing the kinetic energy dissipating capacities of common REACT cylinders used to assemble these systems and a figure listing the estimated energy-absorption capacities of your TL-2, TL-3 and proposed TL-1 units. Also included, as reference, were copies of one-page summaries from previously accepted (60"/96") TL-2 and (60"/96"/120") TL-3 Wide REACT tests.

The TL-1 Wide REACT is a redirective, non-gating crash cushion having an effective length of 3.23 m (10.6 feet). It can be configured with backup widths from 1524m (60") to 2440 (96") as shown in Enclosure 1. Because the TL-1 REACT has essentially the same framework and components as the previously accepted TL-2 and TL-3 Wide REACTs, we agree that the low-speed designs may be assumed to meet the National Cooperative Highway Research Program Report 350 evaluation criteria at TL-1 without additional testing and can be used on the National Highway System (NHS) when such use is acceptable to the contracting authority. However, it is critical that they be used only in locations where impact speeds are not expected to exceed 50 km/h (30 mph) or in locations where a higher-capacity, longer crash cushion cannot be installed due to space limitations.

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

- This acceptance is limited to the assumed crashworthiness characteristics of the device and does not cover its structural features or its conformity with the Manual on Uniform Traffic Control Devices.
- Should the FHWA discover that the analysis you presented was flawed, or that an in-service performance evaluation reveals unacceptable safety problems, or that the device being marketed is significantly different from the version described herein, it reserves the right to modify or revoke it 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.
- To prevent misunderstanding by others, this letter of acceptance, designated as number CC-73C, shall not be reproduced except in full. This letter, and the analysis upon which this letter is based, is public information. All such letters and documentation may be reviewed at our office upon request.
- The TL-1 Wide REACT is a patented product and is 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.

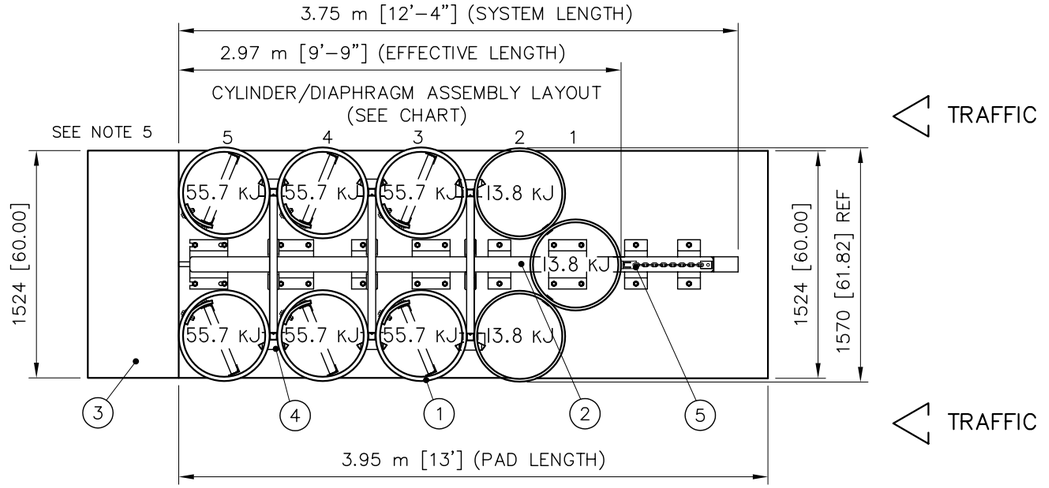
Sincerely yours,

/original signed by/

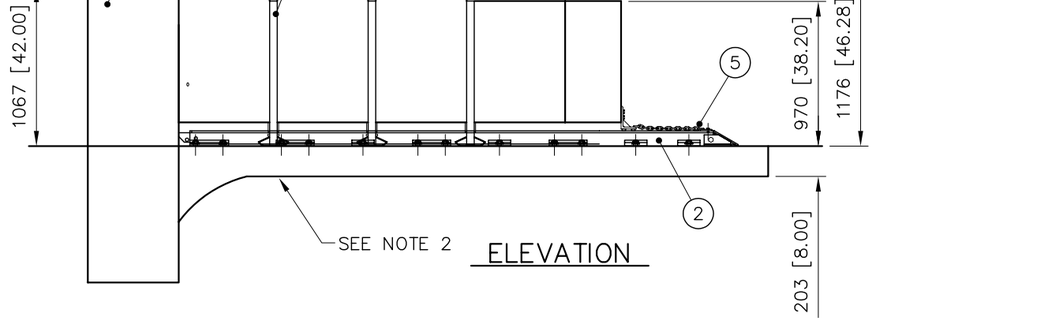
John R. Baxter, P.E.
Director, Office of Safety Design
Office of Safety

Enclosure

CYLINDER/DIAPHRAGM CONFIGURATION		
ROW	SDR NUMBER	CYLLINDER HIEGHT
1	32.5	31"
2	32.5	31"
3	21.0	39"
4	21.0	39"
5	21.0	39"



