U.S. Department
of Transportation
Federal Highway Administration

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

June 9, 2005

In Reply Refer To: HSA-10 CC-54H

Mr. Brian Smith
Trinity Industries, Inc.
Highway Safety Systems Division
2525 Stemmons Freeway
Dallas, TX 75207

Dear Mr. Smith:

On April 10, 2001, the Federal Highway Administration (FHWA) acknowledged acceptable performance of an extended version of your original TRACC impact attenuator (named the FasTRACC) when it was impacted by a 2000-kg pickup truck head-on at a speed of 112.3 km/h (a modified version of the National Cooperative Highway Research Program (NCHRP) Report 350 test 3-31). In acceptance letter CC-54G, dated March 9, 2005, the FHWA accepted a modified design for the standard TL-2/TL-3 TRACC family of attenuators. Mr. James Albritton's May 10, 2005, letter to Mr. Richard Powers of my staff included a summary report prepared by Dr. Dean Alberson of the Texas Transportation Institute documenting the results of a high speed pickup truck test into an extended version of your modified TRACC design and he requested that an acceptance letter for this design be sent to you.

The new FasTRACC differs from the modified TRACC system in length only. The overall effective length of the FasTRACC is 7925 mm compared to 6477 mm for the standard TRACC. The increased length comes from the addition of a set of standard two-bay side panels on each side of the system supported by two additional sliding frames which ride along a lengthened base assembly. The base assembly also incorporates rip plates to provide approximately 1800 mm of additional stroke in an end-on impact. The FasTRACC is anchored to its foundation using a total of 32 anchors compared to the 26 anchor bolts in the standard TL-3 TRACC. A schematic drawing is shown in Enclosure 1.

Although testing guidelines contained in the NCHRP Report 350 do not require impact speeds over 100 km/h, your FasTRACC essentially met all evaluation criteria for a 100 km/h crash at the higher impact speed of 112.2 km/h. The test vehicle was stopped with minimal roll, pitch, or yaw in 4739 mm. Occupant impact velocity was 9.6 m/s and the subsequent ridedown

acceleration was 20.5 g's, with the latter value slightly above the recommended limit of 20 G's. However, since the test conducted was neither a standard nor required Report 350 test, I can agree with Dr. Alberson's conclusion and call this test result marginal but acceptable. Summary test results are shown in Enclosure 2.

Based on our review of the information you provided to us, I conclude that the modified FasTRACC remains an acceptable TL-3 crash cushion, but one which has demonstrated additional capacity for the pickup truck in head-on crashes at a higher speed than the 100 km/h recognized by the NCHRP Report 350.

