

September 7, 2004

Refer to: HSA-10/B-69A

Owen S. Denman, P.E.
President
Barrier Systems, Incorporated
180 River Road
Rio Vista, California 94571-1208

Dear Mr. Denman:

In June 2000, the Federal Highway Administration accepted your Reactive Tension System (RTS) using either steel-clad or concrete Quickchange Moveable Barrier (QMB) segments as a longitudinal traffic barrier at NCHRP Report 350 test level 3 (TL-3). This acceptance was based on tests conducted on straight sections of barrier.

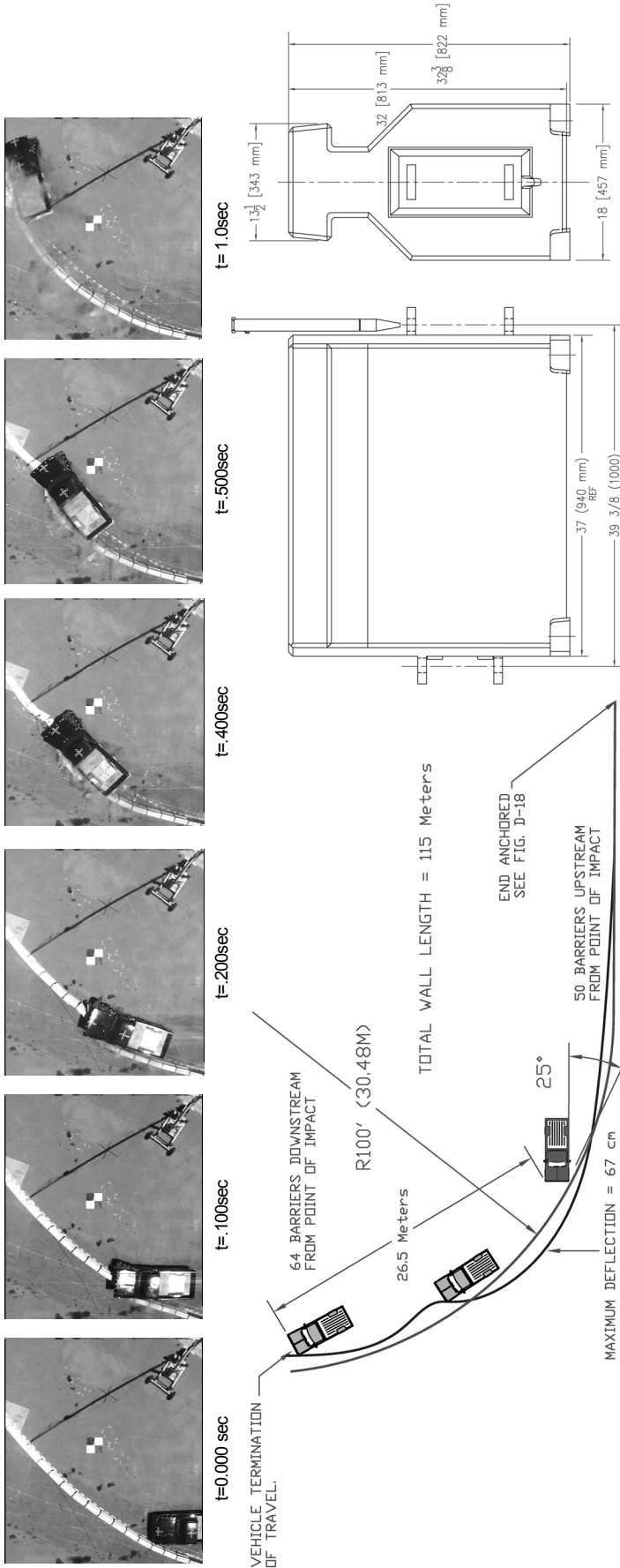
With your August 23, 2004 letter, you submitted a test report prepared by Safe Technologies, Inc. entitled "Barrier Systems, Inc., Concrete Reactive Tension System – Quickchange Moveable Barrier, STI Project QBOR1" which described the impact of a pickup truck at a nominal impact speed of 100 km/h and at a 25-degree angle into a concrete RTS-QMB system installed on a 30-m (100-foot) radius, such as might be found on a freeway off ramp from a major highway. In this test, the barrier was anchored at its upstream end and deflected 67.3 cm (26.5 inches). Your recommended anchorage design and a summary of the test results are enclosed.

Based on the information you provided, I concur that the RTS-QMB, with either steel or concrete segments, meets the evaluation criteria for a TL-3 barrier when installed as tested along a radius as short as 30 m (100 feet) and may be used on the National Highway System. To be fully effective along its entire length, the installation must be anchored at both ends as you recommend, the approach end must be adequately shielded, and the barrier must be able to move freely up to its design deflection without butting up against a curb or similar obstruction.

Sincerely yours,

*/Original Signed by Hari Kalla/
~for~
John R. Baxter, P.E.
Director, Office of Safety Design
Office of Safety*

Enclosure



General Information

Test Agency..... **SAFE TECHNOLOGIES, INC.**
 Test Designation..... **NCHRP Report 350 Test 3-11**
 Test No..... **QBOR1**
 Date..... **4/9/2004**

Test Article

Type..... **Barrier Systems, Inc.**
18" CRTS/QMB Longitudinal Barrier
 Installation Length..... **115 meters overall**

Installation Length

Size and/or dimension and material
 of key elements..... **CRTS Section length 1000mm, height 813mm,
 width 610mm, mass 726 kg.**

Test Vehicle

Type..... **Production Model**
 Designation..... **2000 kg**
 Model..... **1981 Chevrolet 3/4 Ton Pick-up**

Mass (kg)

Curb..... **2025**
 Test Inertial..... **1995**
 Dummy(s)..... **n/a**
 Gross Static..... **1995**

Impact Conditions

Speed (km/h)..... **101.5**
 Angle (deg)..... **25**
 Impact Severity (ku)..... **141.6**

Exit Conditions

Speed (km/h)..... **n/a**
 Angle (deg)..... **n/a**

Occupant risk Values

Impact Velocity (m/s)
 x-direction..... **8.4**
 y-direction..... **-7.7**
 Ridedown Acceleration (g/s)
 x-direction..... **-10.9**
 y-direction..... **17.2**
 THIV (km/h)..... **37.1**
 PHD (g's)..... **17.3**
 ASI..... **1.6**

Test Article Deflection (mm)

Dynamic..... **673**
 Permanent..... **673**

Vehicle Damage

Exterior
 VDS..... **LFQ-4**
 CDC..... **11FLEE4**
 Interior
 OCDI..... **LF0020000**

Figure 1. Summary of Results-Test #QBOR1

