



U.S. Department  
of Transportation  
**Federal Highway  
Administration**

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

January 5, 2000

Refer to: HMHS-B63

Mr. Edwin M. Wood  
Vice President  
Barrier Systems, Inc.  
1100 E. William Street, Apt. 206  
Carson City, NV 89701

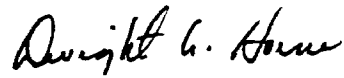
Dear Mr. Wood:

In your letter dated December 14, 1999, you requested the Federal Highway Administration's (FHWA) acceptance of your Quickchange Moveable Barrier (QMB) as a National Cooperative Highway Research Program (NCHRP) Report 350 longitudinal barrier at test level 3 (TL-3). To support this request, you also submitted copies of a report dated October 29, 1999, prepared by Safe Technologies, Inc., entitled "NCHRP Report 350 Crash Test Results, Quickchange Moveable Barrier (QMB), Test No. 001 (10-29-99)" and a CD containing information on the test that was run. Upon our request, you later sent a videotape of the test and revised copies of the CD containing the additional files needed for us to access the information in that format.

The barrier that you tested is the same as the moveable concrete barrier tested by the California Department of Transportation in the mid-1980's and accepted by the FHWA as an NCHRP Report 230 barrier for use in temporary and permanent installations on October 24, 1991. The effective length of each segment is 1000 mm with an effective height of 813 mm. Each segment weighs approximately 650 kg, with the upper portion "T"-shaped to accommodate the lifting rollers on the barrier transfer machine. Adjacent segments are pinned together with a 28.6-mm diameter ASTM 4140 steel pin. Since this design (Enclosure 1) has not been changed, the earlier test with an 1800-lb car remains valid and it was necessary only to run the pickup truck test to certify the QMB as meeting Report 350 requirements. The summary results of the latter test (NCHRP Report 350 test 3-11) are shown in Enclosure 2. The impact point was approximately midway along the 75 m test installation. Under these impact conditions, the dynamic and permanent deflection of the barrier was reported to be 1346 mm. Assuming that the barrier is not anchored at the ends, a similar impact nearer to either end would result in greater deflections. We further assume that you will provide users of the QMB with guidelines in this regard.

Based on the reported test results, we agree that the standard QMB meets the evaluation criteria for an NCHRP Report 350 test level 3 (TL-3) longitudinal barrier. It may be used on the National Highway System (NHS) as a temporary or permanent barrier when such use is requested by a transportation agency. Since the QMB is a proprietary product, its use on the NHS remains subject to the conditions listed in Title 23, Code of Federal Regulations, Section 635.411 when it is specified by the contracting authority.