Sincerely yours,

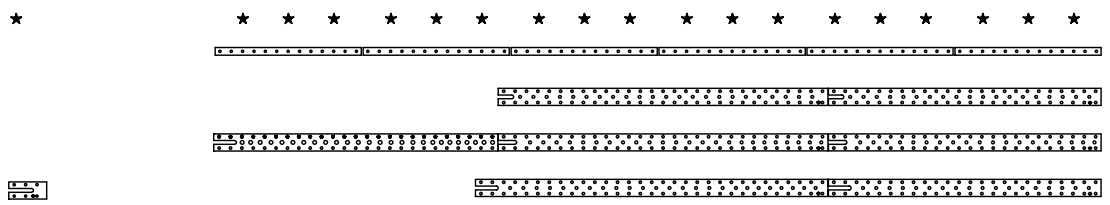
/original signed by/

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

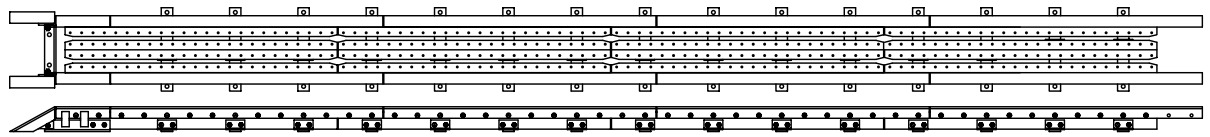
2 Enclosures

PARTS LIST			
ITEM	PART NO.	QTY	DESCRIPTION
1	05 FASTRACC	1	FASTRACC, 23'8", TL-3+

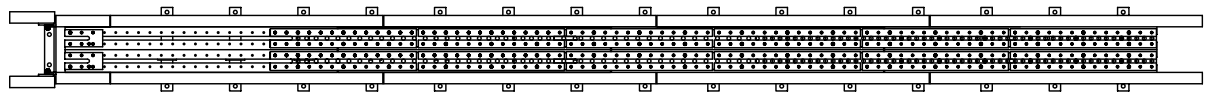
STAGE 1 | STAGE 2 | STAGE 3 | STAGE 4



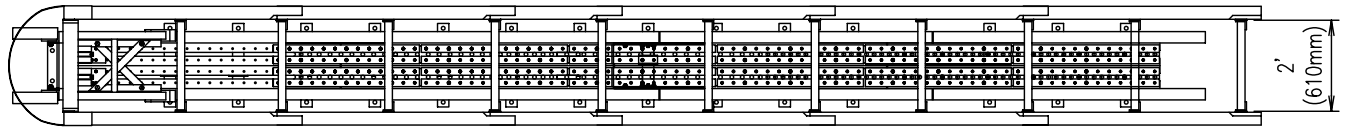
★ = DOUBLER BOLT LOCATIONS
DOUBLERS
3rd LAYER — RIP PLATES FOR ONE SIDE
2nd LAYER — OF FASTRACC BASE
BOTTOM LAYER



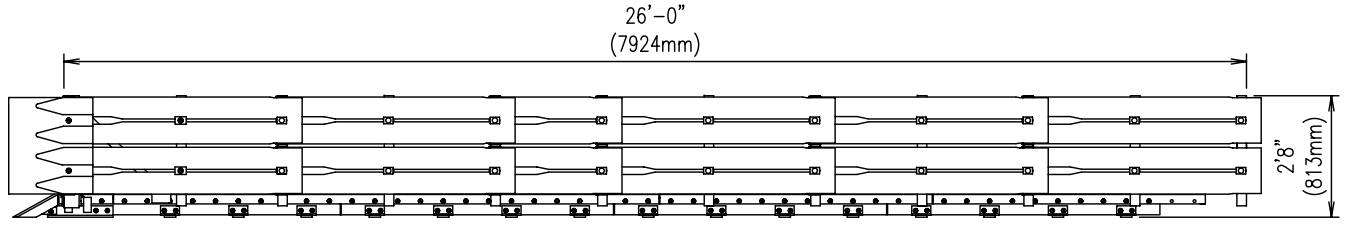
FASTRACC BASE ASSEMBLY
WITHOUT RIP PLATES



FASTRACC BASE ASSEMBLY
WITH RIP PLATES AND DOUBLERS



TOP VIEW OF
COMPLETE FASTRACC



SIDE VIEW OF
COMPLETE FASTRACC

UPFACTOR= 32

REV	BY	DATE	REVISION
B	BJ	3.22.05	CHG'D SEG 4 TO FULL SEGMENT

TOLERANCES: UNLESS OTHERWISE SPECIFIED ON THIS DRAWING THE FOLLOWING TOLERANCES SHALL APPLY. SEE EXODYNE STANDARDS FOR ADDITIONAL TOLERANCES. FRACTIONS MACHINED ±1/64" (.016") ALL OTHERS: (1" to 2")±1/16", (2' to 10')±1/8", (10' to 20')±1/4", (OVER 20')±1/2" DECIMALS 3 PLACE ±.005 2 PLACE ±.03 1 PLACE ±.1 ANGLES MACHINED ±1/2 DEG. ALL OTHERS ±1 DEG.

