SUPERSEDED BY EB 06-057 EFFECTIVE 5/3/07	MODIFIED BY EB 03-054 EFFECTIVE 10/17/03	*New York State Department of Transportation* ENGINEERING INSTRUCTION	EI 03-032

Title: **Impact Attenuator, Beam Type with Metal Tearing Strips (WIDE TRACC)**

Distribution:		Approved:
☒ Manufacturers (18)	☐ Surveyors (33)	
☒ Main Office (30)	☒ Consultants (34)	
☒ Local Govt. (31)	☒ Contractors (39)	09/17/03
☒ Regions/Agencies (32)	☐ _____( )	P. J. Clark, Deputy Chief Engineer, Design Division — Date

ADMINISTRATIVE INFORMATION:

- **Effective date.** This EI is effective with projects submitted for the letting of May 6, 2004.
- **Superseded issuances.** None.
- **Disposition of issued materials.** The revised specifications will appear in the next edition of the *Standard Specifications*.

PURPOSE:

- To issue standard specifications for the subject impact attenuator.
- To provide guidance on its use.

TECHNICAL INFORMATION:

- **Interim Guidance.**

- These impact attenuators may be used to protect objects up to 3.2 m wide.
- They are rated as Test Level 3 (100 km/h) devices. As such, they may be used on all classes of highways.
- There are no Test Level 2 (70 km/h) or Test Level 1 (50 km/h) devices of this type currently available in the wider configurations. However, for the narrower configuration, applicable for objects up to 610 mm wide, there is a six-bay unit available, which is a TL2 rated device.
- In the use of these devices, all curbing from the back of the unit to a point 15 m in front of the unit must either be removed or effectively reduced in height to 100 mm or less.
- On the nonapproach traffic side of bidirectional highways, the side of the subject impact attenuator must not protrude beyond the object being protected by the subject device. The specifications require transitions on the nonapproach side to avoid snagging of the back of the impact attenuator in wrong-way hits.
- No backup structures are required for these impact attenuators. This reduces cost and may prevent interference with buried objects or utilities.
- Cross slopes of 1 on 12 or flatter may be tolerated. Differential cross slope (twist) from front to back may not exceed two percent (2%).

- **Policy issues.** The contract items for these units are proprietary. Therefore, it will be necessary to justify the use of Items 654.30XXYR and 654.31XXYR. The following information may be useful in making these justifications.

- When objects wider than 610 mm need impact attenuators, only four types are available. These are: Cartridge/Quad beam style, Sand Barrel Arrays, HDPE Cylinder/Diaphragm Types, and the subject beam-type with metal tearing strips impact attenuators. Only sand barrel arrays are nonproprietary.
- When objects 610 mm wide or narrower are considered, there is another expendable Cartridge/Thrie beam style also approved.
- To avoid "coffin corner" impacts, sand barrel arrays must be 1.5 m wider than the protected object in gores and other situations where approaching traffic may pass on both sides of the unit. For bidirectional situations, and

where approaching traffic will impact only one side of the unit, only 750 mm of added width will be required.

- Damaged barrels must be replaced.
- Corrugated-beam-style impact attenuators and HDPE-cylinder-type impact attenuators provide good redirection in side impacts, and therefore would be good choices if hit on the side. Corrugated beam styles require only moderate replacement of parts on impact.
- The impact attenuators using HDPE cylinders may not provide as desirable a post-collision trajectory with a head-on impact as do the beam types (including the subject impact attenuators), but they require less maintenance and have greater uptime than other types.
- The subject units require foundations, but not backup structures. Sand barrel arrays need neither.

• Other Information.

- Six-bay units are rated as TL2 or 70 km/h design speed. Nine-bay units are rated at TL3, or 100 km/h.

Table 1. Impact Attenuator, Beam-Type with Metal Tearing Strips (WideTRACC)

Bays (XX)	Extension bays	Width, Shielded (mm)			Length (mm)	Contract Items and remarks.	
		Number of Sides Flared					
		None Y=0	One Y=1	Two Y=2			
6	0	610	NA	NA	4,330	654.30XXYR	Impact Attenuator, Beam Type, Metal Tearing Strips, New Foundation, XX Bays, Y Sides Widening
9	0	610	1,050	1,470	6,400	654.31XXYR	Impact Attenuator, Beam Type, Metal Tearing Strips, New Foundation, XX Bays, Y Sides Widening
10	1	NA	1,140	1,640	7,100	654.34XXYR	Impact Attenuator, Beam Type, Metal Tearing Strips, Relocate to and Construct New Foundation, XX Bays, Y Sides Widening
11	2	NA	1,220	1,810	7,810	654.36XXYR	Impact Attenuator, Beam Type, Metal Tearing Strips, Relocate to Existing Foundation, XX Bays, Y Sides Widening
12	3	NA	1,310	1,990	8,520		
13	4	NA	1,400	2,160	9,220		
14	5	NA	1,480	2,330	9,930		
15	6	NA	1,570	2,510	10,630		
16	7	NA	1,650	2,680	11,340		
17	8	NA	1,740	2,850	12,050		
18	9	NA	1,830	3,030	12,750		
19	10	NA	1,910	3,200	13,460		