PLAN



ELEVATION

NOTES:

1. IN COMPLIANCE WITH THE AASHTO 2002 ROADSIDE DESIGN GUIDE, MANUFACTURER RECOMMENDS REMOVAL OF ALL CURBS AND ISLANDS TO ENSURE PROPER IMPACT PERFORMANCE.
2. 203 [8.00] MIN. REINFORCED 28 MPa [4000 PSI] P.C. CONCRETE PAD OR 203 [8.00] MIN. NON–REINFORCED 28 MPa [4000 PSI] P.C. CONCRETE ROADWAY, MEASURING AT LEAST 3.6 m [12'–0"] WIDE BY 15.24 m [50'–0"] LONG.
3. **SEE THE "REACT 350 (60"/96"/120") PRODUCT MANUAL" FOR A DESCRIPTION OF ITS IMPACT PERFORMANCE CHARACTERISTICS AND DESIGN LIMITATIONS BEFORE PLACING A SYSTEM AT A GIVEN SITE. INFORMATION AND COPIES OF ABOVE MANUAL ARE AVAILABLE BY CALLING CUSTOMER SERVICE DEPARTMENT AT (888) 323–6374.**
4. UNITS OF MEASUREMENT ARE MILLIMETERS [INCHES] UNLESS OTHERWISE NOTED.
5. WHERE NECESSARY, THE CUSTOMER SHALL SUPPLY A TRANSITION FROM THE REACT SYSTEM TO THE OBJECT BEING SHIELDED.
6. NOSE COVER AND REFLECTORS SHALL BE ADDED PER MUTCD REQUIREMENTS. NOSE COVER TO BE ORDERED SEPARATELY.

FIGURE 1

UNIDIRECTIONAL
MODEL NO. 31C060

KEY
1. CYLINDER ASSEMBLY (TYP.)
2. MONORAIL
3. CONCRETE BACKUP
4. DIAPHRAGM ASSEMBLY
5. TRIGGER ASSEMBLY

Revisions	Date	Rev.	By	Ckd.	App.

REFERENCES

SERIAL#		BACKUP ASSEMBLY	3535064–0000
SALES ORDER#		CONCRETE PAD/BACKUP	3535069–0000
EH PROJECT#		REFLECTIVE NOSE ASSEMBLY	3535071–0000
DESIGN SPEED	50 km/h [31 MPH]	DIAPHRAGM ASSEMBLY	3535058–0000
NOSE COLOR		MONORAIL ASSEMBLY	3535111–0000
NUMBER OF UNITS		MISCELLANEOUS HARDWARE ASSEMBLY	3535067–0000
REFLECTOR ASSEMBLY	3535055–0000	CYL/DIA ASSEMBLIES	SEE CYL/DIA ASSEMBLY CHART

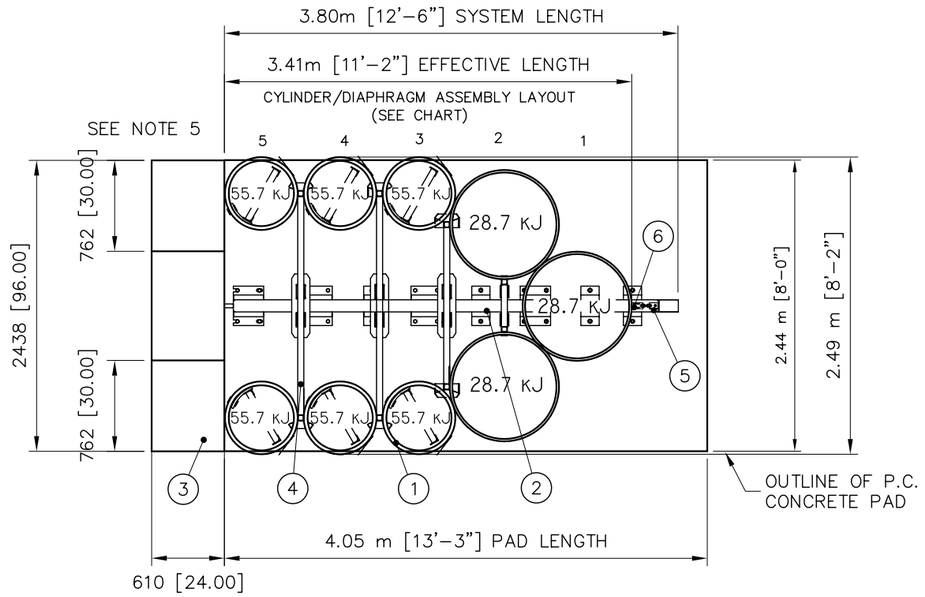
DRAWN:		DATE:
DESIGNED:	A. Franklin	DATE: 3/30/06
CHECKED:		DATE:
APPROVED		DATE:
CAD FILE:	R31C060U.dwg	

