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

Dear Mr. Wood:

In your May 16 letter you requested the Federal Highway Administration’s (FHWA) acceptance of two types of moveable barriers, a Steel Reactive Tension System (SRTS) and a Concrete Reactive Tension System (CRTS), for use on the National Highway System (NHS) at National Cooperative Highway Research Program Report 350 Test Level 3 (TL-3). To support this request, you sent copies of an April 2000 report entitled “NCHRP Report 350 Crash Test Results - Reactive Tension System (RTS) Quickchange Moveable Barrier (QMB) (Longitudinal Barrier),” prepared by Safe Technologies, Inc., plus videotapes and CDs showing the tests that were conducted.

The Steel Reactive Tension System is identical to the Narrow Quickchange Moveable barrier previously accepted by the FHWA (Acceptance Letter B-40, dated 8/27/97), except that the SRTS modules use spring-loaded hinges which keep the individual segments in tension and the Variable Length Barrier (VLB) used in the system has been redesigned. The new design of the standard module is shown as Enclosure 1.

The Concrete Reactive Tension System is similar to the original Quickchange Moveable Barrier which was formally accepted by FHWA by Acceptance Letter B-63 on January 5, 2000, but it also uses spring-loaded hinges to minimize deflection and its vertical sides make it narrower than the original QMB design by 150 mm (6 inches), making its total width 460 mm (18 inches). This design is shown in Enclosure 2.

Enclosure 3 consists of summary sheets of the three tests you ran on the CRTS and of the single test you ran on the SRTS. When the two systems were tethered to a ground anchor capable of supporting a 100,000-pound barrier load, we noted that vehicle containment and redirection was very good in all tests and that the maximum deflection was only 700 mm for the SRTS and 610 mm for the CRTS.

Based on instrumented measurements taken during one of your certification tests, you stated in your letter that this same minimal deflection could be expected if, in lieu of an anchor at each end of the installation, an additional 80 CRTS or SRTS elements were placed upstream (and presumably downstream) from the point at which these small deflection distances were required.
Based on the tests conducted and the information you provided, I agree that the CRTS and the SRTS QMB designs meet the evaluation criteria for a TL-3 longitudinal barrier and they may be used on the NHS when such use is requested by a transportation agency. Since both systems are proprietary, their use on Federal-aid projects, except exempt, non-NHS projects, remains subject to the conditions listed in Title 23, Code of Federal Regulations, Section 635.411.

Sincerely yours,

[Signature]

Frederick G. Wright, Jr.
Program Manager, Safety

3 Enclosures
Figure 1. Summary of Results CRTS Test #RTS01
General Information
Test Agency................................................ SAFE TECHNOLOGIES, INC.
Test Designation.......................................... NCHRP 350 3-10
Test No...................................................... RTS02
Date.......................................................... 4/19/00

Test Article
Type... ........................................................ Barrier Systems Inc.
Installation Length ....................................... 42 meters (83 meters overall)
Size and/or dimension of key elements Section length 1 000mm, Height 822mm, width 457mm, mass 700kg

Test Vehicle
Type............................................................. Production Model
Designation................................................ 820C
Model...................................................... 1990, Ford Festiva

Mass (g)
Curb. ................................................... 795
Test Inertial ........................................... 837
Dummy(s). ........................................... 7 5
Gross Static ........................................... 912

Impact Conditions
Speed (km/h)........................................... 1047
Angle (deg)........................................... 20
Impact Severity (kJ) .................................. 41.4

Exit Conditions
Speed (km/h) )............ ...................... 70
Angle (deg) . 7.4

occupant Risk Values
Impact Velocity(m/s)
  x-direction .......... 8.3
  y-direction... .... 18.2
Ridedown Acceleration (g’s)
  x-direction .... 4.5
  y-direction... .... 7

THV (m/s)... 8.6
PHD (g’s) .... 19.9
AS ..................... 1.39

Vehicle Damage
Exterior
VDS..................................................... LQF-3
CDC................................................... 11FLEEM2
Interior
OCD.................................................. AS0000000

Post-Impact Vehicular behavior (deg - gyro @ c.g.)
Maximum Roll Angle...... -16.1 (-14 deg at exit)
Maximum Pitch Angle...... -6.1 (-6 deg at exit)
Maximum Yaw Angle...... -68.4 (28 deg at exit)

Figure 6. Summary of Results CRTS Test #RTS02
Figure 11. Summary of Results CRTS Test #RTS03
Figure 16. Summary of Results SRTS Test #RTS04