**Revise Section 614 of the Standard Specifications for this project to include the following:**

## Description

This work consists of furnishing and installing impact attenuators. This work shall be done per these specifications and in conformity with the lines and details shown on the plans or established.

## Materials

The impact attenuator shall be one of the following:

1. QUADGUARD System, as manufactured by Energy Absorption Systems, Inc., One East Wacker Drive, Chicago, IL 60601
2. Smart Cushion, as manufactured by SCI Inc., 2500 Production Drive, St. Charles, IL 60174

The design speed of this portion of the roadway is ♦ miles per hour.

The impact attenuator shall meet the following design parameters:

NCHRP Report 350 (or) MASH Test Level: TL ♪

Hazard Width: ▲

Bi‑directional: ♥

Location: ♣

Object to be shielded: ♠

## Construction Requirements

The site shall be prepared to receive the impact attenuator by filling, excavating, smoothing, constructing the concrete foundation pad, installing approved transition and anchoring, and all other work necessary for the proper installation of the attenuator. The foundation pad shall be 6 inch thick reinforced concrete or 8 inch thick non-reinforced concrete. Other foundations may be used, if recommended by the impact attenuator manufacturer, and approved by the Engineer. The impact attenuator shall be fabricated and installed per the manufacturer's recommendations. The Contractor shall provide a copy of the manufacturer’s installation instructions and parts lists to the Engineer before installation of the device.

Each installation shall be supervised and certified as correct upon completion by a representative of the device manufacturer or by an employee of the Contractor who is a certified installer. The Contractor shall submit all appropriate documentation to validate that the certified installer has completed device training and has been registered with the manufacturer as a certified installer.

## Method of Measurement

Impact attenuators will be measured by the actual number of attenuators that are installed and accepted.

## Basis of Payment

The accepted quantities will be paid for at the contract unit price for the pay item listed below.

Payment will be made under:

| Pay Item | **Pay Unit** |
| --- | --- |
| Impact Attenuator | Each |

Payment will be full compensation for all work and materials required to furnish, install, and certify the impact attenuator. Site preparation, foundation pad and all necessary hardware including anchors and transitions will not be measured and paid for separately but shall be included in the work.

All costs associated with either having a manufacturer's representative on-site, or training and certifying an employee of the Contractor as a certified installer, will not be measured and paid for separately but shall be included in the work.

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

**Instructions to Designers** (Delete instructions and symbols from final draft.):

Use this special provision for attenuators to be used for hazards up to 3 feet wide.

♦ Insert the design speed.

▲ Insert the hazard width.

♪ Insert NCHRP Report 350 or MASH and insert TL-2 or TL-3. NCHRP Report 350 should only be used for devices developed before 2011; otherwise, MASH testing criteria should be utilized, TL-2 is used for design speeds up to 45 miles per hour. TL-3 is used for speeds greater than 45 miles per hour.

♥ Indicate "yes" or "no". Use of an approved transition from shielded obstacle to QUADGUARD or SCI 100 GM is required for bidirectional use.

♣ Indicate where the attenuator will be installed such as "Median", "Gore", "Roadside", or "Construction Zone".

♠ Identify the object to be shielded, such as "Guardrail Type 3", Guardrail Type 7", "Bridge Rail", or other object.