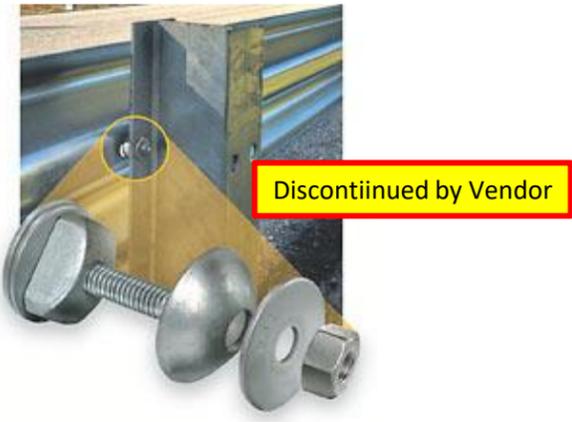


AASHTO MASH Roadside Post and Beam Rail Element

NOTE: No barriers should be placed on any slope steeper than 1V:6H, unless it has been crash tested in accordance with MASH evaluation criteria.

If a barrier is to be placed on a slope steeper than 1V:10H, a flexible or semi-rigid type should be used.

NAME	ILLUSTRATION	MASH	POST	BLOCKOUT	DISTINGUISHING CHARACTERISTICS
SEMI-RIGID SYSTEMS					
<p>W-beam (strong post)</p> <p>Generic</p>		<p>TL-3</p>	<p>W6 x 9 or W6 x 8.5 x 6 ft. Steel post.</p> <p>Post spacing 6 ft. 3 in.</p>	<p>6 in. wide x 8 in. x 14 in. blockouts</p> <p>Routed (w/steel posts) timber or composite blockout</p> <p>Double blockouts can be used</p>	<p>Top height of rail 27.75 in. FHWA recommends new applications to have 29 in. +/-1 in. rail height.</p> <p>Strong post barrier systems usually remain functional after moderate to low speed impact, thereby minimizing the need for immediate repair</p> <p>Rail splices are located at the posts.</p> <p>Dynamic lateral deflection 3.9 ft. MASH</p> <p>Uses 12-gauge panels. Specific applications may use 10-gauge panels.</p>
<p>Midwest Guardrail System (MGS)</p> <p>Generic</p> <p>Eligibility Letters:</p> <p>B189, B-211, B-214, B-230, B-230A, B-240, B-243, B-243A, B-261</p>		<p>TL-3</p>	<p>W6 x 9 or W6 x 8.5 x 6-ft long steel posts</p> <p>Post spacing 6 ft. 3 in.</p> <p>Rectangular or round timber posts allowable</p>	<p>12", 8", or no block. Backup plate needed with non-blocked option.</p> <p>When steel posts are used, timber or plastic blockouts may be routed or toenailed.</p>	<p>Nominal mounting height of 31". Tolerance +/- 1 in.</p> <p>Uses standard 12-gauge panels.</p> <p>Rail splices are located at midspan between adjacent posts</p> <p>Dynamic lateral deflection 3 ft. 8 in.</p> <p>Under research. One-half and one-quarter standard post spacing.</p> <p>Applications: use on curbs, over long span culvert, adjacent to slope, varying flare rates, at wire-faced MSE wall, approach transition, median barrier and single omitted post options. Deflection values varies by applications. Special applications do not have the same height tolerances and the nominal height is recommended.</p>
<p>Mini Spacer</p> <p>Eligibility Letter</p> <p>B-150A</p>		<p>TL-3</p>	<p>W6 x 9 or W6 x 8.5 x 6-ft Steel posts</p> <p>6 x 8 in. rectangular or 7 in diameter round timber posts</p> <p>Post spacing 6 ft. 3 in. or 12 ft. 6 in. or 3 ft. 1.5 in.</p>	<p>No blockouts or backup plates</p> <p>Rail is attached to post using a 5/16-in diameter standard hex head bolt incorporated with the GMS</p>	<p>Top height of rail between 27 and 32 inches</p> <p>Rail splices can be at mid span or at the post</p> <p>Uses standard 12-gauge or 10-gauge panels and standard post.</p> <p>Can be used with Thrie-beam at 39 in. tall</p> <p>GMS fastener may be used in place of a standard guardrail bolt on any non-proprietary strong or weak post W-beam guardrail design</p> <p>Dynamic lateral deflection 2.9 ft. (6ft 3in spacing); 5ft (12ft 6 in spacing) MASH.</p>

AASHTO MASH Roadside Post and Beam Rail Element

NOTE: No barriers should be placed on any slope steeper than 1V:6H, unless it has been crash tested in accordance with MASH evaluation criteria.

If a barrier is to be placed on a slope steeper than 1V:10H, a flexible or semi-rigid type should be used.

