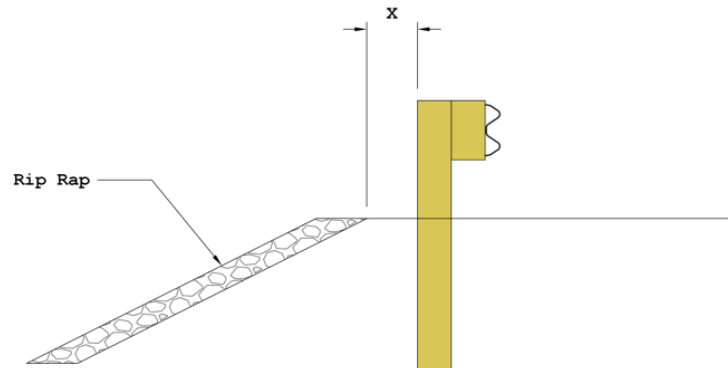
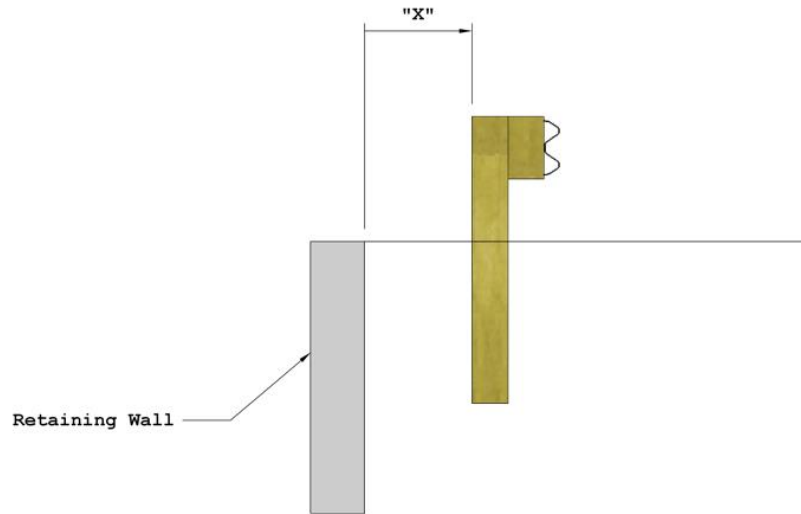


Project Title:

W-Beam Guardrail in Front of Retaining Wall or Rip Rap (LSRB)
2023-05-LSRB

Project Synopsis:



There are times when beam guard is installed in proximity of retaining walls or rip rap.

Project Goal(s):

Determine the lateral distance between W-beam guardrail and retaining wall/rip rap that allows the guardrail to operate without damaging retaining wall or moving rip rap. Determine if type of retaining wall (e.g., steel sheet pile, small modular blocks, large module blocks) influences required offset distance.

Project Background:

There are many situations where W-beam guardrail is installed near retaining walls and rip rap. If the guardrail is placed too close to the retaining wall or rip rap, it could cause problems with post rotation that could adversely affect guardrail impact performance or result in costly damage to the retaining wall. There is a need to determine the proper offset of the guardrail for these different conditions that maintains MASH compliant performance and avoids damage to the retaining wall.

Proposed Work Plan:	<ol style="list-style-type: none"> 1.) Task 1 – Model and simulate MASH Test 3-11 of W-beam guardrail in front of modular block retaining wall. Iterate guardrail placement to determine minimum offset from retaining wall that provides acceptable guardrail performance without damage to the retaining wall. 2.) Task 2 – Model and simulate MASH Test 3-11 of W-beam guardrail in front of steel sheet pile retaining wall. Iterate guardrail placement to determine minimum offset from retaining wall that provides acceptable guardrail performance without damage to the retaining wall. 3.) Task 3 – Perform engineering evaluation to determine recommended minimum lateral offset of W-beam guardrail from Rip Rap.
Deliverables:	Agencies will be provided guidance for minimum lateral guardrail offsets that permit acceptable guardrail operation without damaging retaining walls or rip rap.
Urgency and Expected Benefit:	Situations that required guardrail in front of a retaining wall or rip rap stabilized slope is a common design condition. If a proper offset is not maintained between the guardrail and retaining wall/rip rap, the function of the guardrail may be affected and/or the guardrail may interact with the retaining wall/rip rap resulting in costly repairs. Guidance regarding the minimum offset required for different types of retaining wall and rip rap stabilized slopes will prevent either of these problems from occurring.
Problem Funding and Research Period:	<p>Total Estimated Cost = \$98,000</p> <p>Research Period = 15 months</p>
Developer(s) of the Problem Statement:	<p>Name: Erik Emerson</p> <p>Email: Erik.Emerson@dot.wi.gov</p> <p>Phone:</p>