ENERGY ABSORPTION SYSTEMS, INC.
ENGINEERING AND RESEARCH DEPARTMENT

REACT 350® (60") SYSTEM
60" SYSTEM W/CONCRETE BACKUP

SCALE	DWG.	SHEET	REV
1:40	R31C060U	1 of 1	–

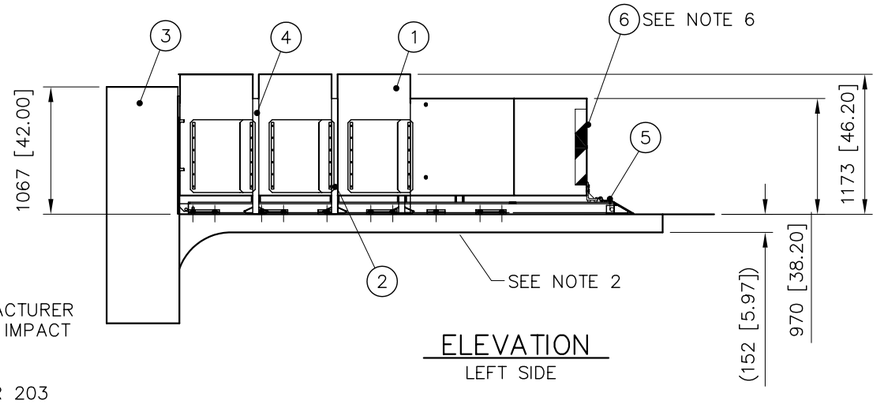
CYLINDER/DIAPHRAGM CONFIGURATION		
ROW	SDR NUMBER	CYLLINDER HIEGHT
1	32.5	31”
2	32.5	31”
3	21.0	39”
4	21.0	39”
5	21.0	39”



TRAFFIC

TRAFFIC

PLAN



ELEVATION
LEFT SIDE

FIGURE 2

NOTES:

1. IN COMPLIANCE WITH THE AASHTO 2002 ROADSIDE DESIGN GUIDE, MANUFACTURER RECOMMENDS REMOVAL OF ALL CURBS AND ISLANDS TO ENSURE PROPER IMPACT PERFORMANCE.
2. 152 [6.00] MIN. REINFORCED 28 MPa [4000 PSI] P.C. CONCRETE PAD OR 203 [8.00] MIN. NON–REINFORCED 28 MPa [4000 PSI] P.C. CONCRETE ROADWAY MEASURING AT LEAST 3.66 m [12’–0”] WIDE BY 15.24 m [50’–0”] LONG.
3. **SEE THE ”REACT 350 (60”/96”/120”) PRODUCT MANUAL” FOR A DESCRIPTION OF ITS IMPACT PERFORMANCE CHARACTERISTICS AND DESIGN LIMITATIONS BEFORE PLACING A SYSTEM AT A GIVEN SITE. INFORMATION AND COPIES OF ABOVE MANUAL ARE AVAILABLE BY CALLING CUSTOMER SERVICE DEPARTMENT AT (888) 323–6374.**
4. UNITS OF MEASUREMENT ARE MILLIMETERS [INCHES] UNLESS OTHERWISE NOTED.
5. WHERE NECESSARY, THE CUSTOMER SHALL SUPPLY A TRANSITION FROM THE REACT SYSTEM TO THE OBJECT BEING SHIELDED.
6. NOSE COVER & REFLECTORS SHALL BE ADDED PER MUTCD REQUIREMENTS. NOSE COVER & DEBRIS COVER TO BE ORDERED SEPARATELY.

UNIDIRECTIONAL
MODEL No. 31C096

KEY

1. CYLINDER ASSEMBLY (TYP.)
2. MONORAIL
3. CONCRETE BACKUP
4. DIAPHRAGM ASSEMBLY
5. TRIGGER ASSEMBLY
6. REFLECTIVE NOSE COVER

Revisions	Date	Rev.	By	Ckd.	App.

REFERENCES

SERIAL#		BACKUP ASSEMBLY	3535097–0000
SALES ORDER#		CONCRETE PAD/BACKUP	3535106–0000
EH PROJECT#		REFLECTIVE NOSE ASSEMBLY	3535071–0000
DESIGN SPEED	50 km/h [31 MPH]	DIAPHRAGM ASSEMBLY	3535095–0000
NOSE COLOR		MONORAIL ASSEMBLY	3535111–0000
NUMBER OF UNITS		MISC HARDWARE ASSEMBLY	3535067–0000
REFLECTOR ASSEMBLY		CYL/DIA ASSEMBLIES	SEE CHART

DRAWN:	DATE:
DESIGNED: A. Franklin	DATE: 3/30/06
CHECKED:	DATE:
APPROVED	DATE:
CAD FILE: R31C096U.dwg	
NEXT ASSEMBLY:	

ENERGY ABSORPTION SYSTEMS, INC.
ENGINEERING AND RESEARCH DEPARTMENT

REACT 350®(96”) SYSTEM
W/ CONCRETE BACKUP

SCALE	DWG.	SHEET	REV
1=50	R31C096U	1 of 1	–