



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

In Reply Refer To:
HSA-10/B-144

March 10, 2006

Mr. Alex F. Talbott
LifeNet SoftWalls, LLC
8311 Shelbyville Road
Louisville, KY 40222

Dear Mr. Talbott:

In your February 2 letter, you requested the Federal Highway Administration (FHWA) acceptance of a barrier system comprised of used automobile tires called the LifeNet SoftWalls Median Barrier System. You also sent me copies of test reports prepared by the Transportation Research Center in East Liberty, Ohio, that documented the results of the National Cooperative Highway Research Program (NCHRP) Report 350 tests 3-10 and 3-11. Initial staff review of these reports revealed some errors and inconsistencies that needed to be addressed. Corrected copies of these reports were received electronically on March 3.

The tested LifeNet Softwalls barrier system consisted of approximately 400 used automobile tires with diameters ranging from 23 inches to 31 inches. These tires were arranged in stacks seven tires high and connected together with tire treads from other tires. Enclosure 1 shows the component parts and the layout of the test installation. As can be seen, the installation was set in a 4.5 foot offset zigzag pattern with each individual segment consisting of 6 interlocking stacks of tires. The barrier height was 4.5 feet and its overall length was 105 feet. The test installation was freestanding on a flat concrete surface and was unanchored. Tennis balls were used under the tread strap sets to simulate drainage risers.

In test 3-10, the small car impacted the barrier at 100.7 kmh and an impact angle of 20 degrees approximately 80 feet downstream from the beginning of the installation. The vehicle was effectively "captured" (rather than redirected) by the barrier, which straightened out during the impact and slid along the ground approximately 17 feet longitudinally and 12 feet laterally. Occupant impact velocity was 11.6 m/s and the ridedown acceleration was 9.3 G's. In test 3-11, the pickup truck impacted at 100.3 kmh and at an impact angle of 25 degrees, also approximately 80 feet from the upstream end of the test installation. Again, the vehicle was captured upright by the barrier as it was straightened out from its original zigzag alignment. The barrier moved approximately 40 feet longitudinally and 16 feet laterally. Occupant impact velocity was 9.7 m/s and the ridedown acceleration was 5.7 G's. In both tests, the selected



impact point was 80 feet from the upstream end of the test installation thus establishing the design length of need point. Enclosure 2 shows the summary sheets for the two tests that were run.

Based on the reported results of these tests, the LifeNet SoftWalls Median Barrier System meets the evaluation criteria in the NCHRP Report 350 for a test level 3 longitudinal barrier and may be used on the National Highway System if selected for use by a transportation authority. In both tests, acceptable crash performance was contingent upon the test vehicles being stable immediately prior to impact (i.e., the vehicles' suspensions were neither compressed nor extended) and upon the LifeNet Softwalls installation being free to translate both longitudinally and laterally along the ground. End users may require additional testing if your barrier is installed on sloping terrain or on a surface that may prevent or restrict its free movement when struck by a vehicle.

Please note the following standard provisions that apply to this acceptance letter:

- This acceptance is based on the reported crash performance of the LifeNet SoftWalls barrier under the conditions in which it was tested. It is not intended to address its structural or maintenance characteristics or its long term durability.
- 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 mechanical properties and geometry as that submitted for acceptance.
- To prevent misunderstanding by others, this letter of acceptance, designated as number B-144 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.
- If the LifeNet SoftWalls barrier is patented it is considered "proprietary." If proprietary devices are *specified by a highway agency* for use on Federal-aid 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, a copy of which is enclosed.
- 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,

