

Section 2551. Crash Cushions

2551.01 GENERAL.

- A.** Furnish and install crash cushions accepted as crashworthy devices by the FHWA and meeting the requirements of NCHRP Report 350, Test Level 3 criteria. Approved products are listed in Materials I.M. 455, Appendix A. All products listed in Materials I.M. 455, Appendix A, are acceptable for use as temporary crash cushions.
- B.** When a permanent, redirective, or severe-use crash cushion is required by the contract documents, install one of the crash cushions specifically designated for such use in Materials I.M. 455, Appendix A.
- C.** In case of a discrepancy between these specifications and the manufacturer's recommendations, these specifications govern.

2551.02 MATERIALS.

- A.** Meet the manufacturer's requirements.
- B.** Ensure crash cushions are in good repair when installed.
- C.** For permanent crash cushions and spare parts kits, use equipment and materials of new stock, unless the contract documents provide for the relocation or the use of fixtures furnished by others.
- D.** Refer to Materials I.M. 455, Appendix A, for parts to be included in spare parts kits. Spare parts kits are to be supplied by the crash cushion manufacturer and contain materials designated for repairing the specific brand and model of crash cushion furnished.

2551.03 CONSTRUCTION.

A. General.

- 1.** Install crash cushions according to the manufacturer's recommendations. Prior to installation, provide the Engineer with:
 - Three copies of the manufacturer's most current product manuals covering installation and maintenance of the unit.
 - Required certification statements.
 - Additional hardware, tools, or documentation supplied by the manufacturer.
- 2.** The manufacturer may require the use of additional connection hardware, construction of a backup structure, or construction of a paved footing for a specific installation. When required, construct and attach these items to the obstacle, the crash cushion, or both, in a manner specified by the manufacturer.
- 3.** Complete grading work, if required, prior to installation of crash cushions.
- 4.** When a roadway is closed to public traffic for construction, install all crash cushions prior to opening the road to traffic.
- 5.** Do not allow attachments to new concrete or to anchor bolts set in epoxy resin to be stressed until the new concrete or epoxy resin has attained an age of 3 calendar days. This time requirement may be lengthened by the Engineer during cool weather.

B. Temporary Crash Cushions.

- 1.** Unless shown otherwise in the contract documents, apply a retroreflective panel as described for permanent crash cushions.
- 2.** When damaged, repair or replace the crash cushion. Initiate service to a damaged crash cushion within one hour of notification. Do not allow the object being shielded to be exposed to traffic for more than 12 hours.

3. **When a temporary crash cushion is no longer required, remove it. The crash cushion becomes the property of the Contractor. Remove anchor bolts, if used, and fill the bolt holes with one of the non-shrink grouts listed in Materials I.M. 491.13, Appendix A.**
4. When a crash cushion is required after the final stage of a project, leave it in place. The crash cushion becomes the property of the Contracting Authority.

C. Permanent Crash Cushions.

1. Mark the approach end of the crash cushion with a rectangular panel consisting of materials approved by the manufacturer and install according to the manufacturer's recommendations. Cover the panel with alternating black and retroreflective yellow stripes that meet the following:
 - Minimum of 3 inches (75 mm) in width,
 - Slope down at an angle of 45 degrees toward the side on which traffic is to pass the crash cushion.
 - Form chevrons that point upwards if traffic can pass to either side of the crash cushion.
 - Retroreflectivity requirements for Type III or Type IV reflective sheeting (yellow stripes only).
2. Crash cushions with a flat face, the panel is to cover the entire face of the crash cushion.
3. Crash cushions with a rounded face, the panel is to cover the entire height and width of that portion of the face between the sides of the crash cushion. However, the panel need not cover that portion of the face within 12 inches (300 mm) of the ground or higher than 42 inches (1050 mm).
4. Permanent crash cushions become the property of the Contracting Authority.

2551.04 METHOD OF MEASUREMENT.

Measurement will be as follows:

- A. Temporary Crash Cushions.**
By count.
- B. Permanent Crash Cushions.**
By count.
- C. Crash Cushion Spare Parts Kits.**
By count for crash cushion spare parts kits delivered to the local maintenance office.
- D. Backup structures, paved footings, and additional connection hardware.**
Not measured separately for payment.

2551.05 BASIS OF PAYMENT.

Payment will be contract unit price as follows:

- A. Temporary Crash Cushions.**
 1. Installed: each.
 2. Repaired or replaced due to damage by public traffic: extra work according to Article 1109.03, B.
- B. Permanent Crash Cushions.**
Each.
- C. Crash Cushion Spare Parts Kit.**
Each.
- D. Backup structures, paved footings, and additional connection hardware.**
Incidental to crash cushions.