August 28, 2003

Refer to: HSA-10/B-119B

Mr. Rodney A. Boyd
Trinity Highway Safety Products Division
P.O. Box 568887
Dallas, Texas 75356-8887

Dear Mr. Boyd:

In his August 15, letter to Mr. Richard Powers of my staff, your representative, Mr. Don Johnson, requested formal Federal Highway Administration acceptance of a third variation to your high-tension, wire rope traffic barrier called the Cable Safety System (CASS). Included with the letter were copies of a Texas Transportation Institute (TTI) report dated June 2003, entitled "National Highway Cooperative Research Program (NCHRP) Report 350 Test 3-11 of the TRINITY CASS System with 2 m Post Spacing with Concrete Footings and Sockets" and videotapes of the crash test. Previous acceptances were for the CASS System with 3-m and 5-m post spacings, respectively.

As with the previous two designs, the CASS barrier described in the test report consisted of three 19-mm diameter, pre-stretched 3 x 7 strand steel cables mounted 530 mm, 640 mm, and 750 mm above the ground. Each cable was tensioned to 24kN using turnbuckles attached to swaged threaded fittings on each end. These cables were supported by 1200-mm long, galvanized 100 x 50 x 4 mm C-channels inserted into socketed concrete foundations. The TS 125 mm x 75 mm x 3.2 mm sockets, 380-mm long, were cast inside 250-mm diameter concrete cylinders set 600 mm into augured holes. The upper central section of each post web was removed to accept the cables, which are kept separated in a vertical plane by the insertion of plastic spacer blocks, a stainless steel strap, and a plastic cap over the top of each post.

In test 3-11, the pickup truck impacted near the third-point of the 100 m test installation at 100.6 km/h at 25.6 degrees. The reported roll angle was 39.9 degrees, but all occupant risk values were well below Report 350 preferred limits. The cable rail deflected 2.06 meters in the test. Although the tested design met all Report 350 evaluation criteria, you requested acceptance of a stronger concrete foundation/steel socket to reduce repair costs after impacts. Specifically, you proposed increasing the concrete foundation diameter to 300 mm and its depth to 760 mm, and you increased the thickness of the steel sleeve from the tested 3.2 mm to 4.8 mm. These modifications are acceptable.

Although the posts in the test installation were set in steel sockets cast into concrete cylinders, you requested the use of posts set in driven steel tubes or posts driven directly into a strong soil as alternative designs. As long as the post failure mechanism remains essentially unchanged (i.e., post failure by bending at the ground line with minimal deflection below ground as in the test installation), these options are acceptable for any of the tested CASS post spacings. The CASS barrier should be introduced and ended with a crashworthy terminal such as the previously accepted TTI breakaway terminal for a high-tensioned cable barrier. If the TTI terminal is used, the first six posts beyond the third breakaway anchor post must be the same posts at the same spacing as were used in the terminal certification tests unless you repeat the appropriate tests using the CASS post at these locations. A non-crashworthy terminal may be used if both the upstream and downstream anchors are adequately shielded.

In summary, the CASS barrier, with posts set on 2-m centers, meets NCHRP Report 350 evaluation criteria as a test level 3 barrier and may be used on the National Highway System (NHS) as either a roadside or median barrier when such use is acceptable to the contracting agency. Since it is a proprietary product, the provisions of Title 23, Code of Federal Regulations, Section 635.411 apply to its use on Federally funded projects, except exempt non-NHS projects.

Please note the additional standard provisions that apply to FHWA letters of acceptance:

- This acceptance is limited to the crashworthiness characteristics of the CASS system and does not cover its long-term durability or maintenance requirements.
- Any design changes that may adversely influence the crashworthiness of the device may require a new acceptance letter.
- 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 chemistry, mechanical properties, and geometry as that submitted for acceptance, and that they will meet the crashworthiness requirements of FHWA and NCHRP Report 350.
- To prevent misunderstanding by others, this letter of acceptance, designated as number
  B-119B, 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.

Sincerely yours,

(original signed by Harry W. Taylor)

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