MICHIGAN

DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION

FOR

**24-INCH WIDE TEMPORARY IMPACT ATTENUATOR, TEST LEVEL 3, SPECIAL**

**FURNISHED AND OPERATED**

GCB:CT 1 of 4 APPR:MB:CRB:05-21-21

**a. Description.** This work consists of furnishing, installing, maintaining, operating, and removing a 24-inch wide NCHRP 350, Test Level 3 (TL-3) or MASH, TL-3 temporary impact attenuator meeting the requirements of this special provision. If the requirements of this special provision conflict with the manufacturer’s specifications, follow the requirements of this special provision, unless otherwise approved by the Engineer.

**b. Materials.**

1. Construct attenuator base pad, anchor block and/or concrete backup unit using Grade 4000 or 4000HP concrete in accordance with section 1004 of the Standard Specifications for Construction, or as directed by the Engineer.

2. Provide epoxy-coated steel reinforcement for constructing attenuator base pads, anchor blocks and/or concrete backup units meeting the requirements of section 905 of the Standard Specifications for Construction. Epoxy coating for steel reinforcement must meet the requirements of subsection 905.03.C of the Standard Specifications for Construction.

3. Provide impact attenuators meeting NCHRP 350, TL-3 or MASH, TL-3 criteria and having a FHWA letter specifying the impact attenuator is eligible for Federal aid reimbursement.

4. Provide an attenuator that can shield an object up to 24 inches in width.

5. Ensure the attenuator backup/backstop is of the type specified on the plans or as directed by the Engineer.

6. Furnish one of the following attenuators:

A. Quadguard II, manufactured by Trinity Highway Products, LLC.

B. TAU-II, manufactured by Lindsay Transportation Solutions, LLC.

C. Quadguard Elite, manufactured by Trinity Highway Products, LLC.

D. TAU-II-R, manufactured by Lindsay Transportation Solutions, LLC.

Other alternatives may be permitted if all the following conditions are satisfied:

E. The impact attenuator is capable of adequately shielding a concrete barrier ending with a rectangular cross-section and width of 24 inches.

F. The overall impact attenuator width must not exceed 34⅛ inches;

G. The overall impact attenuator length must not exceed 32 feet-0 inches;

H. The impact attenuator is suitable for exposure to bi-directional traffic on both sides of the attenuator;

I. The impact attenuator is suitable for installation at the proposed installation site, as determined by the Engineer;

J. Sand module attenuators are prohibited;

K. Submit a written request to the Engineer identifying the proposed attenuator, and include shop drawings of the proposed attenuator, transitional assemblies, end panels, and any other accessories required for attenuator installation;

L. Provide FHWA letter(s) certifying the proposed attenuator is eligible for federal aid reimbursement as a NCHRP 350, TL-3 or MASH, TL-3 device;

M. Obtain written approval from the Engineer before installing an alternative attenuator; and

N. The alternative attenuator must meet all the requirements identified in this special provision.

7. Attenuator transition assemblies, transition panels, end panels, and other miscellaneous accessories required for proper installation must meet manufacturer’s specifications.

8. The 24-inch square attenuator object marker sign must be made of 0.040 inch thick aluminum. The yellow stripes on the attenuator object marker sign must meet *ASTM D4956* specifications for Type IX retroreflective sheeting and must meet the requirements of Section 2C.64 and 2C.65 of the *MMUTCD*.

9. Guardrail beam elements, including associated hardware, and steel guardrail posts are in accordance with the requirements specified in section 908 of the Standard Specifications for Construction.

10. Wood guardrail posts and guardrail blocks must meet the requirements of section 912 of the Standard Specifications for Construction.

**c. Construction.** Furnish and deliver the impact attenuator that meets all the requirements of this special provision, as well as any other requirements specified on the plans.

Construct any required concrete base pad, anchor block or concrete backup unit in accordance with the plans and/or manufacturer’s specifications.

Ensure an individual trained by the manufacturer of the impact attenuator system supplied for the project is present during attenuator installation. The Department will not provide this individual.

Install the unit and connect the unit to the backup and to the front anchoring system as required for proper installation of the system.

Install attenuator transition assemblies (including guardrail beam elements, guardrail posts, guardrail blocks, and miscellaneous hardware), transition panels, end panels, and other miscellaneous accessories required for proper connection to guardrail, concrete barrier, or other concrete structure. Install these items per manufacturer’s specifications.

Provide written certification to the Engineer verifying attenuator installation in accordance with the requirements of this special provision.

Attachments to the attenuator (appurtenances) approved by the attenuator manufacturer may be installed per manufacturer’s specifications. Do not attach unapproved appurtenances to the attenuator.

Furnish and install an object marker, with alternating black and yellow stripes, to the nose of the attenuator. Construct the object marker and install in accordance with the diagram titled “Impact Attenuator Object Marker” WZD-150 Series.

If using temporary anchors in new or existing pavement, remove anchors to at least 1 inch below final pavement grade and backfill with an epoxy material approved by the Engineer. For temporary anchors in temporary pavement, remove temporary anchors flush with the paved surface.

If concrete pads contain steel reinforcement, use equipment capable of drilling or coring through steel reinforcement to obtain the required depth for the concrete anchors.

Place cable anchorages and backups to meet the required attenuator alignment.

If the Engineer directs the replacement, repair, or realignment of attenuators, respond within 24 hours. If the Contractor fails to respond, or fails to complete repair work within 48 hours after notification, the Engineer may assign the work to others at the Contractor’s expense.

**d. Measurement and Payment.** The completed work, as described, will be measured and paid for at the contract unit price using the following pay item:

**Pay Item** **Pay Unit**

Impact Attenuator, Temp, 24 inch Wide, TL-3, Spec, Furn Each

Impact Attenuator, Temp, 24 inch Wide, TL-3, Spec, Oper Each

1. **Impact Attenuator, Temp, 24 inch Wide, TL-3, Spec, Furn** includes all of the items identified in subsection 812.04.M.1 of the Standard Specifications for Construction. Payment will be made per subsection 812.04.C of the Standard Specification for Construction.

2. **Impact Attenuator, Temp, 24 inch Wide, TL-3, Spec, Oper** includes all of the items identified in subsection 812.04.M.2 of the Standard Specifications for Construction. Cleaning impact attenuators during construction is included as part of this pay item. Payment will be made per subsection 812.04.D of the Standard Specification for Construction.

All work items described in this special provision will be included as part of the pay items defined in this special provision and will not be paid for separately.

Damage compensation will be handled in accordance with the requirements of subsection 812.04.A of the Standard Specifications for Construction.