

**TRITON CONCRETE END TREATMENT SYSTEM
FOR TL-2 AND TL-3 APPLICATIONS
GENERAL SPECIFICATIONS**

I. GENERAL

- A. The TRITON Concrete End Treatment System is a system of components, which when assembled as specified by the manufacturer, provides an integral gating, non-redirecting crashworthy end treatment especially suited for use with unanchored Portable Concrete Median Barrier (PCMB).

- B. All elements, components, and subassemblies of the TRITON Concrete End Treatment System shall be designed, manufactured, and/or supplied by Energy Absorption Systems, Inc., of Chicago, Illinois.

II. DESCRIPTION OF THE SYSTEM

- A. The TRITON Concrete End Treatment System shall consist of a series of six individual TRITON Barrier “**segments**” and a transition section.

- B. Each TRITON Barrier “**segment**” shall be composed of the following:
 - 1. One barrier segment.
 - a) Each barrier segment shall be constructed of a lightweight, recyclable, linear low density polyethylene plastic shell, with UV stabilizers and antioxidants, designed to accept water ballast.

 - b) The approximate physical dimensions and capacities of the segments shall be: length (pin to pin) 1981 mm [78 in.]; width: 533 mm [21 in.]; height: 813 mm [32 in.]; empty weight: 64 kg [140 lb.]; water ballast: 549 liters [145 gallons]. Weight when fill shall be approximately 612kg (1350 lbs)

 - c) Barrier segments shall be constructed in white or workzone safety orange colors for high visibility.

- d) Each barrier segment shall include an internal galvanized steel framework to provide additional rigidity during handling and impacts, and shall be equipped with a 12.7 mm [1/2 in.] diameter galvanized steel cable along a recess in the top of the segment, for suitable tensioning capability.
 - e) The ends of each barrier segment shall be constructed with vertically aligned knuckles which interlock with those of abutting sections and accept a 51 mm [2 in.] dia. hollow steel connecting pin. The connecting pin shall be constructed to securely connect adjoining segments and their respective tension cables for suitable impact performance.
 - f) Each barrier segment shall be constructed with ribbed sidewalls to interact with an impacting vehicle.
 - g) Each barrier segment shall be constructed with elevated forklift openings to allow for mechanical lifting when empty or full.
 - h) Each barrier segment shall be constructed with two 127 mm [5 in.] diameter quick fill openings with covers, and a 38 mm [1 1/2 in.] diameter rapid release gate valve to allow quick draining of the water ballast. A reflectorized fill level indicator shall be constructed in the top of each section to allow quick verification that the segment is adequately full of water ballast.
- C. The first TRITON segment, at the nose of the system, should be free of water, and for TL-3 applications flipped upside down, and supported with a short steel pedestal. The following five TRITON segments shall be filled with water, and for TL-3 applications, supported with the hardware in the TRITON Barrier TL-3 Kit. The six segments shall be connected to unanchored PCMB using a TRITON Concrete End Treatment transition section (described below).

D. Transition Section

1. The transition section shall be constructed of galvanized steel.
2. The approximate physical dimensions and capacities of the sections shall be: length (pin to pin) 686 mm [27 in.]; width: 597 mm [23.5 in.]; height: 838 mm [33 in.];
3. The section shall be filled with proprietary energy absorbing foam.
4. Two different Transition Sections shall be available. One shall allow direct connection to standard pin-and-loop PCMB and the other shall allow direct connection to vertical T-Slot PCMB. The forward end of the Transition Section shall connect to either TL-2 TRITON Barrier (resting on the ground) or TL-3 TRITON Barrier (elevated on 178mm high pedestals).

E. TRITON Barrier® TL-3 Kit.

Each TRITON Barrier TL-3 Kit shall consist of the following:

1. Two pedestals.
 - a) Each pedestal shall be constructed of a lightweight, recyclable, virgin or recycled, linear low density polyethylene plastic shell, with UV stabilizers and antioxidants, and shall be black in color.
 - b) Pedestals shall be design to work in tandem (2) to support the weight of one barrier segment that is full of water ballast.
 - c) The approximate physical dimensions and capacities of each pedestal shall be: length 787 mm [31 in.]; width: 419 mm [16.5 in.]; height: 229 mm [9.0 in.]; weight: 3.2 kg [7 lb.].

- d) Each pedestal shall be constructed to support a TRITON Barrier segment approximately 178 mm [7 in.] above ground level.
 - e) Each pedestal shall be constructed with slots in its upper surface to receive a strap by which the pedestal shall be attached to a TRITON Barrier segment.
 - f) Pedestals shall be constructed to nest when stacked to reduce shipping and storage space.
2. Two strap assemblies.
- a) Each strap assembly shall include one galvanized steel strap 32 mm [1.25 in.] in width and approximately 1.19 m [47 in.] in length. A galvanized 3/8" hex head bolt, hex nut and washers shall be included to fasten the strap together.

III. PERFORMANCE CRITERIA

- A. The TRITON Concrete End Treatment System shall have been tested and evaluated per the criteria set forth in the National Cooperative Highway Research Program Report 350 (NCHRP-350). An FHWA acceptance letter shall be available authorizing its use on the National Highway System.
- B. The TRITON Concrete End Treatment System is a narrow, non-redirective, gating crash cushion. Its impact performance is similar to a sand-filled inertial barrel array. It is recommended that the TRITON Concrete End Treatment System only be used with unanchored PCMB and placed at sites where the probabilities of side impacts are low.

IV. DESIGN AND SELECTION CRITERIA

- A. Design, selection, and placement of the TRITON Concrete End Treatment System should conform with applicable guidelines in:
 - 1. U.S. Department of Transportation, Federal Highway Administration, "Manual on Uniform Traffic Control Devices", Washington, D.C. U.S. Government Printing Office, 2003 and all subsequent revisions.
 - 2. American Association of State Highway and Transportation Officials, "Roadside Design Guide", Washington, D.C. AASHTO, January 2002 and all subsequent revisions.

- B. Installation of the TRITON Concrete End Treatment System shall be accomplished in accordance with the recommendations of Energy Absorption Systems, Inc., in the TRITON Concrete End Treatment Installation and Application manual.