



U.S. Department
of Transportation
**Federal Highway
Administration**

Alaska Division

November 12, 2025

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In Reply Refer To:
HDA-AK

Lauren Little, P.E.
Chief Engineer
Alaska Department of Transportation & Public Facilities
Statewide Design & Engineering Services
PO Box 112500
Juneau, AK 99811-2500

Dear Ms. Little:

We are in receipt of HSP20-12 and associated Brand Specific Determination requiring Road Systems, Inc. MASH MSKT W-Beam Guardrail End Terminal on all highway projects that include guardrail. We have reviewed and approve as submitted for use on Federal-aid projects.

Any future changes require review and approval by the Federal Highway Administration Alaska Division. If you have any questions, please contact Emily Haynes at 907-586-7464 or emily.haynes@dot.gov.

Sincerely,

Emily Haynes
Acting Deputy Division Administrator

Enclosures:

HSP20-12
Brand Specific Determination

Cc:

Brandon Irvine, P.E., Preconstruction Standards Engineer, DOT&PF
Judy Anunciacion, P.E., Construction Standards Engineer, DOT&PF

Note to Designer: Use this special provision on all projects that have guardrail.

**SECTION 710
FENCE AND GUARDRAIL**

11/05/25 (HSP20-12)

710-2.11 GUARDRAIL TERMINALS. *Delete this subsection and substitute the following:* W-beam shall meet requirements of AASHTO M 180, Class A, Type II. Box beam shall meet requirements of ASTM A500 Grade B or ASTM A501. Galvanize after fabrication.

Components made from rolled pressed and forged shapes, castings, plates, bars, and strips shall meet the coating requirements of AASHTO M 111. Galvanize after fabrication.

All hardware or fasteners supplied shall meet the coating requirements of AASHTO M 232.

Guardrail terminals shall be AASHTO MASH Test Level 3.

1. W-Beam. Provide one of the following terminal types, as shown on the Plans, for single-rail W-beam guardrail. Design requirements: 31 in top of rail height, 8 in blockouts, W6x8.5 steel posts, 12 ft 6 in w-beam panels, and mid-span splice connection to run of rail.
 - a. Parallel Terminals. Provide the RoadSystems, Inc. MASH MSKT W-Beam terminal with the following characteristics:
 - (1) Length: 50 ft nominal effective length
 - (2) End Offset: 0 ft to 2 ft (25:1 or flatter straight taper). Offset as shown on the Plans.
 - b. Buried in Backslope Terminal. Provide terminals as shown on the Plans.
2. Box Beam. Provide terminals, as shown on the Plans for box beam guardrail. Design requirements: 28 in top of rail height, designed for use with 6 in by 6 in by 3/16 in box beam.
 - a. Parallel Terminals. Provide terminals meeting the following:
 - (1) Length: 33 ft nominal effective length, or a minimum 18 ft of box beam rail and standard 3 in weak posts beyond the 1/8 in end tube rail, or as recommended by the manufacturer's installation manual.
 - (2) End Offset: 25:1 or flatter straight taper. Offset end as shown on the Plans.

MEMORANDUM

State of Alaska
Department of Transportation & Public Facilities
Statewide Design and Engineering Services

TO: Lauren Little, P.E.
Chief Engineer

DATE: October 3, 2025

PHONE NO: (907) 378-5911

THRU: Barbara Tanner, P.E.
NR Chief of Contracts

A blue ink signature of Barbara Tanner, P.E., enclosed in a blue rectangular box. The signature is written in a cursive style.

FROM: Brandon Irvine, P.E.
Statewide Preconstruction
Standards Engineer

SUBJECT: RSI MASH MSKT Terminal
Brand Specific Determination

Introduction

Since June 2018, W-beam guardrail end terminals have been required to comply with the AASHTO Manual for Assessing Safety Hardware (MASH) standards. Currently, three MASH-approved Test Level 3 w-beam guardrail end terminals are available. Two of these systems utilize a front-anchor design where the impact head is positioned behind a ground-mounted anchor, while the third system places the ground-mounted anchor behind the impact head.

Alaska has installed a combination of these three systems since 2018, but the front-anchored systems have consistently created operational challenges during winter maintenance across all regions. Despite collaboration between Traffic & Safety staff and manufacturers to develop marking solutions, no marking devices can be attached directly to the anchor itself. They must instead be installed at least one foot in front of the anchor. This positioning leaves the ground anchor exposed and vulnerable to damage from snowplows, which occurs regularly throughout the winter season.

Additionally, following significant snowstorms, Maintenance and Operations (M&O) crews must manually clear snow around end terminals to re-expose the impact heads. The front-anchored terminal design requires M&O staff to hand-shovel around impact heads, creating both operational inefficiency and increased safety risks as workers are exposed to errant vehicles.

Proprietary Items

Road Systems, Inc. MASH MSKT W-Beam Terminal

Public Interest Finding - Justification

The MASH MSKT system by Road Systems, Inc. offers a design similar to end terminals that Alaska's three DOT&PF regions have successfully used for over ten years. Many components are interchangeable between the previously deployed NCHRP 350 SKT-SP terminal and the MASH MSKT system, providing substantial economic benefits to the State's M&O departments. These operational and other economic benefits are outlined below:

Operational Efficiency Benefits:

- M&O departments maintain higher inventory levels of MSKT repair kits, enabling faster response times for repairs.
- Standardizing use of a single end-terminal system simplifies forecasting, ordering, and restocking procedures.
- Bulk purchasing of standardized materials typically yields significant cost savings.
- Warehouse and yard storage requirements for repair parts are reduced by an estimated 50%.
- M&O staff installation and repair efficiency increases while training complexity decreases, facilitating smoother onboarding of new employees and improved safety for the public.

Winter Operations Advantages: Following major snow events, M&O operators can clear MASH MSKT impact heads using front-end loaders or skid-steers, eliminating the need for manual shoveling. This mechanized approach generates an estimated \$100 in cost savings per terminal per snow event, totaling more than \$20,000 in annual savings per region. More importantly, worker safety is enhanced by reducing unprotected exposure to roadway traffic and harsh winter conditions.

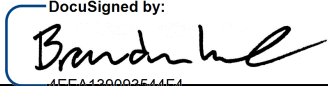
Maintenance and Durability: The MSKT system's visibility allows snowplow operators to identify and avoid impact heads during plowing operations. Current data indicates that 20-30% of front-anchored terminal heads sustain plow damage annually. When an MSKT head is damaged during winter operations, replacement can typically occur even in frozen ground conditions, whereas front-anchored systems require ground thawing to access and replace below-grade components. Additionally, M&O staff report that upon being struck by a vehicle, the MSKT system collapses in a more controlled manner that results in the need to replace fewer parts/components such as brackets, rails, and foundation posts.

Public Interest Finding - Duration

This Public Interest Finding shall be valid for a period of five years from date of approval (to September 8, 2030).

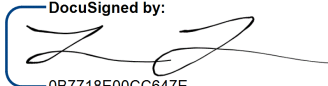
Finding of Public Interest

It is hereby found to be in the Public's best interest and consistent with the Code of Federal Regulation Title 23, Section 635.411 and AKDOT&PF Policy and Procedure 10.02.013 and 10.02.050 to specify Road Systems, Inc's MASH MSKT w-beam guardrail end treatment on all highway projects in the State of Alaska.

Submitted by: 
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Brandon Irvine, P.E.
Statewide Preconstruction
Standards Engineer

10/3/2025

Date

Approved by: 
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Lauren M. Little, P.E.
Chief Engineer

10/7/2025

Date