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Bolt holes in guardrail posts

Question

State NE

Description Multiple people have contacted MwRSF to discuss the proper sizing and location for bolt holes in W-beam guardrail posts. Within the Hardware Guide, some system details show a 3/4" hole diameter, while others show a 13/16" hole diameter. Which size hole should be utilized? Also, some drawings show the hole as centered 1 1/8" from the center line of the post, while other drawings show the hole centered 3/4" from the edge of the flange. Which is correct? Finally, discrepancies have existed for the dimension of the hole to the top of the post. Some drawings indicate 7" while other indicate 7 1/8". What should the distance be?

Question

Keywords • Guardrail

Other Keywords hole, bolt hole, diameter

Date December 22, 2016

Response

Hole diameters: We believe the two different hole diameters came about from the conversion to metric dimensions, rounding, then a conversion back to English and rounding again. The 1/16" difference in hole diameters that has resulted is so minor that MwRSF believes that both hole diameters function and perform appropriately. Thus, either bolt hole diameter could be utilized in the fabrication of guardrail posts. Construction standards typically call for a hole to be 1/8" larger in diameter than the bolt. Guardrail bolts are 5/8" diameter, so MwRSF utilizes a 3/4" diameter hole in all of its drawings and details.

Placing the hole as a distance from either the center line of the post or the edge of the post flange will result in a difference of 1/16" in the lateral position of the hole. MwRSF views this difference as within construction tolerances and inconsequential to the performance of the guardrail. Thus, either placement/measurement may be utilized. MwRSF has

Response typically detailed the hole as 3/4" from the flange edge for simplicity reasons.

The distance from the center of the bolt hole to the top of the post has varied due to a couple of factors. First, the height of W-beam guardrail has been shown as the nominal 12 1/4" or rounded to 12". Second, wood blockouts typically extended 1" above and below the rail, while steel blockouts typically extended 3/4" above and below the rail. Finally, the nominal height to the top of the rail has been shown to vary depending on rounding and which units are shown (US empirical vs. SI). All of these minor variations have lead to some post drawings showing the hole centered 7" from the top while others show it 7 1/8" from the top. MwRSF feels that this 1/8" difference is within standard construction tolerances, and thus either dimension can be utilized. Note, the targeted (nominal) height to the top of the W-beam rail should remain 31". MwRSF has typically utilized the more precise dimension and detailed the hole as being centered 7 1/8" from the top of the post.

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