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/B-141B

Mr. Stephen L. Brown
President
Trinity Highway Safety Products, Inc.
P.O. Box 568887
Dallas, Texas 75356-8887

Dear Mr. Brown:

In my November 17, 2005, acceptance letter B-141, I agreed that a 3-rope CASS cable barrier using weakened S4 x 7.7 structural steel posts set in concrete footings on 20-foot centers met the National Cooperative Highway Research Program (NCHRP) Report 350 evaluation criteria as a test level 3 (TL-3) traffic barrier. In your April 28, 2006 letter to Mr. Richard Powers, you requested that the same system with the posts set on 32.5-foot centers also be accepted as an NCHRP Report 350 TL-3 design. To support this request, the Texas Transportation Institute conducted a test on the modified system on March 10, 2006, and detailed the results in an April 2006 report, "NCHRP Report 350 Test 3-11 of the CASS-TL3 with Posts in Sockets Spaced at 9.9 M." For this test, the three 3/4-inch diameter cables were set at the same heights as in the earlier test (i.e., 21.0, 25.2, and 29.5 inches above the ground surface, measured to the center of each cable) and each line post was weakened by adding two 11/16-inch diameter holes through each flange at ground. The cables were not pre-stretched, but were tensioned to 5,600 pounds force for the test. The dynamic deflection for the 330-foot long test installation was 11.2 feet. By comparison, the deflection in your earlier test with a 20-foot post spacing was 7.7 feet. As can be seen in the attached test summary sheet, all Report 350 evaluation criteria for test 3-11 were satisfactorily met. I would be remiss, however, if I did not express my concern for the performance of this design when it is installed under typical field conditions. Although the barrier performed well under ideal test impact conditions with the pickup truck, the likelihood of passenger car underrides of **any cable system** may increase as the post spacing increases, particularly when the barrier is installed on non-level or slightly irregular terrain and the cables are not restrained from lifting at each post. With fewer posts, the dynamic deflection of the barrier is also likely to increase when it is installed along the convex sides of horizontal curves. Consequently, some transportation agencies have limited post spacing to approximately 20 feet for cable barriers.

In spite of the above caveat, the CASS TL-3 design described above may be used as either a roadside or median barrier on the National Highway System (NHS) when such use is acceptable to the contracting agency. Although the cables used in the test were not pre-stretched, this acceptance is also valid if and when pre-stretched cables are used, assuming that the recommended post-tensioning is applied to the cables.