• Actions

- DQAB will insert a shelf note into proposals calling for these contract items.
- EICs should provide drawings and extra copies of product, installation, and maintenance manuals to the Regional Maintenance Groups.

• Cost Impact. None.

• Changes. This Engineering Instruction changes contract items and provides for additional widths for a standard impact attenuator already included in the *2002 Standard Specifications.*

IMPLEMENTATION:

• Disapproved Specifications. 654.30XX, 654.31XX, 654.34XX and 654.36XX, where XX is 06 or 09. They are replaced by the following new specifications indicated below. They may be included in proposals submitted for the letting of May 6, 2004, or later.

- **New Specifications.**

654.30XXYR	Impact Attenuator, Beam Type, Metal Tearing Strips, New Foundation, XX Bays, Y Sides Widening	Each
654.31XXYR	Impact Attenuator, Beam Type, Metal Tearing Strips, New Foundation, XX Bays, Y Sides Widening	Each
654.34XXYR	Impact Attenuator, Beam Type, Metal Tearing Strips, Relocate to and Construct New Foundation, XX Bays, Y Sides Widening	Each
654.36XXYR	Impact Attenuator, Beam Type, Metal Tearing Strips, Relocate to Existing Foundation, XX Bays, Y Sides Widening	Each

Where XX = 06, or 09-19 bays

Y = 0, no flaring. Available only when XX = 06 or 09.
= 1, flared only on one side
= 2, flared on two sides

R = major revision number, now 1

TRANSMITTED MATERIALS:

- Shelf note incorporating the above pay items into the Standard Specifications. See first bullet under "Other information," given above.
- No drawings, design, or installation information is transmitted herein, but such information is available on the manufacturer's website, www.highwayguardrail.com/Images/Flyers/widetracc. This page may also be accessed via the IntraDot link for TRACC at http://intradot/design/dqab/specs/endterms.html.

BACKGROUND: Special specifications for the narrow six-bay and nine-bay units were issued under EI 01-003. They were subsequently incorporated into the *Standard Specifications* by EI 01-026. That EI also converted the special specifications for several other impact attenuator types into standard specifications.

Since issuance of EI 01-026, the vendor has developed units that are capable of shielding objects up to 3.2 m wide. This is accomplished by using wider diaphragms in the fourth through ninth bays of the original nine-bay, 6.4 m design. In addition, the length of the impact attenuator is extended by the use of added fender panels mounted on knee-braced posts. The units can be widened on either the left or right sides or both sides. The angles formed by these wider diaphragms create seven degree (7°) flares with respect to the longitudinal axis of the impact attenuator.

VENDOR: Trinity Industries, Inc.
Highway Safety Products
2525 Stemmons Freeway, Dallas, Texas, 75207
(800) 644-7976 Phone. (214) 589-8423 Fax

CONTACT: Marc Connolly, Design Quality Assurance Bureau, (518) 457-5440.

Impact Attenuators, Beam-Type with Metal Tearing Strip Type

Make the following changes to the *Standard Specifications* of January 2, 2002:

Page 6-175, Lines 41. (Section 654, list of pay items)
Replace contract items 654.30XX, 654.31XX, 654.34XX, and 654.36XX with the following:

654.30XXYR	Impact Attenuator, Beam Type, Metal Tearing Strips, New Foundation, XX Bays, Y Sides Widening	Each
654.31XXYR	Impact Attenuator, Beam Type, Metal Tearing Strips, New Foundation, XX Bays, Y Sides Widening	Each
654.34XXYR	Impact Attenuator, Beam Type, Metal Tearing Strips, Relocate to and Construct New Foundation, XX Bays, Y Sides Widening	Each
654.36XXYR	Impact Attenuator, Beam Type, Metal Tearing Strips, Relocate to Existing Foundation, XX Bays, Y Sides Widening	Each

Where XX = 06, or 09-19 bays

Y = *0, no flaring. Available only when XX = 06 or 09.*
= *1, flared on only one side*
= *2, flared on two sides*

R = *major revision number, now 1*