



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

ROY COOPER
GOVERNOR

JAMES H. TROGDON, III
SECRETARY

MEMO TO: John Sullivan, PE FHWA

FROM: Tim Little, PE,
Chief Engineer

DATE: September 11, 2017

SUBJECT: Roadside Safety Hardware – MASH-16 Implementation Plan

This memo outlines the Department's implementation plan for roadside safety hardware compliance with the 2016 edition of the AASHTO Manual for Assessing Safety Hardware (MASH-16). The plan includes the full integration of roadside safety hardware that are considered proprietary and are listed on the NCDOT's Approved Products List (APL) and non-proprietary items shown in the Roadway and Structures Standard Drawings (e.g. guardrail, concrete barrier, bridge rails, etc.)

The implementation dates below apply to the installation of roadside safety hardware on all Interstate routes, US routes, NC routes, and State Routes that are constructed and/or maintained by NCDOT.

July 1, 2017: MASH approved Guardrail End Units (GREU) will be installed as outlined:

1. All projects, centrally let or Division let with guardrail items, will be required to install GREU devices. For projects that have been let with GRAU-350 or M-350 end units, those items will be removed from the contract and replaced with MASH GREU devices
2. Effective July 1, 2017, Division Maintenance contracts will be amended to install GREU devices for new installation and replacement installations.
3. All MASH approved GREU devices will be installed at the new 2'-1" height requirement. When installing the GREU devices connecting to existing 1'-11" w-beam guardrail, an additional 25' of guardrail will be required to transition from the 2'-1" height down to the existing 1'-11" height. If the existing guardrail height is 1'-9", an additional 25' of guardrail will be required to transition from 2'-1" down to 1'-9" for a total of 50' of additional guardrail.

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4. When replacing the current M-350 end units, a new GREU device will be installed. The GREU will not have the same flare rate as the M-350. Additional guardrail will need to be installed along with the GREU device to provide the needed protection.

July 1, 2017: 2'-1" Height W-Beam Guardrail

1. All projects, centrally let or Division let with W-Beam guardrail, will be required to install 2'-1" height W-Beam guardrail. See Roadway Standard Details 862d01, 862d02, and 862d03.
2. Division Maintenance contracts will be amended to install W-Beam guardrail to the new 2'-1" height.
3. Repair and maintenance guidelines for replacement and repair of 1'-11" or lower W-Beam guardrail will be developed and distributed to our Division Maintenance units.

Cast-in Place Concrete Barriers - We will incorporate the new MASH compliant barriers when they become available prior to the December 31, 2017 deadline

Cable Barriers, Cable Barrier Terminals and Impact Attenuators – We will incorporate the new MASH compliant devices when they become available prior to the December 31, 2018 deadline

Bridge Rails, Temporary Work Zone Devices, Sign Supports and all Other Breakaway Devices - We will incorporate the new MASH compliant devices when they become available prior to the December 31, 2019 deadline

The development of this implementation plan is in response to the AASHTO/FHWA Joint Implementation Agreement for the Manual for Assessing Safety Hardware. For more information, follow the link below:

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

For questions about the new requirements, please contact Joel S. Howerton, PE, at 919-707-6950 or jhowerton@ncdot.gov .

TML/jsh

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