



INDIANA DEPARTMENT OF TRANSPORTATION

INTER-DEPARTMENT COMMUNICATION

Standards Section Room N642

Writer's Direct Line

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May 14, 2001

**DESIGN MEMORANDUM No. 01-02
TECHNICAL ADVISORY**

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

FROM: /s/ Anthony L. Uremovich
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SUBJECT: Impact Attenuator Design and Contract Document Preparation Procedures

EFFECTIVE: October 16, 2001, Letting

I. INTRODUCTION

The practice of identifying specific attenuators in contract documents is being discontinued in favor of generic attenuator types. There are five 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.
- 5. Type LS.** Type LS impact attenuators are low speed energy dissipation devices that have redirective capability on two sides. These attenuators shall conform to Test Level 1(TL-1) criteria only.

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

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

II. DESIGN PROCEDURE

To determine the appropriate impact attenuator, see the Interim Design Manual Changes attached to Design Memorandum No. 01-02 Policy Change.

III. CONTRACT DOCUMENT REQUIREMENTS

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

- 1. Plans.** The location of impact attenuators should 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 should be shown on all plan and profile sheets and applicable construction detail sheets. The actual layout of an obstruction shield should be shown on a plan detail sheet.
- 2. Standard Drawings.** The designer should review all standard drawings pertaining to impact attenuators to determine which ones are to be listed in the contract-specific standard drawings index.

The standard drawings which have been revised due to issuance of this memorandum are included herewith as recurring plan details. For the Grading at Impact Attenuator series, the recurring plan details are 601-R-404d / E 601-R-404d, pages 1 through 4. For the Impact Attenuator Type ED drawing, the recurring plan detail is 601-R-405d / E 601-R-405d. Such recurring plan details will remain effective until they are superseded by the complementary standard drawings effective March 2002.

- 3. Specifications / Special Provisions.** The Standard Specifications should be reviewed to verify that they are adequate to provide for the installation of all attenuators in the contract. If necessary, unique special provisions should 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 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 shielding component. Where an obstruction-shielding method is developed by the designer, the obstruction-shielding method will be measured and paid for in accordance with the INDOT Standard Specifications requirements for the individual components of the obstruction shield.

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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
601-07009	Impact Attenuator, LS, W1, TL-1	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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