

# ROADWAY BULLETIN



## NCDOT Construction Unit

### Current Issues: MASH Compliance

The FHWA has agreed to apply the AASHTO Manual for Assessing Safety Hardware (MASH) for the practice of crash testing safety hardware devices for use on the National Highway System (NHS). This replaces the National Cooperative Highway Research Program (NCHRP) Report 350, which had been utilized since 1993.

As directed by the Chief Engineer's Office, the NCDOT has begun installing MASH compliant Guardrail End Units (GREU) and 2'-1" Height W-Beam Guardrail on all active projects after July 1, 2017.

### Tasks for Contract Administrators:

Verify projects let after July 1, 2017 include updated standards and special provisions.

Projects let prior to July 1 that have not installed GR should remove GRAU-350 and M-350 end units from the contract and replace them with MASH GREU devices under supplemental agreement. They should also install w-beam guardrail per the new standards.

Active projects with GR and GRAU devices installed prior to July 1 will be evaluated individually for how to proceed. The Resident/District Engineer should review with their DCE and ACE.

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### Welcome

As previously mentioned in the Structure Bulletins, this is an attempt to implement training and keep employees informed on current issues. We plan to cover topics such as current construction issues, specification questions, upcoming training, and best practices.

If you have any questions or recommendations click the email link below and submit it.

[Email](#)



## What to look for on the project:

In order to verify end units are MASH approved and installed correctly, the Contractor shall provide the following:

**FHWA acceptance letter for each guardrail end unit certifying it meets the requirements of the AASHTO Manual for Assessing Safety Hardware, Test Level 2 or 3, in accordance with Article 106-2 of the 2012/2018 Standard Specifications.**

- **Test Level 2 Units are to be used on roads with speeds posted lower than 45 MPH. Test Level 3 Units are to be used when posted speeds are 45 MPH or greater. TL 3 units can be used on roads less than 45 MPH, if desired.**

**Certified working drawings and assembling instructions from the manufacturer for each guardrail end unit in accordance with Article 105-2 of the 2012/2018 Standard Specifications.**

The NCDOT [Approved Products List](#) should be checked for END TREATMENTS, but it may not be updated as soon as units are approved. The FHWA letter will confirm the unit's acceptability.

## Field Installation Challenges

**Currently no median/flared end units (GREU-Median) are approved (expected in 6 months):**

- Evaluate if the run of guardrail can be lengthened to eliminate the flared end unit and install a straight end unit. Utilize revised standard 862.01, sheets 3 and 4 for guidance.

**Need to skip a post due to a pipe conflict:**

- With MASH GR, it is acceptable to skip a post due to conflicts, provided the run is greater than 100'. There is no need to nest the GR with an additional rail.

**Barrier anchor assembly height needs to be changed:**

- New holes can be drilled into barrier without concern. This might need to be handled under a Supplemental Agreement. Old holes can be grouted in.

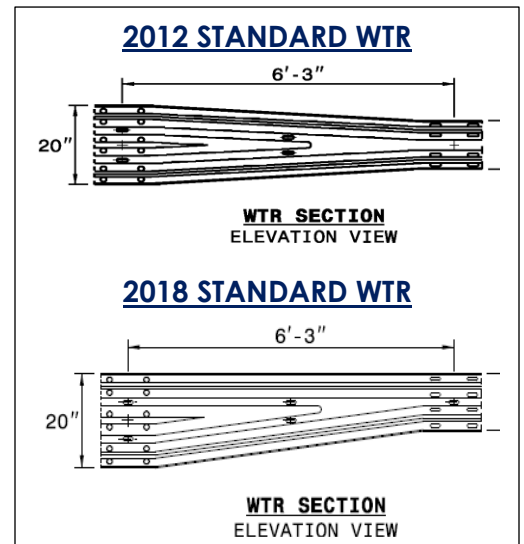
## Major Changes to W-Beam and Anchors

The new installation height is **2'-1"** to the middle of the beam (**31"** to the top of the rail)

The W beam splice will be at mid span (no longer spliced over the posts)

The centerline for the B-77/83 guardrail anchor assembly will be placed at **2'-1"**

The centerline for the Type III guardrail anchor assembly will be placed at **1'-9"**. **Please note this is incorrectly labeled as 1'-11" on 862.03 Sheets 1 and 2. A revised standard drawing will be issued soon.**



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