



U.S. Department
of Transportation

**Federal Highway
Administration**

February 22, 2002

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

Refer to: SA-10/CC-69B

Mr. Kaddo Kothmann
President, Road Systems, Inc.
3616 Howard County Airport Road
Big Spring, TX 79720

Dear Mr. Kothmann:

In your January 24 letter to Mr. Frederick G. Wright, Jr., the Federal Highway Administration's former Program Manager for the Safety Core Business Unit, you formally requested acceptance of your Box-Beam Burster Energy Absorbing Terminal Single-Sided Crash Cushion (BEAT-SSCC) as an NCHRP Report 350 crash cushion at test level 3 (TL-3). To support your request, you submitted a copy of the Midwest Roadside Safety Facility's January 7, 2002, test report entitled "Safety Performance Evaluation of a Single-Sided Crash Cushion," a videotape of the crash tests that were conducted and drawings and photographs of the BEAT-SSCC.

The BEAT-SSCC is similar in design concept to the BEAT and the BEAT-MT and is comprised of the following main components:

- an impact head assembly;
- a Stage 1 energy absorber (152-mm x 152-mm x 3.2 mm box beam rail);
- a Stage 2 energy absorber (152-mm x 152-mm x 4.8-mm box-beam rail);
- eight breakaway steel posts; and
- a fabricated end section for transitioning the BEAT-SSCC to a New Jersey shaped barrier.

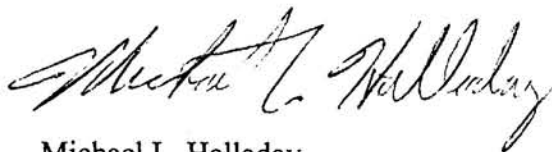
The BEAT-SSCC is approximately 8.4-m long. The general design features and layout are shown in the enclosure to this letter. I assume you will be able to provide detailed drawings and installation guidelines to interested parties.

The test report states that seven NCHRP Report 350 tests (test numbers 3-30 through 3-35, and 3-39) are normally required to certify the crashworthiness of a gating terminal or crash cushion. Based on earlier tests conducted on the Wyoming DOT's box-beam terminal (WYBET) and/or the BEAT and BEAT-MT box beam terminals and the similarities of these designs to the BEAT-SSCC, you concluded that tests 3-30, 3-32, 3-33, 3-34, and 3-35 were not needed. My staff reviewed the information you provided and concurred with your analysis. Test 3-31 was successfully conducted. Test 3-38, which is identified in Report 350 as being needed for a nongating device, was run twice, with one impact point at the beginning of the length of need (approximately 400 mm upstream from post 3) and the second 2.0 m upstream from the rigid New Jersey barrier. In addition, test 3-39, was also run twice: to test

the BEAT-SSCC on its backside at mid-length in a reverse direction impact and to test the concrete barrier connection on the front side from the reverse direction. Summary reports on each of the five tests are included in the enclosure.

Based on the results of these tests and earlier testing done on the WYBET, the roadside BEAT, and the BEAT-MT, the BEAT-SSCC, as described above, may be considered an NCHRP Report 350 crash cushion at TL-3. Consequently, it may be used on the National Highway System (NHS) when such use is acceptable to the contracting authority. Due to its single-sided design, the BEAT-SSCC is not appropriate for use at locations where backside hits towards the rigid concrete barrier are possible, e.g., in gore areas, nor is it appropriate for use in a narrow median where backside, opposite direction hits are likely. Test 3-38 demonstrated that the BEAT-SSCC has no significant containment or re-directional capabilities when struck in this manner. Since it is a proprietary product, its use on Federal-aid projects, except exempt non-NHS projects, is subject to the provisions in Title 23, Code of Federal Regulations, Section 635.411.

Sincerely yours,

A handwritten signature in black ink, appearing to read "Michael L. Halladay". The signature is fluid and cursive, with the first name "Michael" being the most prominent part.

Michael L. Halladay
Acting Program Manager, Safety

Enclosure