NAME	ILLUSTRATION	MASH	POST	BLOCKOUT	DISTINGUISHING CHARACTERISTICS
<p>Nu-Guard 31</p> <p>www.trinityhighway.com www.nucorhighway.com</p> <p>Nucor Steel Marion, Inc.</p> <p>Eligibility Letter: B-288, B-310</p>		TL-3	<p>6 ft. 6 in. RIB-BAK U-channel 2 in. deep and 3.5 in. wide</p> <p>Post weight 5 lbs.per foot</p> <p>3/4-in. wide x 7 in. long slot is located 1 in. down from the top of the posts in the middle cross section</p> <p>Post spacing 6 ft. 3 in.</p>	<p>No blockouts</p> <p>Round spacer washers are installed between the guardrail and the legs of the posts</p> <p>Spacers are 3.5 in outer diameter, with a 1 in diameter hole</p> <p>Washer is placed with 5/8 in. x 3.5 in. post bolt and standard guardrail splice nut</p>	<p>Top height of rail 31 in.</p> <p>Uses standard 12-gauge panels.</p> <p>Rail splices are located at the posts.</p> <p>Dynamic lateral deflection TL-3: 3.4 ft.</p>
<p>Nu-Flex™</p> <p>www.trinityhighway.com www.nucorhighway.com</p> <p>Nucor Steel Marion, Inc.</p>		TL-3	<p>6 ft. 6 in. RIB-BAK U-channel 2 in. deep and 3.5 in. wide</p> <p>Post weight 4 lbs.per foot</p> <p>3/4-in. wide x 7 in. long slot is located 1 in. down from the top of the posts in the middle cross section</p> <p>Post spacing 6 ft. 3 in.</p>	<p>No blockouts</p> <p>Round spacer washers are installed between the guardrail and the legs of the posts</p> <p>Spacers are 3.5 in outer diameter, with a 1 in diameter hole</p> <p>Washer is placed with 5/8 in. x 3.5 in. post bolt and standard guardrail splice nut</p>	<p>Top height of rail 31 in.</p> <p>Uses standard 12-gauge panels</p> <p>Rail splices are located at midspan between adjacent posts</p> <p>Dynamic lateral deflection TL-3 88 in./7.3 ft. MASH</p>

AASHTO MASH Roadside Post and Beam Rail Element

NOTE: No barriers should be placed on any slope steeper than 1V:6H, unless it has been crash tested in accordance with MASH evaluation criteria.

If a barrier is to be placed on a slope steeper than 1V:10H, a flexible or semi-rigid type should be used.

NAME	ILLUSTRATION	MASH	POST	BLOCKOUT	DISTINGUISHING CHARACTERISTICS
<p>Trinity T-31 Guardrail System</p> <p>https://trinityhighway.com/product/t-31-guardrail/</p> <p>Trinity Highways, LLC</p>		<p>TL-3</p>	<p>W6 x 9 or W6 x 8.5 x 6 ft. Steel post</p> <p>6 ft. long Steel Yielding Line Posts (SYLP)</p> <p>Each post has four 13/16-in. diameter holes in the flanges at ground line</p> <p>Post spaced at 6 ft. 3 in.</p>	<p>No Blockouts</p> <p>Uses a 6-inch long flange protector at each post (W-beam)</p>	<p>Top of rail height 31 in.</p> <p>Rail is attached to the post using a 5/8 in. diameter x 1.75 in. long special bolt with a slotted countersunk head</p> <p>Uses standard 12-gauge panels</p> <p>All splices in the W-beam rail element fall midspan, between adjacent posts</p> <p>Dynamic lateral deflection 3.4 ft. MASH</p>
<p>Box Beam weak Post</p> <p>https://www.aashtotf13.org/Files/Drawings/sgr03.pdf</p> <p>Generic</p> <p>Eligibility Letter: B-334</p>		<p>TL-3</p>	<p>S3 x 5.7 post 5 ft. 3 in. long with soil plate</p> <p>Post spacing 6 ft.</p>	<p>No blockouts</p>	<p>Top height of rail 27 in.</p> <p>Post near the point of impact are designed to break or tear away, distributing impact forces to adjacent post</p> <p>Dynamic lateral deflection 4.8 ft. (MASH)</p>
<p>Trinity Guardrail System (TGS)</p> <p>https://trinityhighway.com/product/tgs-guardrail/</p> <p>Trinity Highways, LLC</p>		<p>TL-3</p>	<p>W6 x 9 or W6x8.5 x 6ft Steel post.</p> <p>Post spacing 6'-3"</p>	<p>No blockouts</p>	<p>Mounting height 31"</p> <p>Uses standard 12 gauge W-beam panels and standard post.</p> <p>Rail is attached to the post using a 5/8 in. diameter x 1.75 in. long special bolt with a slotted countersunk head</p> <p>Dynamic lateral deflection 3.2 ft. (MASH)</p>
<p>Retro-Rail™ Guardrail Retrofit</p> <p>http://www.highwayguardrail.com/products/gr.html</p> <p>Trinity Highways, LLC</p> <p>Eligibility Letter: B-246, B-246A</p>		<p>TL-3</p>	<p>N/A</p> <p>Can be used with both wood and steel post w-beam installations.</p>	<p>N/A</p> <p>Can be used with 8" wood or composite blocks.</p>	<p>Mounting height 31" to 35"</p> <p>The Retro-rail™ is a guardrail retrofit system that is effective for use on 25" to 29" high strong post guardrail. It consists of two cable end brackets, a single wire rope and cable mid brackets to support the cable along the length of the installation. The Retro-rail™ elevates the effective height of existing guardrail by 6".</p> <p>The cable mid brackets are installed at 12.5' intervals, maximizing the use of existing splice bolt holes in the rail for these attachments.</p>

