

September 5, 2002

HSA-10/CC33A

Mr. Rodney A. Boyd
Trinity Highway Safety Products Division
Box 568887
Dallas, Texas 75356-9619

Dear Mr. Boyd:

Mr. Don H. Johnson's June 5 letter to Mr. Richard Powers of my staff requested Federal Highway Administration acceptance of alternative foundation tube and post combinations for use with the CAT guardrail terminal/crash cushion. After reviewing this request and discussing it in some detail with Mr. Johnson and with Mr. Maurice Bronstad, who developed the CAT design, Mr. Powers has agreed to the following substitutions:

The foundation tubes for CAT posts #1 and #2 may be 6 x 8 x 3/16 steel tubes either 6'-6" or 6'-0" without soil plates, or 4'-6" with soil plates. The same foundation tubes must be used for the first two posts. Additionally, the ET-Plus angle strut may be used as an option to the CAT channel strut and yoke to connect these first two foundation tubes to provide anchorage. Also, posts #3 through #6 may be standard 6' long CRT posts, weakened short wood posts set in 4'-6" deep steel tubes 6 x 8 x 3/16 with soil plates or in 6'-0" steel tubes without soil plates. As with the foundation tubes for posts #1 and #2, posts #3 through #6 must be the same posts in each individual CAT installation.

These alternative designs are acceptable for use with the CAT because they have been crash tested with other W-beam terminals and found to be acceptable and are not likely to change the crash performance characteristics of the CAT for either end-on or side impacts.

On the other hand, the use of Trinity's Hinged Breakaway Posts (HBA posts) with King offset blocks with the CAT is questionable, as it is difficult to determine if this combination of steel posts and narrow offset blocks would change the performance of the CAT in an end-on or side impact. The energy-dissipating mechanism for the CAT is completely different from that for an extruding-type terminal and depends heavily on the support posts and wooden offset blocks remaining upright and intact until struck by an impacting vehicle. Therefore, I am unwilling to approve this change without further proof of acceptable crash performance. Similarly, the use of posts set in short steel tubes without soil plates is not approved for use with the CAT.

Based on our previous discussions on steel tubes for other guardrail terminals, the foundation tubes for the CAT may be reduced to a 1/8-inch thickness. While it is unlikely that this minor change will effect crash performance or decrease their

usability after a crash, impacted units should be monitored in the field to verify these assumptions.

Sincerely yours,

(original signed by Carol H. Jacoby)

**Carol H. Jacoby, P.E.
Director, Office of safety Design**