Sincerely yours,

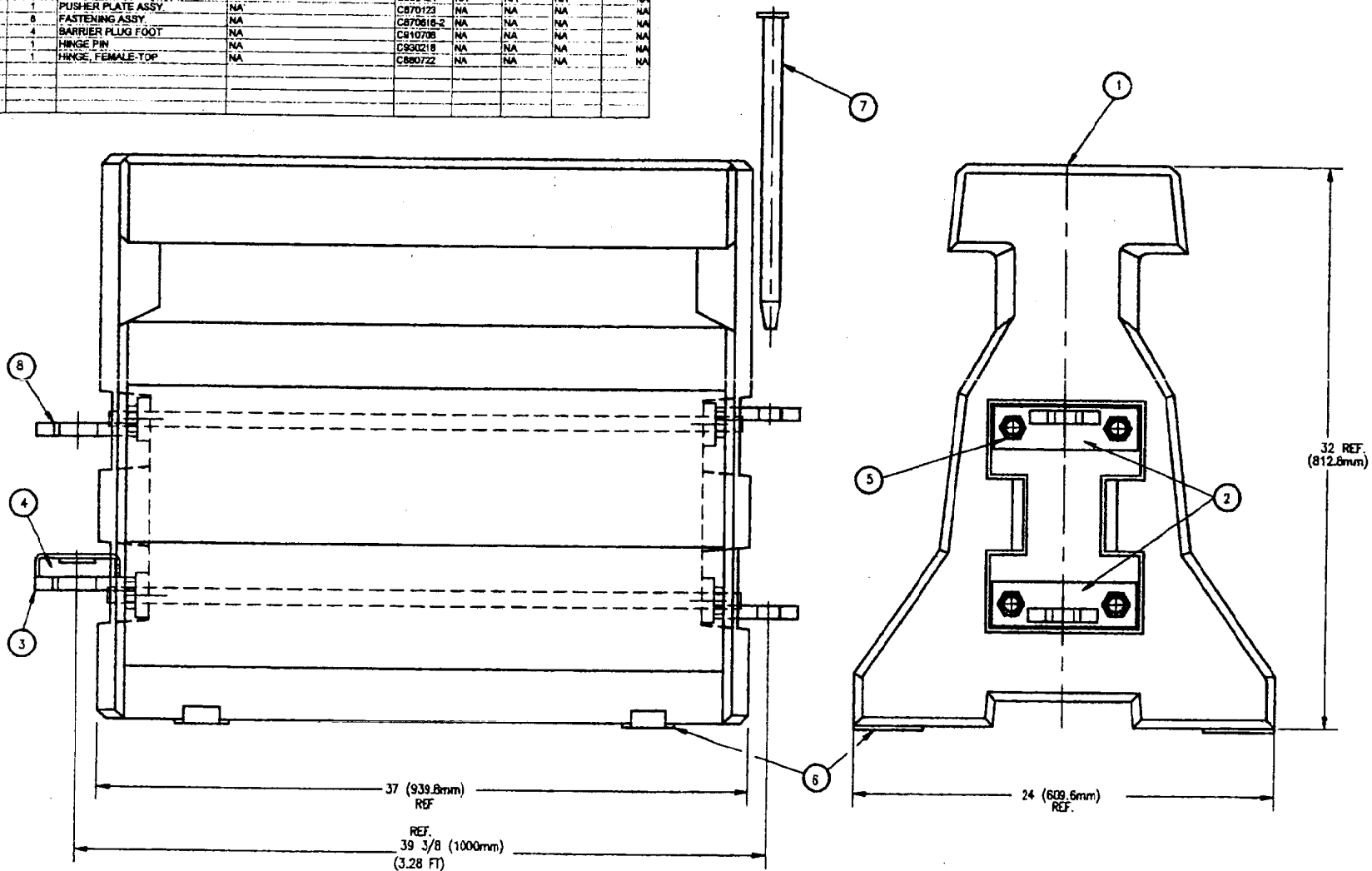


Dwight A. Horne  
Director, Office of Highway Safety Infrastructure

2 Enclosures

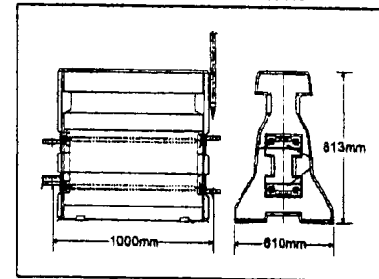
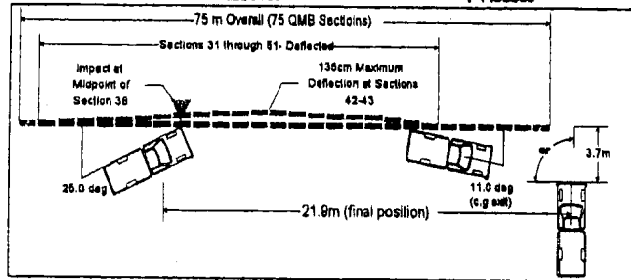
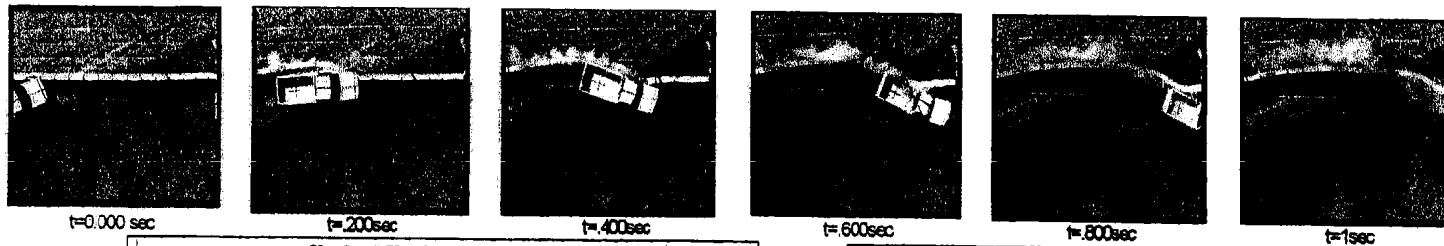
ENCLOSURE 1

