



Bureau of Materials Materials Approval Procedures

MAP Number: **135-19**

Effective Date: June 18, 2019

Approved By: *Edward M. Inman*

PROCEDURE FOR APPROVAL OF COMPRESSIVE CRASH CUSHIONS

PURPOSE:

To establish a procedure to approve compressive crash cushions for addition to the NJDOT Bureau of Material's Qualified Products List (QPL).

REFERENCES:

New Jersey Department of Transportation Standard Specifications for Road and Bridge Construction
Section 611.02

MASH Report:

https://safety.fhwa.dot.gov/roadway_dept/countermeasures/reduce_crash_severity/aashto_guidancecfm.cfm

PROCEDURE:

A. Manufacturer's Request for Approval.

The Manufacturer shall request in writing for the approval of the product. Include the following information in the request:

1. The name, address, and contact information for the manufacturer.
2. The name and designation of product to be evaluated.
3. Documentation of FHWA acceptance of the compressive crash cushion, if issued by the FHWA.
4. Documentation of MASH, including crash test videos, and test level 2 (TL-2) & test level 3 (TL-3) results.
5. Four copies of detailed drawing and specification sheet for the compressive crash cushion.
6. Four copies of the Manufacturer's recommendations for installation, maintenance and repair of the compressive crash cushion.
7. An estimate of initial cost and repair costs for the compressive crash cushion.

Mail the request for approval to the following:

Mailing Address (USPS):

Manager, Bureau of Materials (Thiokol Bldg. 4)
New Jersey Department of Transportation
P.O. Box 600
Trenton, NJ 08625-0600

Street Address (UPS, FedEx, etc.):

Manager, Bureau of Materials (Thiokol Bldg. 4)
New Jersey Department of Transportation
930 Lower Ferry Road
West Trenton, NJ 08628

B. Bureau of Materials Review

The Material's Engineer (ME) in the Inspection Section of the Bureau of Materials will review the submitted package for completeness and will verify that the submitted compressive crash cushion was approved by comparison with the MASH website. If the package is incomplete or the compressive crash cushion does not comply, the ME will notify the manufacturer.

C. Departmental Review

If the ME determines that the package is complete, he will schedule a meeting for Departmental review of the compressive crash cushion with representatives from:

- North, South, and Central Regional Maintenance Offices (RE's for each of the three Regional Beam Guide Rail and Attenuator Repair Contracts).
- Division of Highway and Traffic Design (Roadway Design – Group 1).
- Division of Bridge Engineering and Infrastructure Management (New Technologies and Products Unit).
- Division of Capital Program Support (Roadway Standards Unit).

The manufacturer's representative will be invited to this meeting to make a product presentation at the beginning of the meeting, then depart from the meeting.

The Departmental Review Team will consider the following information in their evaluation of a compressive crash cushion:

1. Cost, ease, and frequency of maintenance.
2. Cost and ease of construction.
3. Design parameters and requirements.
4. The number of currently approved compressive crash cushions and the impact on the inventory of adding a new compressive crash cushion.

The Departmental Review team will conclude at the meeting to either go forward with a field trial or reject the product.

D. Field Trial

The Departmental Review Team may request a field trial to evaluate the ease of construction and determine any construction/maintenance issues with the product. The team will decide locations, experimental period, and assign data collectors.

The Manufacturer will supply, at no cost to the Department, the compressive crash cushion; and the manufacturer's representative will provide the necessary installation training and initial construction oversight for the field installation. If the Manufacturer elects to supply only the proprietary parts, then the Department will supply the generic crash cushion parts.

The compressive crash cushion will be installed in the Guide Rail Terminal and Crash Cushion Installation Field at the Operation's Training Center at US Route 130 & Dunn's Mill Road in Bordentown, NJ under the direction of the RE for the Region South Beam Guide Rail and Attenuator Repair Contract. The Repair Contract's contractor will install the compressive crash cushion, including the 6 inch thick Porous HMA Nonvegetative Surface underneath.

The RE will schedule the installation training in the appropriate building on site with the Operation's Training Unit (installation of compressive crash cushion in the Field will occur directly after the training). Once scheduled, the Operation's Training Unit will invite the:

- Departmental Review Team.
- Videotaping person from Bureau of Operation's Support and Engineering (videotape to be edited and used for future training).
- Operation's inspection staff.

E. Product Approval/Rejection

The Departmental Review Team will determine the acceptability of the compressive crash cushion. The ME will notify the manufacturer of the Department's decision.

If the product is accepted,

- Roadway Design, Group-1 will determine the item names for all the appropriate sizes (IE: CRASH CUSHION, QUADGUARD, 2 BAYS, 24" WIDE; ETC). Maintenance Units will determine Item names for the various replacement parts. New Technologies and Products Unit will send the design and maintenance item names to the Office of AASHTOWare Project Support, Bureau of Construction Services & Materials and request that they assign Standard Item numbers. Office of AASHTOWare Project Support will confirm when Standard Item numbers are in the AASHTOWare Project Support Software.
- The Departmental Review Units will gather the information for the draft Specification changes, if needed, for the current Standard Input (SI). The Design Document Management Unit will draft the Specification changes.
- The Roadway Standards Unit will write design guidelines, if needed, to be placed in the Roadway Design Manual.
- The Standard Item names and numbers, Specification revisions, and Roadway Design Manual guidelines will be issued via a Baseline Document Change (BDC). The New Technologies and Products Unit will prepare and submit the BDC request to the Design Document Management Unit.
- In order to keep the number of Non-Gating Crash Cushions to a workable number for maintenance reasons, the Departmental Review Team may have to eliminate a previously approved product, if the new product is better by way of initial cost, maintenance and/or ease of construction.

The ME will have the product information shown above inserted into the "COMPRESSIVE CRASH CUSHIONS, MASH QPL" on the following website:

<http://www.state.nj.us/transportation/eng/materials/qualified/OPLDB.shtm>.

PROJECT ACCEPTANCE REQUIREMENTS:

Qualification of a product and addition to the QPL does not constitute a blanket approval of the material. The Contractor for each proposed project must submit the product and source on a Materials Questionnaire as specified in Section 106. The ME shall approve the product and source on a project to project basis based on the specifications for the project. The ME shall inspect, test, and accept the material according to the applicable Section of the *NJDOT Standard Specifications for Road and Bridge Construction*.

DISQUALIFICATION:

The ME may remove the product from the QPL for non-conformance with specification requirements or for a documented history of poor field performance. The manufacturer shall notify the ME, in writing, of any change in compressive crash cushion configuration. Failure to notify the ME of changes in the product will result in disqualification. The Departmental Review Team may also disqualify a product to limit inventory control problems with a proliferation of compressive crash cushions.

REQUALIFICATION:

The ME will reevaluate a product which has been disqualified and removed from the QPL only after submission of a formal request along with acceptable evidence that the problems causing the disqualification have been resolved.

The ME may require the manufacturer to requalify the product for any of the following reasons:

1. To ensure that obsolete products are not kept on the list, the ME may request written confirmation from the manufacturer that the product is still available and has not changed design. Failure to respond to the Bureau's written request will result in the product being removed from the list.
2. If the design of the product has changed, the ME will require that the new design be requalified.
3. If the Department's standard specifications change or if the MASH criteria change, the ME may require requalification to ensure that the product meets the new specification.