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 (1L-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
**General Information**

Test Agency: SAFTE TECHNOLOGIES, INC.
Test Designation: NCHRP-350 3-11
Test No: QMB Test #001
Data: 10/29/96

**Test Article**
- **Type:** Barrier Systems, Inc.
- **Installation Length:** 75m overall (75 QME sections)
- **Size and/or dimension and material:** Section length 2000mm, height 910mm, width 819mm, mass 345kg

**Test Vehicle**
- **Type:** Production Model
- **Designation:** 2003P
- **Model:** 1989, Chevy Silverado 2500
- **Mass (kg):**
  - Curb: 2050
  - Test Initial: 2932
  - Dummy(s): 42
  - Gross Static: 2932

**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
- **Ride-Down Acceleration (g/s):**
  - X-direction: 5.4
  - Y-direction: 4.6
- **ThV (mm):** 5.2
- **RHD (g/s):** 4.4
- **ASI:** 0.61

**Test Article Deflection (mm):**
- Dynamic: 1346
- Permanent: 1346

**Vehicle Damage**
- **Exterior:**
  - VOS: LFQ-5
  - CDC: HLE6V2
- **Interior:**
  - OCCI: ASO0000000

**Post-Impact Vehicle behavior (deg @ c.g.)**
- Maximum Roll Angle: 12
- Maximum Pitch Angle: 4
- Maximum Yaw Angle: 38

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**Figure 1. Summary of Results QMB Test #001**