

TO: All Design Section Staff

FROM: Bijan Khaleghi

DATE: June 25, 2010

SUBJECT: Bridge Traffic Barrier

Section 13.7.7 of the AASHTO LRFD Bridge Design Specifications states that, “*It shall be the responsibility of the user agency to determine which of the test levels is most appropriate for the bridge site.*” This design memorandum is intended to give guidance regarding the design of traffic barrier systems for new structures.

It shall be the Bridge and Structures Office policy to design traffic barriers for new structures using the Test Level 4 (TL-4) design criteria as specified in the AASHTO LRFD Bridge Design Specifications Table A13.2.1 regardless of the height of the barrier safety shape (e.g. 2’-8”, 2’-10”, or 3’-6”). These loads should be applied at the top of the barrier.

TL-5 (Test Level 5) shall be used for the following conditions:

1. “T” intersections on a structure.
2. Structures on curves less than 500 feet radius, greater than 10% trucks, and where approach speeds are 50 mph or greater. (e.g., Freeway off ramps). TL-4 is adequate for the inside barrier.

### **Background:**

Until recently it has been the Bridge Office practice to design bridge barriers for new structures to a TL-4 level. The increased use of 42” barrier for median sections has led to discussions regarding what a test level should be used for designing.

Traffic accident data that involved semi-trucks from the past 7 years, was retrieved. In that period there were 84 incidents that involved semi-trucks impacting bridge barrier. Of those 84, only 6 indicated a “through, over, or under” result. Only 1 of the 6 actually penetrated through the barrier. This was an old style baluster rail barrier. The other five incidents involved the vehicle either riding up on top of the rail or tipping up onto it. One of the five tipped over the rail and ended up on the roadway below. Based on this data and further research with maintenance has not yielded any evidence that we should give consideration to increasing our design level do to TL-5, except as noted above.

If you have any questions regarding these issues, please contact Ron Lewis at 705-7396 or Bijan Khaleghi at 705-7181.

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