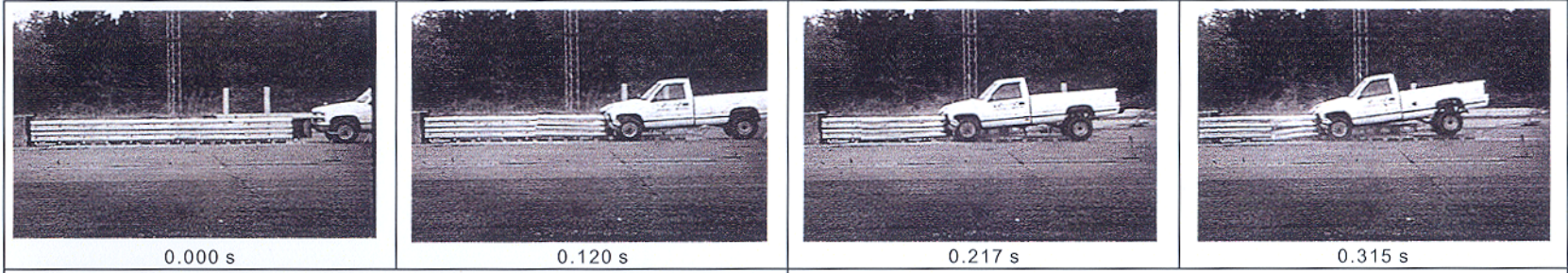
ETI EXODYNE
EXODYNE TECHNOLOGIES, INC. FORT WORTH, TEXAS

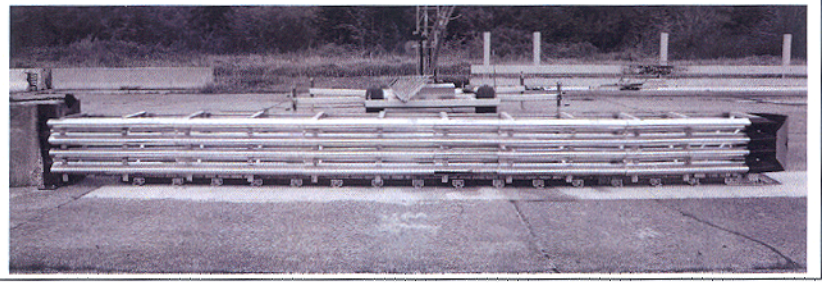
DRAWN	BJ	1-29-05
CHKD	BJ	1-29-05
APPD	JRA	1-31-05
ITMCLS	05 TRACC	
NLA	~	
WEIGHT	TBD	

FASTRACC SYSTEM,
TL-3+

DRAWING NO: 05 FASTRACC

SHEET 1 OF 1 | REV B | SIZE C





General Information

Test Agency	Texas Transportation Institute
Test No.	400001-HST3
Date	03/31/2005

Test Article

Type	Crash Cushion
Name	High-speed TRACC
Installation Length (m)	7.95
Material or Key Elements	Guidance Track, Impact Sled, Intermediate Frames, Fender Panels
Soil Type and Condition	Concrete, Dry Pavement

Test Vehicle

Type	Production
Designation	2000P
Model	1998 Chevrolet 2500 Pickup Truck
Mass (kg)	
Curb	2317
Test Inertial	2077
Dummy	No Dummy
Gross Static	2077

Impact Conditions

Speed (km/h)	112.2
Angle (deg)	0

Exit Conditions

Speed (km/h)	Stopped
Angle (deg)	x.x

Occupant Risk Values

Impact Velocity (m/s)	
x-direction	9.6
y-direction	0.3
THIV (km/h)	34.5
Ridedown Accelerations (g's)	
x-direction	-20.496392
y-direction	5.2
PHD (g's)	20.5
ASI	1.27
Max. 0.050-s Average (g's)	
x-direction	-14.9
y-direction	-1.5
z-direction	4.5

Test Article Deflections (m)

Dynamic	6.58
Permanent	6.58

Vehicle Damage

Exterior	
VDS	12FC2
CDC	12FLEN2
Maximum Exterior Vehicle Crush (mm)	340
Interior	
OCDI	FS0000000
Max. Occ. Compart. Deformation (mm)	

Post-Impact Behavior (during 1.0 s after impact)

Max. Yaw Angle (deg)	
Max. Pitch Angle (deg)	
Max. Roll Angle (deg)	

Figure 5. Summary of results for modified *NCHRP Report 350* test 3-31 on the High-Speed TRACC.