ITEM	QTY / DWG	PART DESCRIPTION	SPECIFICATION	DWG #	LENGTH inches	AREA sq. ft.	BURN TEMP #	LENGTH decimal																																		
1	1	BARRIER MODULE, CONST.	NA	C881222	NA	NA	NA	NA																																		
2	2	HINGE, MALE	NA	C880425-1	NA	NA	NA	NA																																		
3	1	HINGE, FEMALE-BOTTOM	NA	C880424	NA	NA	NA	NA																																		
4	1	PUSHER PLATE ASSY.	NA	C870123	NA	NA	NA	NA																																		
5	8	FASTENING ASSY.	NA	C870618-2	NA	NA	NA	NA																																		
6	4	BARRIER PLUG FOOT	NA	C810708	NA	NA	NA	NA																																		
7	1	HINGE PIN	NA	C930218	NA	NA	NA	NA																																		
8	1	HINGE, FEMALE-TOP	NA	C880722	NA	NA </tr <tr> <td>9</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>10</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>11</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>12</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr>	9									10									11									12								
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SEE C880728.BOM FOR MATERIAL LIST

<p>NOTE: THICKNESS OF WELD TO BE EQUAL TO THE THICKNESS OF 2 PEECES BEING JOINED. WELD TO BE ALL AROUND UNLESS OTHERWISE NOTED.</p>	<p>© 1995 Raster Systems, Inc.</p>		<p>SCALE: QUARTER</p>	
	<p>REV. CHANGES</p>	<p>DATE BY</p>	<p>DATE BY</p>	<p>DATE BY</p>
<p>REV. G</p>	<p>ADDED (REV) DIMS. TO DWG</p>	<p>8/95</p>	<p>SP</p>	<p>06</p>
<p>TITLE: BARRIER, SERIES 200</p>		<p>MODEL: DRAWING NUMBER</p>	<p>REV.:</p>	<p>C880728</p>
				<p>G</p>



**General Information**

Test Agency..... SAFE TECHNOLOGIES, INC.  
 Test Designation..... NCHRP 350 3-11  
 Test No..... QMB Test #001  
 Date..... 10/29/99

**Test Article**

Type..... Barrier Systems, Inc.  
 Quickchange Moveable Barrier (QMB)

Installation Length..... 75m overall (75 QMB sections)

Size and/or dimension and material  
 of key elements..... Section length 1000mm, height 813mm,  
 width 810mm, mass 646kg

**Test Vehicle**

Type..... Production Model  
 Designation..... 2000P  
 Model..... 1999, Chevy Silverado 2500  
 3/4 Ton Pickup

**Mass (kg)**

Curb..... 2050  
 Test Inertial..... 2032  
 Dummy(s)..... n/a  
 Gross Static..... 2032

**Impact Conditions**

Speed (km/h)..... 100.6  
 Angle (deg)..... 25  
 Impact Severity (kJ)..... 141.83

**Exit Conditions**

Speed (km/h)..... 47.4  
 Angle (deg)..... 11

**Occupant risk Values**

Impact Velocity (m/s)  
 x-direction..... 4.2  
 y-direction..... -3.7  
 Ridedown Acceleration (g's)  
 x-direction..... -5.4  
 y-direction..... 4.6  
 THIV (m/s)..... 5.2  
 PHD (g's)..... 14.4  
 ASI..... 0.61

**Test Article Deflection (mm)**

Dynamic..... 1346  
 Permanent..... 1346

**Vehicle Damage**

Exterior  
 VDS..... LFQ-5  
 CDC..... 11LDEV2  
 Interior  
 OCCI..... AS0000000

**Post-Impact Vehicular behavior (deg - gyro @ c.g.)**

Maximum Roll Angle..... -12  
 Maximum Pitch Angle..... -4  
 Maximum Yaw Angle..... 36

Figure 1. Summary of Results QMB Test #001