/original signed by John R. Baxter/

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

2 Enclosures

C-TREAD STRAP FASTENINGS 2

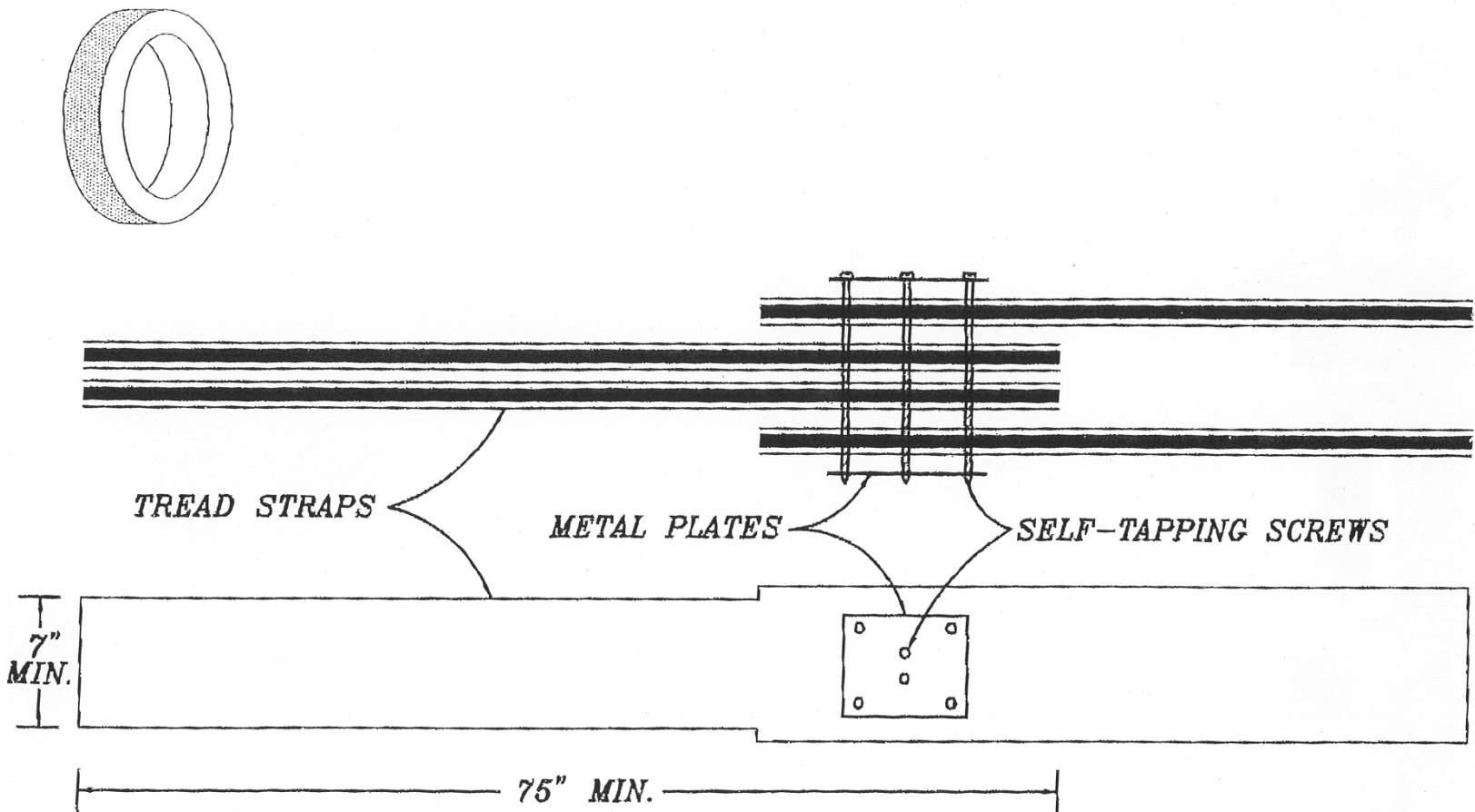
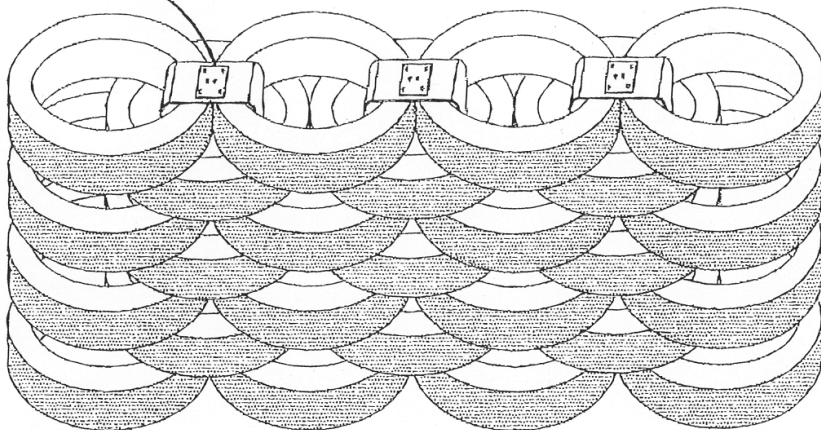


