

SECTION 18.06
TYPE D PORTABLE
IMPACT-ATTENUATION SYSTEM

18.06.01--Description: This item shall consist of the furnishing of and use of a self contained, lightweight portable impact-attenuation system in accordance with the requirements of this section and the design plans or as directed by the Engineer.

18.06.02--Materials: All materials shall conform to the requirements of the plans. If the system is not furnished new, the Contractor shall document and/or demonstrate to the Engineer that the system conforms to the requirements of a new system. The Contractor shall submit a materials certificate in accordance with Article 1.06.07 for each new system supplied.

Type D-1 Connecticut Crash Cushion (CCC): The CCC shall attach behind and beneath a service vehicle and within a telescoping framework. The service vehicle shall have a mass between 4500 and 11000 kg. The CCC shall be comprised of four steel cylinders each of 610 mm in diameter and 865 mm deep. An aluminum impact plate shall be attached to and be an integral part of the rear of the system. The assembly shall rest on an aluminum frame, which, on impact, will slide forward freely into a guide frame bolted to the truck chassis.

Type D-2 Hex Foam Portable Impact Attenuator: The D-2 system shall attach to a 4500 to 11000 kg truck. It shall be comprised of crushable hex foam cartridges, a fiberglass housing, rear jack assembly and skid plate. It shall have a hydraulic device capable of tilting the unit upward from the roadway surface to improve travel characteristics. The Contractor shall present documentation of system performance to demonstrate that the system will perform its intended function with minimum maintenance.

18.06.03--Construction Methods: The Contractor shall have available a portable impact-attenuation system mounted on a truck. The contractor shall maintain the system in a fully operable condition at all times. A system which is not fully functional will not be permitted at the work site. The truck shall be equipped with at least two strobe type flashers mounted high enough to be fully visible from the rear, and an internally illuminated flashing arrow visible from the rear. The illuminated arrow shall conform to the requirements of Section 11.30.

1. Use of the portable impact-attenuation system(s) as a stationary barrier vehicle shall be under the control of the Engineer at all times, and in conformance with the following required operational provisions:
 - A. The portable impact-attenuation system shall be positioned such that adjacent traffic does NOT pass any other object within the protected area (i.e. equipment, personnel, vehicles) before reaching the portable impact-attenuation system.
 - B. Each portable impact-attenuation system in use shall be positioned not less than 8 m, nor more than 30 m from the forward boundary of the area to be protected.
 - C. Each portable impact-attenuation system shall be provided for use with an assigned operator. An operator shall be available to reposition the portable impact-attenuation system within a 15-minute time frame.
 - D. Use of one (1) portable impact-attenuation system shall be required, as directed by the Engineer, for each established protection area in a construction zone.
2. Use of the portable impact-attenuation system as a shadow protection vehicle for mobile or stop and go operations shall be under the control of the Engineer at all times, and in conformance with the following required operational provisions:

- A. The portable impact-attenuation system shall be positioned such that approaching traffic does NOT reach or overtake any object in the construction array before passing the portable impact-attenuation system.
- B. Each portable impact-attenuation system in use shall be positioned not less than 15 m nor more than 60 m from the rear of the next vehicle in the mobile array when the array is in a stopped position. When the array is in motion, the maximum distance between vehicles may extend to 150 m, depending on the type and speed of the operation, road conditions, traffic volumes, etc.
- C. Each portable impact-attenuation system in use shall be provided for use with an assigned operator, who must remain in the service vehicle at all times that the portable impact-attenuation system is in use.

The disposal of crushed cylinders or a damaged system is the responsibility of the Contractor. The disposal methodology employed shall be approved by the Engineer.

18.06.04--Method of Measurement: This item will be measured for payment by the actual number of hours that the Type D Portable Impact Attenuation System is used in conformance with the above requirements. Subject to the approval of the Engineer, Type D Portable Impact Attenuation Systems may be used as a contractor option to a High Mounted Internally Illuminated Flashing Arrow. If the Attenuation System is deployed instead of a Flashing Arrow, then it will be paid for under the item "High Mounted Internally Illuminated Flashing Arrow."

18.06.05--Basis of Payment: This item shall be paid for at the contract unit price per hour, which shall include the furnishing and use of the specified vehicle and an operator in conformance with the above requirements; flashers; illuminated arrow; and all equipment, materials, tools, labor, disposal of damaged systems and/or components, and work incidental thereto.

<u>Pay Item</u>	<u>Pay Unit</u>
Type D Portable Impact-Attenuation System	HR.