



U.S. Department  
of Transportation

**Federal Highway  
Administration**

October 19, 2005

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

In Reply Refer To: HSA-10

Mr. Rick Mauer  
Outside Sales National Representative  
Nucor Steel Marion, Inc.  
912 Chaney Avenue  
Marion, Ohio 43302

Dear Mr. Mauer:

In your September 2 letter to Mr. Richard Powers of my staff, you requested formal Federal Highway Administration acceptance of a design concept by which your high-tension cable rail could be transitioned and connected to a strong-post W-beam guardrail.

Your transition design is intended for use in conjunction with a W-beam installation that has a standard, crashworthy terminal with a minimum 4'-0" offset from the cable. A unique gusset plate is nested behind and bolted to the back of a special 6 foot-3 inch W-beam panel at the splice located at the first line post. Each cable is threaded through 1-in by 2-in slots in the W-beam panel and connected to the bracket. The first U-channel cable post is placed in line with the barrier proper and 6.5 feet upstream from the first W-beam line post. The transition then consists of 11 additional line posts also set on 6.5 foot centers, at which point your standard post spacing begins. Details for the transition design are shown in the enclosed drawings.

Previous full-scale crash testing has shown that high-tension cable barriers result in lower deflections than those seen in the lesser-tensioned generic cable barrier. In earlier cable-to-W-beam transition testing with the lower-tensioned generic cable rail, the cable deflection allowed the W-beam terminals to be impacted, resulting in significant vehicle instability. With your high-tension design, it is less likely that the nose of the terminal will be impacted in a typical impact. Even so, the use of a lightweight, non-energy absorbing W-beam terminal is suggested to minimize vehicle instability if the terminal is hit.

Based on the specific design details noted above, your proposed transition design is acceptable for use on the National Highway System at National Cooperative Highway Research Program Report 350 test level 3 when used in conjunction with a crashworthy terminal having a



minimum 4-foot offset from the cables. Since this transition design has not been physically tested, field installations should be monitored to verify their presumed crashworthiness.

Sincerely yours,



*for* John R. Baxter, P.E.  
Director, Office of Safety Design  
Office of Safety

Enclosure