Figure 1. Details of the LifeNet SoftWalls Median Barrier System (continued)

E-ROW ASSEMBLY

TREAD STRAP SETS



TREAD STRAP SETS

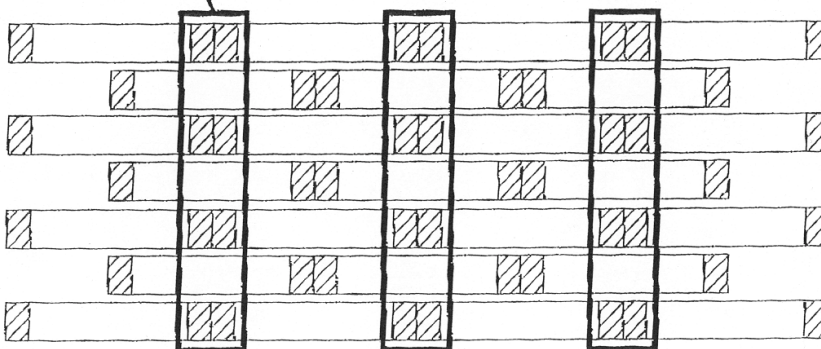


Figure 1. Details of the LifeNet SoftWalls Median Barrier System (continued)

F-ROWS ALIGNED TO CREATE WAVE

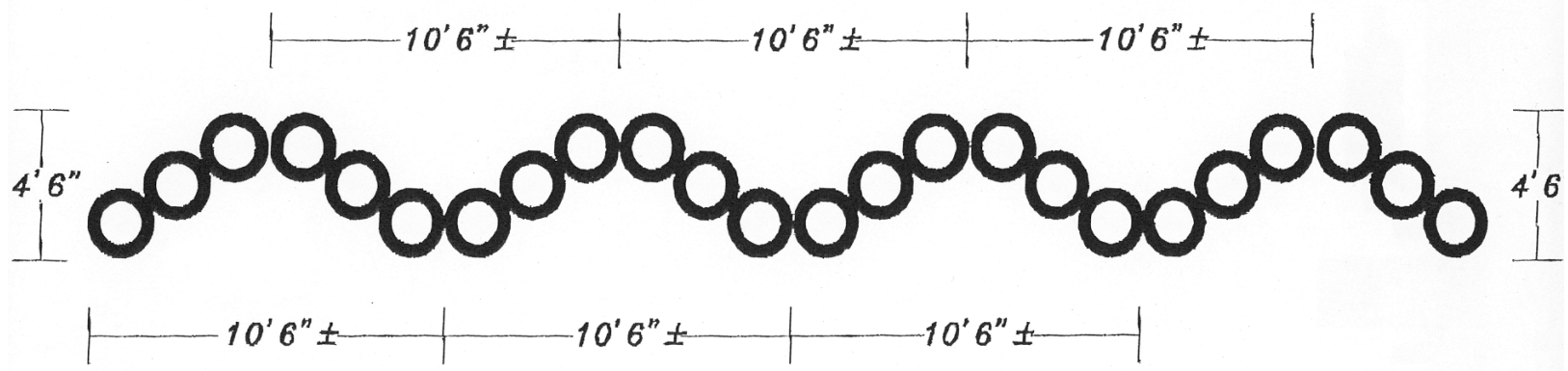
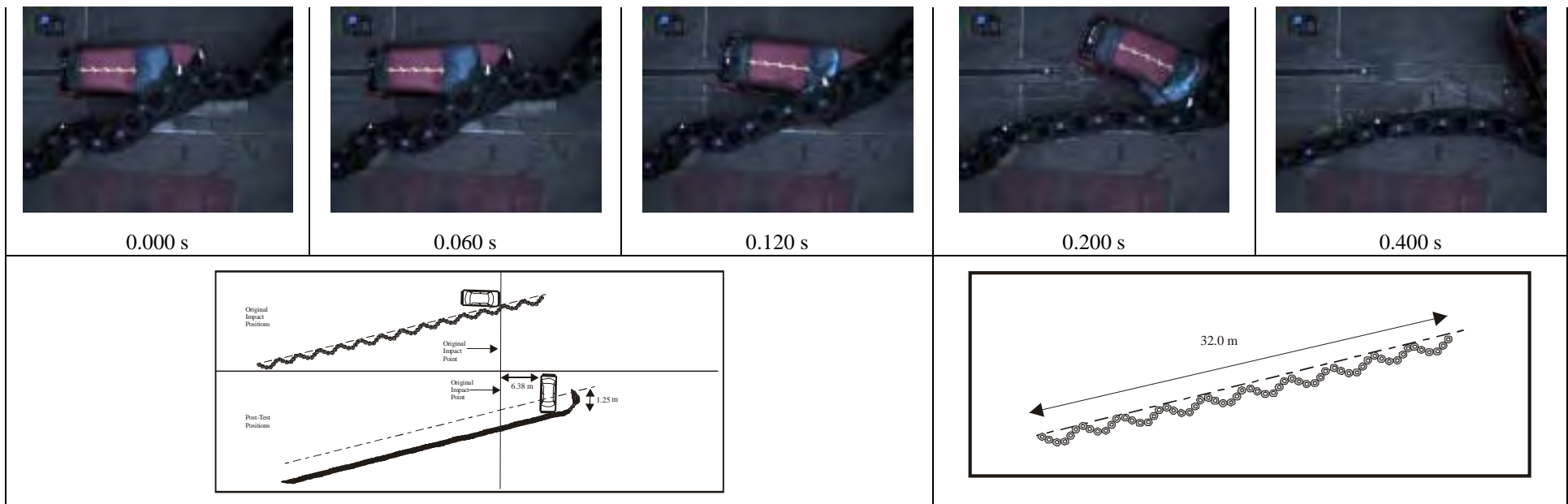


