



**Highway Safety & Design Engineering Instructions (HSDEI)**

**Distribution:** Highway Division, Director of Policy, Planning and Intermodal Development, American Council of Engineering Companies of Vermont

**Approved:** \_\_\_\_\_ **Date:** \_\_\_\_\_  
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**Subject:** Selection of W-Beam Guardrail and W-Beam Guardrail End Terminals

**Administrative Information:**

- Effective Date:** HSDEI 19 – 101 shall be effective from the date of approval.
- Superseded HSDEI:** Not applicable
- Exceptions:** Not applicable
- Disposition of HSDEI Content:** The content of HSDEI 19 – 101 will be incorporated into a future revision to the Highway Safety & Design Manual and/or other applicable design guidance documentation.

**Purpose:**

To provide standardized guidance to agency personnel, consultants and all groups involved in the design, installation, and/or maintenance of w-beam guardrail and w-beam guardrail end terminals.

**Technical Information:**

In order to ensure that all roadside safety hardware installed on the National Highway System (NHS) is crashworthy, a joint implementation agreement was adopted by both the American Association of State Highway Officials (AASHTO) and the Federal Highway Administration (FHWA). This joint implementation defined the AASHTO Manual for Assessing Safety Hardware (MASH) as the controlling criteria for determining crashworthiness of roadside safety hardware. Within this joint agreement were criteria that defined dates on which any new permanent installations or full replacements on the NHS would need to utilize safety hardware that was evaluated using criteria contained within the 2016 edition of MASH. This HSDEI is focused on w-beam guardrail and w-beam guardrail end terminals.

The joint agreement referenced above states that any contracts containing w-beam end terminals on the NHS with a letting date after June 30, 2018 must utilize safety hardware evaluated using the 2016 edition of MASH criteria. The Vermont Agency of Transportation's (VTrans) guardrail committee is comprised of representatives from a diverse range of Sections and Units. This committee has been evaluating products as they have come to market for their potential use on Vermont roadways. These products are listed on the VTrans Approved Products List under 621.50 Manufactured Terminal Section, Flared and 621.51 Manufactured Terminal Section, Tangent and have been deemed as acceptable for use on the transportation network.

All new w-beam guardrail end terminal installations and replacements on the NHS should utilize a product found on the current VTrans Approved Products List, under 621.50 or 621.51.

All new w-beam guardrail end terminal installations and replacements outside of the NHS should utilize a product found on the current VTrans Approved Products List, under 621.50 or 621.51 or the non-proprietary w-beam end terminal referred to as G1-D. Details regarding end terminal G1-D can be found within VTrans Standard Drawing G1-D on the VTrans website at the following location: <https://outside.vermont.gov/agency/vtrans/external/CADD/WebFiles/Downloads/Standards/English/PDF/stdg1d.pdf>. It is important to note that the use of end terminal G1-D is not applicable to all locations, and specific site conditions and characteristics may limit its' use.

To compliment the use of new w-beam manufactured terminal sections, VTrans will utilize the non-proprietary Midwest Guardrail System (MGS) as its w-beam guardrail system. This system has been evaluated using the criteria contained within the 2016 edition of MASH, with the primary differences between current practice being that it is installed at a 31 inch height (as opposed to 29 inches) and it utilizes a w-beam midspan splice (as opposed to a w-beam post splice). All new w-beam guardrail installations and/or w-beam guardrail replacement on the NHS or outside of the NHS should utilize the MGS as the w-beam guardrail system application.

## **Implementation:**

The content of HSDEI 19 – 101 is to be implemented beginning immediately for all projects produced and or managed by VTrans. Highway Safety & Design Details, HSD – 621.07A “MIDWEST GUARDRAIL SYSTEM (MGS)”, HSD – 621.07B W-BEAM GUARDRAIL COMPONENTS, HSD – 621.07F “MIDWEST GUARDRAIL SYSTEM TRANSITION” should be provided to the appropriate Resident Engineers for active construction projects that are planned to install w-beam manufactured terminal sections. The content of HSDEI 19-101 is also to be implemented on all applicable maintenance activities.

## **Transmitted Materials:**

Highway Safety & Design Details (<http://vtrans.vermont.gov/docs/highway-safety-design-details>):

- [HSD Detail 621.07A MIDWEST GUARDRAIL SYSTEM \(MGS\)](#)
- [HSD Detail 621.07B W-BEAM GUARDRAIL COMPONENTS](#)
- [HSD Detail 621.07C MIDWEST GUARDRAIL SYSTEM \(MGS\) ANCHOR](#)

- [HSD Detail 621.07D MIDWEST GUARDRAIL SYSTEM \(MGS\) ANCHOR COMPONENTS](#)
- [HSD Detail 621.07E MIDWEST GUARDRAIL SYSTEM \(MGS\) ANCHOR SYSTEMS](#)
- [HSD Detail 621.07F MIDWEST GUARDRAIL SYSTEM TRANSITION SECTION](#)