AASHTO MASH Roadside Post and Beam Rail Element

NOTE: No barriers should be placed on any slope steeper than 1V:6H, unless it has been crash tested in accordance with MASH evaluation criteria.

If a barrier is to be placed on a slope steeper than 1V:10H, a flexible or semi-rigid type should be used.

NAME	ILLUSTRATION	MASH	POST	BLOCKOUT	DISTINGUISHING CHARACTERISTICS
<p>Safety Roller Barrier</p> <p>Gregory Highway</p> <p>www.gregoryhighway.com</p> <p>Eligibility Letter: B-252</p> <p>Transition - B-252A</p>		<p>TL-3, TL-4</p>	<p>5.5 in steel round posts Post length: 86.1 in Driven post spacing: 52 in Post embedment: 48.6 in</p> <p>Intermediate post length: 30.7 in Intermediate post spacing: 26.3 in</p>	<p>No blockouts</p> <p>2 - Ethaline Vinyl Acetate (EVA) Rollers (14.6 in x 8.3 in)</p>	<p>Mounting height 35 in.</p> <p>Application: Roadside and median</p> <p>System works by EVA rollers absorbing and converting impact energies, steel offers redirection</p> <p>Dynamic lateral deflection 18 in (MASH TL-4)</p>
<p>Guardrail 5 (G5)</p> <p>Gregory Highway</p> <p>www.gregoryhighway.com</p> <p>Eligibility Letter: B-267</p>		<p>TL-5</p>	<p>C-channel posts</p> <p>4.72in x 4in x .25in thick x 118in long</p> <p>Post embedment depth 59 in</p>	<p>Upper spacer (tube) 3/16 in thick x 9.8 in long</p> <p>Main spacer (tube) 1/4in thick x 10in long</p>	<p>Mounting height upper beam 59.6 in lower beam 35.2 in. Overall width of 14.6 in.</p> <p>Application: Roadside and median</p> <p>The G5 is a MASH TL-5 semi-flexible all steel barrier that is direct driven in AASHTO strong soil.</p> <p>The rail elements are comprised of mirrored stacked beams: lower - Thrie beam 12 Ga; upper - W-beam 10 Ga</p> <p>The lower beams use 12 Ga - Thrie-beam backup plate</p> <p>Dynamic lateral deflection: 4.33 ft MASH TL-5</p>
<p>Modified Thrie Beam</p> <p>Generic</p>		<p>TL-3</p>	<p>W6x8.5 posts</p> <p>Post length: 81 in</p> <p>Post spacing: XX in</p> <p>Post embedment: XX in</p>	<p>W14x22 blockouts</p> <p>Thrie beam backup plates at non-splice post locations</p>	<p>Mounting height: 34 in.</p> <p>Application: Roadside and median</p> <p>Modified Thrie Beam is a MASH TL-3 all steel barrier. Single and dual sided tested.</p> <p>Dynamic lateral deflection: 34.3 in Single Side MASH 3-11</p> <p>Dynamic lateral deflection: 16.1 in Double Side MASH 3-10</p>

AASHTO MASH Roadside Post and Beam Rail Element

NOTE: No barriers should be placed on any slope steeper than 1V:6H, unless it has been crash tested in accordance with MASH evaluation criteria.

If a barrier is to be placed on a slope steeper than 1V:10H, a flexible or semi-rigid type should be used.

NAME	ILLUSTRATION	MASH	POST	BLOCKOUT	DISTINGUISHING CHARACTERISTICS
FLEXIBLE SYSTEMS					
<p>Modified W-beam (weak post)</p> <p>https://www.aashtotf13.org/guide_display.php</p> <p>Generic</p>		<p>TL-3</p>	<p>S3 x 5.7 post 5 ft. 5 in. long with soil plate</p> <p>Post spacing 12 ft. 6 in.</p>	<p>No blockouts</p> <p>Backup plates at each post</p>	<p>Mounting height 32.3 in.</p> <p>Rail splices are centered mid-span between posts</p> <p>Dynamic lateral deflection 8.6 ft. (MASH)</p>