Figure 1. Details of the LifeNet SoftWalls Median Barrier System (continued)

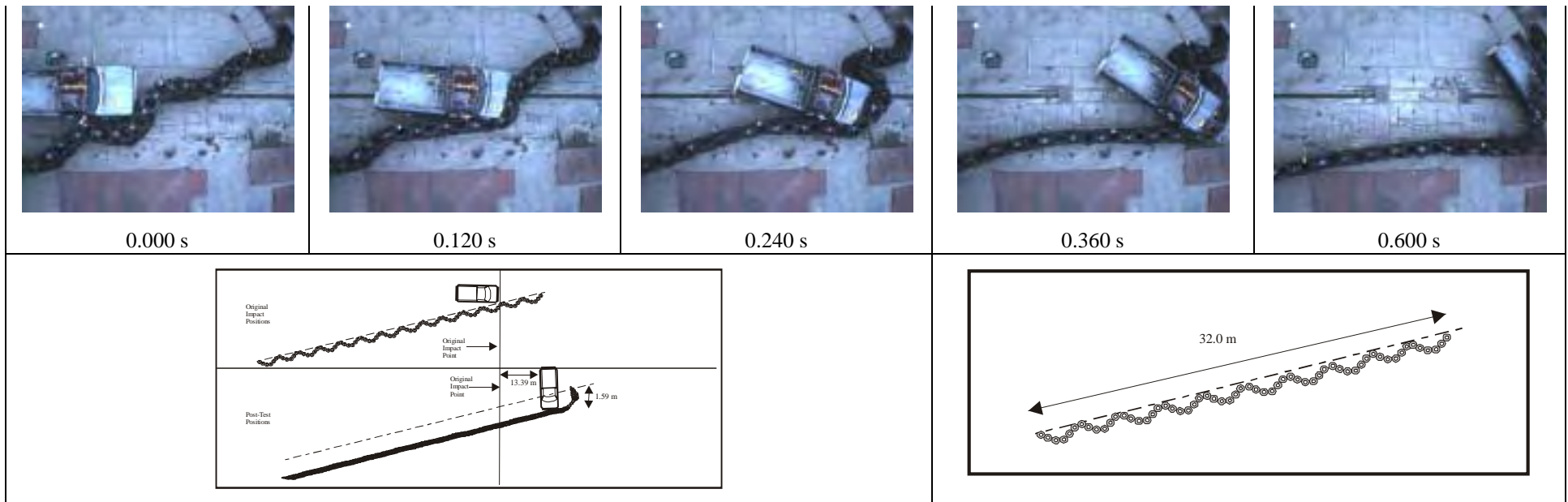


General Information		Impact Conditions		Test Article Deflections (m)		Vehicle Trajectory Post Test	
Test Agency	Transportation Research Center Inc. (TRC Inc.)	Speed (km/h)	100.7	Dynamic	N/A ¹	The impacting vehicle's final most outer left trajectory stayed within twelve feet of the barrier.	Assuming that the barrier was at the edge of the lane, the vehicle would have stayed within a 12-foot lane width.
Test No.	051229	Angle (deg)	20	Permanent ²	3.6		
Date	December 29, 2005	Exit Conditions		Vehicle Damage			
Test Article		Speed (km/h)	N/A	Exterior			
Type	Longitudinal median barrier system	Angle (deg)	N/A	VDS	N/A		
Manufacturer	LifeNet SoftWalls, LLC	Occupant Risk Values		CDC	12FZEW2		
Size and/or dimension and material of key elements	32.0 meters long, consisting of 396 used 23 to 31 inch tires, 240 tire treads, and metal plates with self-tapping screws.	Impact Velocity (m/s)		Interior			
Soil Type and Condition	N/A	x-direction	11.6	OCDI	FS0000000		
Test Vehicle		y-direction	0.4	Maximum Exterior			
Type	Production Model	THIV (optional)	N/A	Vehicle Crush (mm)	100		
Designation	820C	Ridedown Acceleration (g's)		Max. Occ. Compart.			
Model	1995 Chevrolet Metro	x-direction	9.3	Deformation (mm)	32		
Mass (kg)		y-direction	3.8				
Curb	917.8	PHD (optional)	N/A	Post-Impact Vehicular Behavior			
Test Inertial	841.3	ASI (optional)	N/A	Maximum Roll Angle (deg)	6.1		
Dummy(s)	75.3	Max. 0.050 -s Average (g's)		Maximum Pitch Angle (deg)	-3.6		
Gross Static	916.6	x-direction	N/A	Maximum Yaw Angle (deg)	64.4		
		y-direction	N/A				
		z-direction	N/A				

Figure 9. Summary of results for test 051229

¹ Since the test article moved out of the field of view of the widest overhead camera, dynamic deflection could not be measured.