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

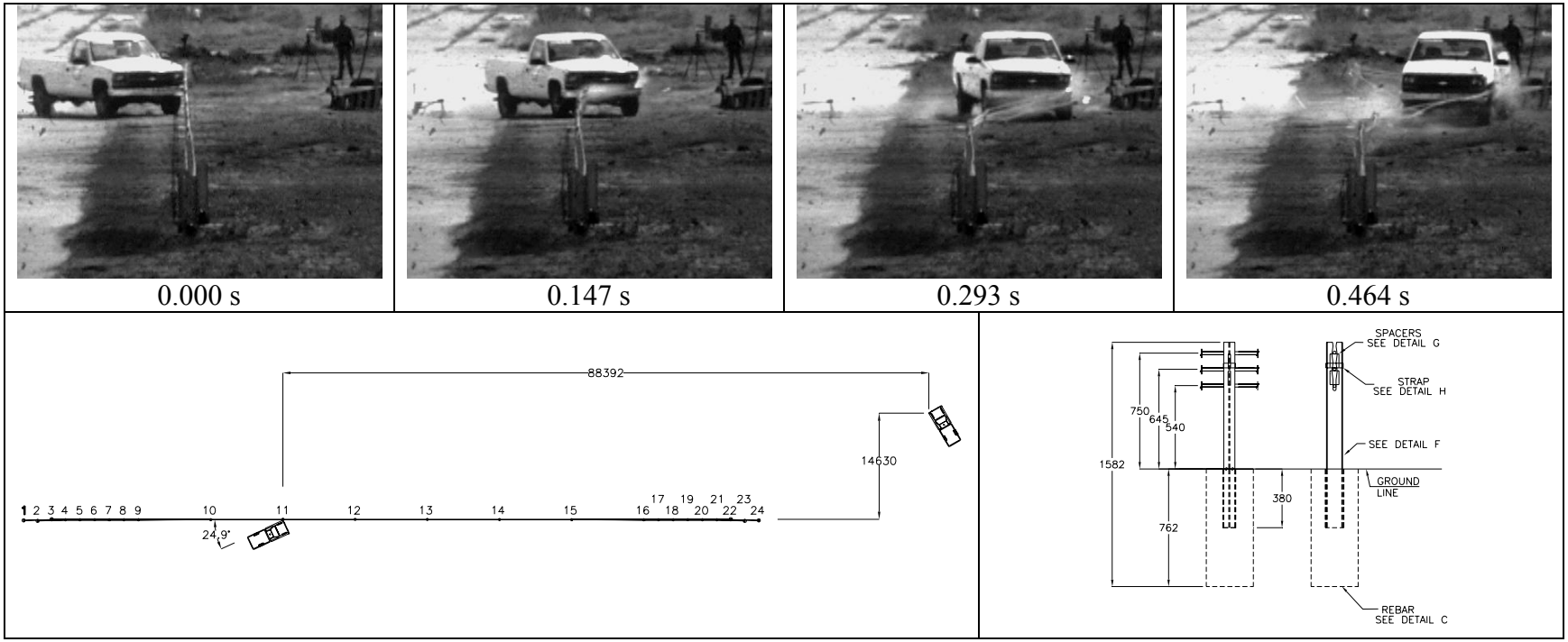
- Our acceptance is limited to the crashworthiness characteristics of the CASS TL-3 design under the reported test conditions and does not cover its structural features, durability, or maintenance characteristics.
- Any additional design or material changes that may adversely affect the crashworthiness of the barrier 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 barrier 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.
- To prevent misunderstanding by others, this letter of acceptance, designated as number B-141B, 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 CASS Cable Barrier includes patented components and is considered proprietary. When 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 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



General Information

Test Agency	Texas Transportation Institute
Test No.	400001-TCR12
Date	03-10-2006

Test Article

Type	Cable Barrier
Name	CASS-TL3
Installation Length (m)	100.6
Material or Key Elements	3 Wire Ropes with S4x7.7 Posts in Concrete Sockets Spaced at 9.9 m
Soil Type and Condition	Concrete Sockets in Standard Soil, Dry

Test Vehicle

Type	Production
Designation	2000P
Model	2000 Chevrolet C2500
Mass (kg)	
Curb	2131
Test Inertial	2102
Dummy	None
Gross Static	2102

Impact Conditions

Speed (km/h)	102.6
Angle (deg)	24.9

Exit Conditions

Speed (km/h)	N/A
Angle (deg)	N/A

Occupant Risk Values

Impact Velocity (m/s)	
Longitudinal	2.0
Lateral	3.2
THIV (km/h)	12.9
Ridedown Accelerations (g's)	
Longitudinal	3.9
Lateral	6.7
PHD (g's)	6.9
ASI	0.40
Max. 0.050-s Average (g's)	
Longitudinal	-1.4
Lateral	3.6
Vertical	-1.2

Test Article Deflections (m)

Dynamic	3.41
Permanent	3.41
Working Width	3.75

Vehicle Damage

Exterior	
VDS	11LFQ2
CDC	11LFEW2
Max. Exterior Vehicle Crush (mm)	180
Interior	
OCDI	LF00000000
Max. Occupant Compartment Deformation (mm)	10

Post-Impact Behavior

(during 1.0 sec after impact)

Max. Yaw Angle (deg)	33
Max. Pitch Angle (deg)	-1
Max. Roll Angle (deg)	9

Figure 12. Summary of results for *NCHRP Report 350* test 3-11 on the CASS-TL3 spaced at 9.9 m.