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Department of Transportation

CRASH CUSHION INVENTORY AND INSPECTION

PURPOSE:

To provide a method and direction for the inventory, inspection, repair, and replacement of crash cushions on the state highway system.

AUTHORITY:

Sections 20.23(3)(a), 334.048(3) Florida Statutes (F.S.)

REFERENCES:

Section 284.50(1)(b), 316.0745, and 335.09, F.S.

FDOT Loss Prevention Manual

FDOT Design Standards

Standard Specifications for Road and Bridge Construction, Section 544

Approved Products List (APL)

Rule 14-15.010, F.A.C, MUTCD.

SCOPE:

This procedure applies to personnel responsible for the inventory, inspection, repair, and replacement of crash cushions.

GENERAL:

Crash cushions serve as protective devices that attenuate or redirect vehicles away from potentially hazardous above ground fixed objects. It is the Department's objective to maintain existing crash cushions so they function as intended.

There are numerous Department approved crash cushion systems that are available for the Districts to use. Each of these systems is unique with special applications of use and performance characteristics. The replacement device selected shall be made by the designated District, or area engineer. Only those systems that are listed on the Department's Approved Products List (APL) will be used in new installations.

1. CRASH CUSHION INVENTORY

All new installations and modifications to existing crash cushion devices shall be inventoried into the Department's Roadway Characteristics Inventory (RCI) database in accordance with ***Procedure No. 850-000-001, Transportation Data Collection, Storage and Reporting***. The proper coding of information is outlined in the Maintenance RCI Field Handbook. The area engineer or designee shall complete ***Crash Cushion Inventory Update, Form No. 850-055-04*** upon completion of a project in which a new crash cushion device has been installed or upon completion of replacing an existing crash cushion device. The form should then be submitted to the designated district personnel responsible for updating the RCI.

2. CRASH CUSHION INVENTORY REPORT

This report is computer generated showing the current crash cushion data recorded in the RCI File. The report is available from the Office of Maintenance SharePoint site or RCI system, and can be sorted by State, District, Area or County.

3. INSPECTION PROGRAM

The purpose of the Crash Cushion Inspection Program is to ensure the proper performance and functionality of each device. Each District is required to conduct a periodic inspection program consisting of two semi-annual inspections.

4. TYPES OF INSPECTIONS

4.1 Type I

This inspection is a cursory review to ensure the crash cushion is intact and functional as designed. Repairs are to be made as needed.

This inspection is to be accomplished during the month of April each year. **Crash Cushion Inspection Report, Form No. 850-055-12** is utilized for this inspection. The inspection report shall be completed, signed, and filed within 15 days after the inspecting month with the District or local maintenance unit.

4.2 Type II

This inspection is a detailed review to ensure the crash cushion is serviceable and functional with all deteriorating factors and deficiencies identified for subsequent repair.

This inspection is to be performed during the month of October each year. **Crash Cushion Inspection Report, Form No. 850-055-12**, is utilized for this inspection. The report shall be completed, signed, and filed within 15 days after the inspecting month with the District or local maintenance unit.

5. INSPECTION CONDITION

Rate the crash cushion condition utilizing the following criteria:

Good - A unit that contains minimal deterioration and will provide the desired or design level of performance under impact. Discoloration or other minor weathering effects that do not affect the function of the unit can be discounted when a unit is otherwise in good condition.

Fair - A unit that contains deteriorated components, yet will provide the desired or design level of performance under impact.

Poor - A unit that contains deteriorated components and/or deficiencies that effectively reduce the unit's potential performance capabilities.

Critical - A unit that will not provide service protection under impact, irrespective of component condition.

6. INSPECTION REPORTING

Annual inspection (**Type I and Type II**) data shall be entered into the roadway characteristic inventory (RCI) within 15 days after the signed inspection report is filed. Crash Cushion inspection reports can be generated from the Office of Maintenance Sharepoint site or the RCI system.

When repairs are performed that result from an inspection report (**Type I or II**) that change the condition reported in RCI, then the RCI must be updated by the

District or local maintenance unit to reflect the revised condition of the unit within 15 days after repair is completed.

7. REPAIR

All deteriorated components and deficiencies identified during the Type I & II inspections shall be repaired within 30 days of identification, and the date the repair was completed shall be recorded on ***Crash Cushion Inspection Report, Form No. 850-055-12.***

Crash cushions damaged due to impact, which will not allow the unit to function as designed, shall be scheduled for repair or replacement as soon as possible and must be completed within ten days after notification.

When making repairs, use the correct manufacturer replacement parts and do not modify or omit hardware.

Damaged systems are required to be secured with proper traffic control devices at the time of identification.

Crash cushion which seem to not be performing as designed shall be formally documented by the maintaining agency and submitted by the area engineer to District Design for evaluation.

8. PERIODIC REVIEWS

Periodic reviews should be made of all devices so that obvious deficiencies that occur between semi-annual inspections will be detected and corrected.

9. UNIT UPGRADE CRITERIA

When more than 50% of the crash cushion components are damaged or deteriorated, it shall be replaced to the current standards using the crash cushions listed on the APL. For each crash cushion that is replaced, the designated area engineer or District Design Office shall evaluate the crash cushion history to ensure it is replaced with the most cost effective crash cushion, taking into account the long term maintenance of the unit. For example, if a crash cushion is routinely being hit, it shall be replaced with a low maintenance/resettable type crash cushion even if the initial installation cost may be higher. Crash cushions are to be installed according to the manufacturer's specification.

Crash cushions requiring repair which do not meet National Cooperative Highway Research Program (NCHRP) Report 350 or the American Association of State Highway and Transportation Officials (AASHTO) Manual for Assessing

Safety Hardware (MASH) crashing testing compliance, must be replaced to the current standards using a crash cushion listed on the APL. These Pre-NCHRP 350 crash cushions are considered obsolete under this provision and include, but are not limited to, the following:

- Hi-Dro Cell
- G-R-E-A-T
- Hex Foam

10. RECORDS

An electronic or hardcopy file shall be kept at the Area Maintenance Office or District Office on each crash cushion installation and inspection. This will provide a reference for essential information concerning inspection, maintenance and impact repair history of each site.

11. REFERENCES

Manufacturer Publications

The manufacturers of the varied crash cushion devices have published written instructions that detail operational characteristics, maintenance check lists, impact repair procedures and a materials list for parts replacement. This information may be found on the APL.

12. TRAINING

None required.

13. FORMS

The following forms are obtainable from the Forms and Procedures Office website at: <http://www.dot.state.fl.us/proceduraldocuments/>

850-055-04, Crash Cushion Inventory Update

850-055-12, Crash Cushion Inspection Report