² Measured perpendicular from the line created by the rearmost pre-test tangent points of the barrier.



General Information		Impact Conditions		Test Article Deflections (m)		Vehicle Trajectory Post Test	
Test Agency	Transportation Research Center Inc. (TRC Inc.)	Speed (km/h)	100.3	Dynamic	N/A ¹	The impacting vehicle's final most outer left trajectory stayed within twelve feet of the barrier. Assuming that the barrier was at the edge of the lane, the vehicle would have stayed within a 12-foot lane width.	
Test No.	051230	Angle (deg)	25	Permanent ²	4.9		
Date	December 30, 2005	Exit Conditions		Vehicle Damage			
Test Article		Speed (km/h)	N/A	Exterior			
Type	Longitudinal median barrier system	Angle (deg)	N/A	VDS	N/A		
Manufacturer	LifeNet SoftWalls, LLC	THIV (optional)		CDC	12FZEW2		
Size and/or dimension and material of key elements	32.0 meters long, consisting of 396 used 23 to 31 inch tires, 240 tire treads, and metal plates with self-tapping screws.	Impact Velocity (m/s)		Interior	FS0000000		
Soil Type and Condition	N/A	x-direction	9.7	Maximum Exterior			
Test Vehicle		y-direction	2.8	Vehicle Crush (mm)	152		
Type	Production Model	THIV (optional)	N/A	Max. Occ. Compart. Deformation (mm)	32		
Designation	2000P	Ridedown Acceleration (g's)		Post-Impact Vehicular Behavior			
Model	1988 Ford F-250	x-direction	5.7	Maximum Roll Angle (deg)	-15.6		
Mass (kg)		y-direction	0.6	Maximum Pitch Angle (deg)	-4.3		
Curb	1950.2	ASI (optional)	N/A	Maximum Yaw Angle (deg)	71.3		
Test Inertial	1956.8	Max. 0.050 -s Average (g's)					
Dummy(s)	0.0	x-direction	N/A				
Gross Static	1956.8	y-direction	N/A				
		z-direction	N/A				

Figure 9. Summary of results for test 051230

¹ Since the test article moved out of the field of view of the widest overhead camera, dynamic deflection could not be measured.

² Measured perpendicular from the line created by the rearmost pre-test tangent points of the tire barrier.