

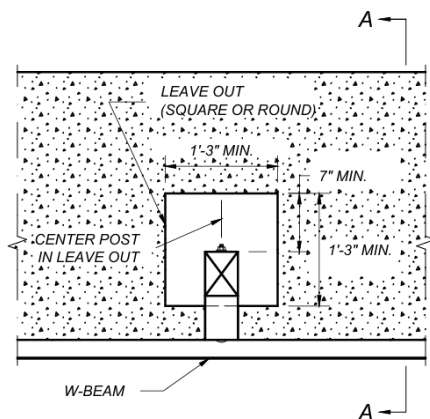
Roadside Safety Hardware FAQs

What is the minimum height of guardrail?

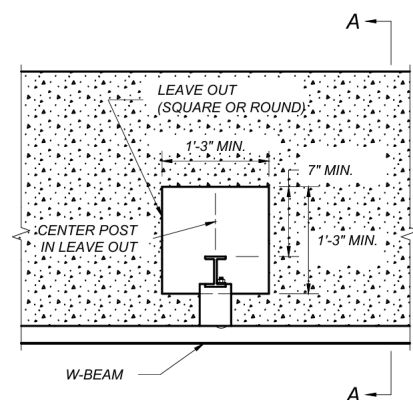
$27\frac{3}{4}$ " is the minimum guardrail height, and standard rail height is 31".

Can guardrail posts be placed in plant mix surfacing?

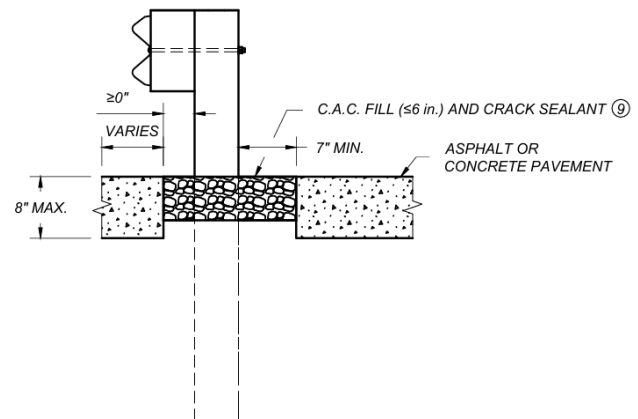
As shown in Detailed Drawing Nos. 606-05A and 606-05B (included below), MGS guardrail posts require leave outs when they are placed in plant mix surfacing. These leave out areas can be sealed with crack sealant material to help reduce erosion from runoff. Box beam and cable barrier are both weak post systems. As such, the strength of the posts is not a concern, and they can be placed in plant mix surfacing.



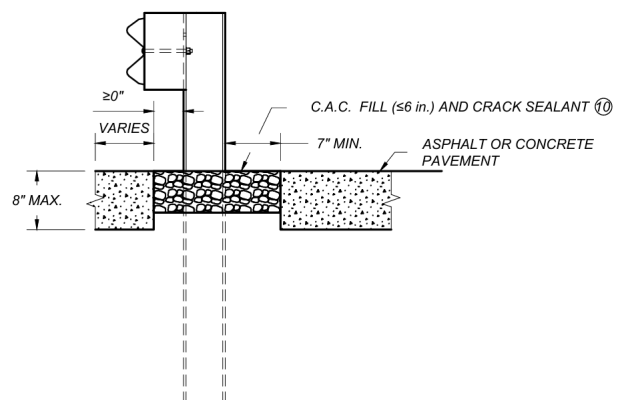
POST DETAIL IN
PAVEMENT APPLICATIONS



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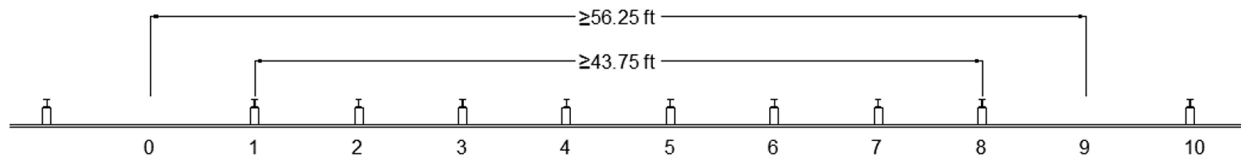
SECTION A-A



SECTION A-A

Can individual MGS guardrail posts be omitted?

