



U.S. Department
of Transportation
Federal Highway
Administration

March 30, 2000

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

Refer to: HSA-B67

C. Eugene Buth, P.E.
Division Head, Safety and Structural Systems
Texas Transportation Institute
3135 TAMUS
College Station, TX 77843-3135

Dear Mr. Buth:

In your letter dated March 3, 2000, you requested the Federal Highway Administration's (FHWA) acceptance of the Georgia Department of Transportation (GADOT) Temporary Concrete Barrier as a National Cooperative Highway Research Program (NCHRP) Report 350 longitudinal barrier at test level 3 (TI-3). To support this request, you also submitted copies of your test report dated February 2000, entitled "NCHRP Report 350 Test 3- 11 of Georgia Temporary Concrete Barriers" and videotapes of the test that was run.

The Georgia temporary barrier is an 8 10-mm high New Jersey shape portable barrier in segment lengths of 3.0 m Base width is 760-mm and the barrier tapers to a 300-mm top width. Reinforcing consists primarily of six longitudinal number 13 bars with three bars located on each face of the barrier. Eleven V-shaped number 13 bars (4 at each end on 200-mm centers and 3 evenly spaced between the ends) are used in each segment. The connection between segments consists of a 638-mm long, 32-mm diameter A-307 steel double hex bolt inserted through 4 loops (2 at each end of each barrier segment) made from number 16 steel bars and retained with a hex nut at its lower end. A sketch of the tested design is shown in Enclosure 1.

The summary results of the pickup truck test you conducted (NCHRP Report 350 test 3-11) are shown in Enclosure 2. Eighteen barrier segments were used in the test for a total installation length of 55.3 m. The impact point was 1.2 m upstream from the connection between segments 7 and 8 or approximately 20 m from the upstream end of the test installation. Under these impact conditions, the dynamic and permanent deflections of the barrier were reported to be 1930-mm and 1880-m respectively. Assuming that the barrier is not anchored at the ends, a similar impact nearer to either end would likely result in larger lateral deflections. The pickup truck was contained and redirected and Report 350 evaluation criteria were met. The reported roll angle was 38 degrees. Although this is relatively high, it is similar to the results seen on several portable concrete barrier tests that have been considered acceptable.

One of the bottom loops between segments 6 and 7 failed in the test, allowing a slight separation of the barrier. The test video shows that the failure occurred after the truck was redirected and we concluded that this failure had no appreciable effect on the dynamic barrier deflection or the subsequent vehicular trajectory. We also noted that some of the bolt heads nearly pulled through the loops at connections located in the impact area. The GADOT may wish to consider the use of larger washers in their design to minimize or eliminate this occurrence.

Based on the reported test results, we agree that the Georgia Temporary Concrete Barrier meets the evaluation criteria for an NCHRP Report 350 test level 3 (TL-3) longitudinal barrier. It may be used on the National Highway System when such use is requested by a transportation agency. I understand that this barrier is nonproprietary and that any persons interested in obtaining final drawings and specifications can get them directly from the GADOT by calling Mr. Paul Liles, State Bridge Engineer, at (404) 656-5280.

Sincerely yours,



Frederick G. Wright
Program Manager, Safety

2 Enclosures

