

INDIANA DEPARTMENT OF TRANSPORTATION



INTER-DEPARTMENT COMMUNICATION
Standards Section Room N642



Writer's Direct Line

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DESIGN MEMORANDUM No. 99-09 REVISED TECHNICAL ADVISORY

TO: All Design, Operations, and District Personnel, and Consultants

FROM: /s/ Richard L. VanCleave
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Technical Services Division

SUBJECT: **Impact Attenuator Design and Contract Document Preparation Procedures**

SUPERSEDES: **Design Memorandum No. 99-09 Technical Advisory dated April 26, 1999**

EFFECTIVE: **September 12, 2000, Letting**

I. INTRODUCTION

The policy related to the design and installation of new permanent impact attenuators will change. The previous practice of identifying specific attenuators in contract documents is being discontinued in favor of generic attenuator types. There are four generic types of impact attenuators and they are as follows:

- 1. Type ED**—This type of attenuator only dissipates energy. It has no capability to redirect an errant vehicle.
- 2. Type R1**—This type of attenuator dissipates energy and has the ability to redirect an errant vehicle on one side only.
- 3. Type R2**—This type of attenuator dissipates energy and has the ability to redirect an errant vehicle on two sides.
- 4. Type CR**—This type of attenuator is similar to a type R2 attenuator, but is installed at locations where lateral clearance restrictions make maintenance activities difficult.

In addition to the type classification, there are two other parameters that are necessary to identify the required attenuator in contract documents. The first parameter is the attenuator width, which is based on the width of the obstruction that requires shielding. The second parameter is the attenuator Test Level which is determined by roadway design speed.

The Division of Materials and Tests will maintain an approved list of impact attenuators. This list will include proprietary attenuators that have been approved for each attenuator type/width/Test Level pay item combination. Bidders will use the list to seek quotes from vendors of approved attenuators.

II. DESIGN PROCEDURE

In order for a designer to determine the appropriate impact attenuator, refer to the interim design procedure attached to Design Memorandum No. 99-09 Revised Policy Change.

III. CONTRACT DOCUMENT REQUIREMENTS

Inclusion of a new permanent impact attenuator into a contract affects the contract documents in the following manner:

- 1. Plans.** The location of impact attenuators must be noted on all plan and profile sheets and construction detail sheets, if applicable. This is necessary to inform the contractor where the attenuators included in the Schedule of Pay Items are to be installed. In addition, guardrail transitions, W-beam guardrail, and guardrail end treatments used to shield obstructions must be shown on all plan and profile sheets and applicable construction detail sheets. The actual layout of the special obstruction shield must be shown on a plan detail sheet.
- 2. Standard Drawings.** The designer must review all standard drawings pertaining to impact attenuators to determine which ones are to be listed in the contract-specific standard drawings index.
- 3. Specifications/Special Provisions.** The Standard Specifications must be reviewed to verify that they are adequate to provide for the installation of all attenuators in the contract. If necessary, special provisions must be written to cover contract specific requirements.
- 4. Schedule of Pay Items.** The pay item format for new permanent impact attenuators is "Impact Attenuator, (type), (width), (Test Level)". The attenuator will be measured and paid for per each unit. Appendix A includes a list of revised pay item names showing test level instead of design speed. Since the design speed is no longer shown, the same pay item names are to be used for both metric and english contracts. The corresponding code numbers will not change. Guardrail transitions, W-beam guardrail, and guardrail end treatments used to shield obstructions will be measured and paid for in accordance with the Standard Specifications requirements for each shield component.

APPENDIX A

Pay Items		
Code number	Description	Unit
601-06224	Impact Attenuator, CR, W1, TL-2	Each
601-06226	Impact Attenuator, CR, W2, TL-2	Each
601-06227	Impact Attenuator, CR, W3, TL-2	Each
601-06228	Impact Attenuator, CR, W1, TL-3	Each
601-06229	Impact Attenuator, CR, W2, TL-3	Each
601-06231	Impact Attenuator, CR, W3, TL-3	Each
601-06232	Impact Attenuator, ED, W1, TL-2	Each
601-06233	Impact Attenuator, ED, W1, TL-3	Each
601-06234	Impact Attenuator, R1, W1, TL-2	Each
601-06236	Impact Attenuator, R1, W2, TL-2	Each
601-06237	Impact Attenuator, R1, W3, TL-2	Each
601-06238	Impact Attenuator, R1, W1, TL-3	Each
601-06239	Impact Attenuator, R1, W2, TL-3	Each
601-06241	Impact Attenuator, R1, W3, TL-3	Each
601-06242	Impact Attenuator, R2, W1, TL-2	Each
601-06243	Impact Attenuator, R2, W2, TL-2	Each
601-06244	Impact Attenuator, R2, W3, TL-2	Each
601-06246	Impact Attenuator, R2, W1, TL-3	Each
601-06247	Impact Attenuator, R2, W2, TL-3	Each
601-06248	Impact Attenuator, R2, W3, TL-3	Each

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