Yes, individual MGS posts can be omitted on a case-by-case basis when included in the project design or as approved by the Project Manager. Posts should only be omitted in special circumstances such as conflicts with rock, utilities, culverts or other underground features. A minimum of 8 continuous posts at standard 6'-3" spacing (43'-9" total) are required on each side of an omitted post before having another omitted post, a terminal, or other special design as shown in the figure below. Omitted posts cannot be used within transitions, terminals or special designs. Curbs greater than 2 inches tall cannot be used when omitting posts. Be aware that omitting posts increases dynamic deflection to 4'-1" requiring a 5.7' minimum distance from face of rail to obstacle, and this must also be accounted for in the design.



Can deeper block outs be utilized, rather than modifying bridge approach slabs for guardrail posts?

Yes, deeper block outs up to 16" (double block outs) can be used for posts that would otherwise be placed in conflict with bridge approach slabs. Double block outs are also utilized for rock fall barrier (triple height w-beam). This information supercedes the [Bridge Rail Guidance](#) document which will be updated accordingly at a future date.

High-Tension Cable Rail Guidance/Questions:

High-tension cable rail barrier systems are proprietary systems, and there is not a generic one on the market at this time. Each individual system has specific design and use requirements based on testing. Following is a list of high-tension cable barrier systems that MDT has predominantly used and their locations:

Brifen (D1 and D3)

CASS (All districts, primary use is crossover closure)

Gibraltar (D4)

Safefence (D2 and D5)

When is HT rail considered?

HT rail is typically used as a divided highway median barrier for wide medians; it does not take the place of concrete barrier rail for narrow median installations. It can also be used where other roadside barrier is used (like MGS rail) but each location will require evaluation of what HT rail system is the best and if more than one system can be used to allow for competitive bidding.

Where do you find HT rail information?

Each manufacturer has information on their respective website. MDT Traffic Section has also downloaded additional information that can be helpful in design, but it is limited.

[NCHRP Report 711](#) has excellent guidance on the selection of HT rail systems and the performance of each system. It should be noted that high tension rail systems are tested with 600' lengths. Any installations with less than 600' of high-tension rail should only be installed at the engineer's discretion.

HT rail design considerations:

When HT rail is decided to be used there are a few quick decision tree type questions that need to be answered. Ultimately these questions will eliminate one or more of the 4 systems that MDT has typically used. None of these questions outcomes should override a design requirement if a single system is the only system that works in the constraints of the location needed to be shielded.

1. Can the system use a tension releasing post? Some of the systems (like the CASS and Gibraltar) have a post that when pushed over by a vehicle's bumper releases the tension in the cable. When this tension is released the entire run of rail is no longer functionally able to take a test level event. If the answer is "no" then CASS and Gibraltar are eliminated from further analysis.
2. What is the predominant system used in the district? Use that system, if possible, for maintenance and repair standardization, as the HT systems use special tools and require proprietary posts and hardware.
3. If no preference is given by maintenance or the district, then analyze each system that can meet the needs of the location and select the appropriate system.

It is okay to select a single system and spec a proprietary system if that is what is needed to meet the project constraints. However, before requiring a sole source consider the quantity of HT rail to be installed. If your linear feet of rail is low then sole source simplifies contracting and design; however, for large quantities try to allow for multiple systems to be used to encourage cost effective contracts. Large sole source projects are at high risk for sole source bid prices. If a proprietary system is selected and a sole source contract is used, then document the decision in a milestone report under the proprietary item section.

HT rail in the plans

HT rail is to be shown similar to other guardrail systems, plan view and cross section view with graphical depictions and callouts to the length of need for the system (do not include terminals unless only one system is allowable for the project and terminals can be clearly located and quantified).

HT rail measurement and payment

HT rail is paid by the linear foot. No separate measurement is made for the anchor terminal ends, unless the number of terminals can clearly be determined in design and if there is only one high-tension rail system allowable for a project. In this case, terminal sections are measured and paid for by each.

HT rail contract documents

HT rail requires a special provision with specific requirements and potentially sole source HT rail systems. Some of the requirements may need to include anchor design requirements, contractor/vendor submittals, on-site manufacturer representatives during installation. Training requirements for maintenance and local first responder, including EMS, Fire, LEO's, and Tow Truck operators (recovery).