J. Speer, PE
Roadway
John, Please share info w/ your Squad

STATE OF NORTH CAROLINA
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FROM: Jay A. Bennett, PE
Assistant State Roadway Design Engineer

DATE: March 6, 2001

SUBJECT: Guardrail End Treatment - Non-gating Impact Attenuator

The purpose of this memo is to discuss guardrail end treatments at median bridge piers. The NCDOT guardrail placement detail, 862D01, shows an impact attenuator attached to tapered guardrail extending from the median bridge pier. The impact attenuator, guardrail and concrete barrier connection close the median hazard completely and offer little opportunity for a vehicle to penetrate and hit the hazard. Special attention needs to be given to median widths of 40 feet and less when non-gating impact attenuators (IAU-350's) are required.

For placement detail 862D01 with a non-gating impact attenuator, a transition design connecting the attenuator to the standard w-beam guardrail must be incorporated as part of the installation. The vendor of the appropriate product should provide this transition design. This work is covered in the impact attenuator provision. The provision states, "The above prices and payment will be full compensation for all work covered by this provision including but not limited to furnishing, installing and all incidentals necessary to complete the work". The Quadguard, Energy Absorption Systems, Inc. and the TRACC, Trinity Industries, Inc. are listed as non-gating impact attenuators in the project provisions.

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For median widths greater than 40 feet, the gating impact attenuators can be used. The Breakmaster, Energy Absorption Systems, Inc., and the Crash Cushion/Attenuating Terminal, C-A-T, Trinity Industries, Inc. are gating impact attenuators.

If median slopes are too steep for an impact attenuator or conditions exist such that proper foundations cannot be provided traditional anchor units, GRAU-350's or M-350's should be considered. When using standard guardrail and guardrail end treatments, it is important that sufficient guardrail is placed based on length of need to properly shield the hazard.

Attached you will find the sketches for guardrail placement detail 862D01, proprietary products mentioned above and provisions for impact attenuator units. If you have any questions regarding this information, please contact me at (919) 250-4016.

JAB

Attachments

cc (w/att): Debbie Barbour, PE
John Permar, PE
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