



U.S. Department
of Transportation

**Federal Highway
Administration**

June 27, 2006

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

In Reply Refer To:
HSA-10/CC-36D

Mr. Michael Kempen
Impact Absorption, Inc.
46-06 245th Street
Douglaston, NY 11362

Dear Mr. Kempen:

The Vanderbilt Truck-Mounted Attenuator (VTMA) design, originally confirmed as being crashworthy by Mr. Frederick G. Wright, Jr. in his February 13, 2001, letter, was subsequently modified by adding a rear impact face with support wheels. The original VMTA was cantilevered from the shadow vehicle and supported by a wire rope/steel boom assembly. The modified design successfully met the evaluation criteria for the National Cooperative Highway Research Report (NCHRP) Report 350 test 3-52, one of the two optional TMA tests identified in that document.

Via a FedEx package received on May 18, 2006, you provided information on a further modification to the VTMA – the addition of front wheels and a trailer hitch assembly. This new design transforms the unit from a cantilevered-type design directly connected to the frame of a support vehicle to an independent trailer, enabling quick hook-up and detachment from a support vehicle. The new design is shown as Enclosure 1. Your undated letter, which arrived in the package, requested FHWA acceptance of this new design.

To verify the continued crashworthiness of the VTMA, you conducted the NCHRP Report 350 test 3-52 at the Transportation Research Center in East Liberty, Ohio. Test 3-52 requires a 100-km/h impact at zero degrees with a 2000-kg pickup truck striking the attenuator with the centerline of the pickup truck offset one-third of the pickup truck width from the centerline of the TMA. Your test was run within these parameters with a maximum reported occupant impact velocity of 10.6 m/s and a maximum ridedown acceleration of 11.6 g's. This latter value was less than the Report 350 preferred 15 g's, and significantly less than the maximum allowable acceleration of 20 g's. The test summary sheet is shown in Enclosure 2. The occupant impact velocity and subsequent ridedown accelerations were both lower than the corresponding values in the earlier test 3-52 when the VTMA was connected directly to the support truck. These reductions were most likely the result of the design of the trailer armature, which includes a dampening mechanism that dissipates some of the energy of the impacting vehicle.



Based on the reported test results, I concur that the trailer VMTA meets the NCHRP Report 350 evaluation criteria for test 3-52, and may be assumed to satisfy these criteria for tests 3-50 and 3-51 as well. I understand that the VTMA is not currently available for use in the United States. If it is eventually sold here, all plans and specifications will need to be converted to English, with copies provided for our files.

Sincerely yours,

/original signed by/

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

2 Enclosures



General Information

Test Agency	Transportation Research Center Inc. (TRC Inc.)
Test Type	NCHRP 3-52
Test No.	060325
Date	March 25, 2006
Test Article	Truck Mounted Attenuator
Type	Impact Absorption
Name or Manufacturer	4 polyethylene cylinders
Size and/or dimension and material of key elements	
Soil Type and Condition	N/A
Test Vehicle	
Type	Production Model
Designation	2000P
Model	1997 GMC 2500 Sierra SL
Mass (kg)	
Curb	
Test Inertial Dummy(s)	2001.6
Gross Static	N/A
	2001.6

Impact Conditions

Speed (km/h)	97.7
Angle (deg)	0
Exit Conditions	
Speed (km/h)	N/A
Angle (deg)	N/A
Occupant Risk Values	
Impact Velocity (m/s)	
x-direction	10.6
y-direction	0.4
THIV (optional)	N/A
Ridedown Acceleration (g's)	
x-direction	11.6
y-direction	4.8
PHD (optional)	N/A
ASI (optional)	N/A
Max. 0.050 -s Average (g's)	
x-direction	N/A
y-direction	N/A
z-direction	N/A

Test Article Deflections (m)

Dynamic	N/A
Permanent	0.3
Vehicle Damage	
Exterior	
VDS	N/A
CDC	12FDEW2
Interior	
OCDI	F0000000
Maximum Exterior Vehicle Crush (mm)	Not recorded
Max. Occ. Compart. Deformation (mm)	24
Post-Impact Vehicular Behavior	
Maximum Roll Angle (deg)	5
Maximum Pitch Angle (deg)	16
Maximum Yaw Angle (deg)	34

Vehicle Trajectory Post Test

The impacting vehicle's final most outer left trajectory did not stay within six feet of the centerline on which it was traveling. Assuming that the impacting vehicle was centered mid-lane at impact, it would not have stayed within a 12-foot lane width.

Figure 9. Summary of results for test 060325