



U.S. Department
of Transportation
**Federal Highway
Administration**

November 9, 2000

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

Refer to: HSA-1\HSA-CC69

Mr. Kaddo Kothmann
President, Road Systems, Inc.
1507 East Fourth Street
Big Spring, TX 79720

Dear Mr. Kothmann:

In your September 20 letter, you provided information on a proprietary box-beam guardrail terminal called the Bursting Energy Absorbing Terminal (BEAT) and requested that this terminal be formally accepted as a National Cooperative Highway Research Program (NCHRP) Report 350 terminal at test level 3 (TL-3). To support your request, you also sent a copy of the September 22, 2000, test report prepared by the Midwest Roadside Safety Facility (MwRSF) entitled "Crash Testing of Box-Beam Bursting Energy Absorbing Terminal (BEAT)" and a video tape of the tests that were run. After reviewing these materials, Mr. Richard Powers of my staff requested additional information from Dr. Dean Sicking which he received in a letter dated October 16.

The roadside BEAT is approximately 4.3 m (14-feet) long from its nose to the beginning of the standard box-beam guardrail. Its primary components include an impact head, a 3.7-m (12-foot) long section of 152mm x 152mm x 3.2mm (6 inch x 6 inch x 1/8 inch) box-beam rail, and a steel breakaway end post and cable anchor system. The impact head includes a steel mandrel which causes the box beam rail section to split at the corners and peel back as the head is pushed backwards in an end-on impact. These and other details are shown in Enclosure 1. The BEAT may be installed parallel to the roadway or offset from traffic on a 50:1 flare rate.

Three successful tests were run on the BEAT and these are summarized in Enclosure 2. Based on the results of the strength test (test 3-35), the length of need of this gating, redirective terminal is approximately 380-mm (15 inches) upstream from post number 3, or approximately 4800 mm (15.75 feet) from the nose of the BEAT. The supplemental information provided by Dr. Sicking enabled us to agree that the minor changes made to the impact head following an unsuccessful test with the pickup truck would not significantly change the results of test 3-30 which was run earlier with the 820-kg car. Based on the similarities between the BEAT and the previously-accepted WYBET box-beam terminal, you concluded that Report 350 tests 3-32, 3-33, 3-34, and 3-39 did not need to be run on the BEAT. We concur that these tests may be waived for the roadside BEAT. However, it is likely that test 3-32 and test 3-35 will need to be run on the median barrier BEAT design.

The roadside BEAT may be considered a TL-3 terminal for box-beam guardrail and used on the National Highway System (NHS) when such use is requested by the contracting agency. Since it is a proprietary product, its use on the federal-aid projects, except exempt non-NHS projects is

subject to the conditions in Title 23, Code of Federal Regulations, Section 635.411. As requested by Dr. Sicking in his October 16 correspondence, this acceptance is for the roadside BEAT only. The acceptability of the median barrier BEAT design remains under review and will be addressed in a separate letter.

Sincerely yours,



Frederick G. Wright, Jr.
Program Manager, Safety

2 Enclosures