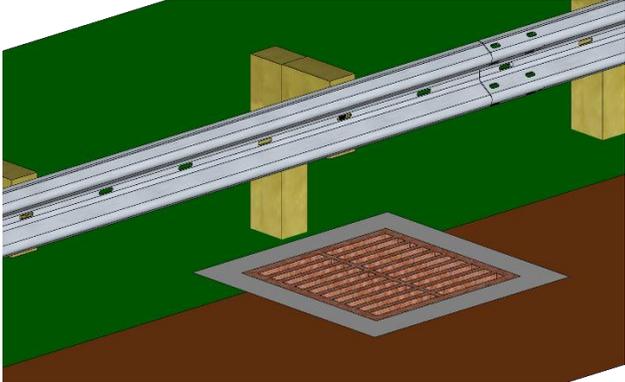
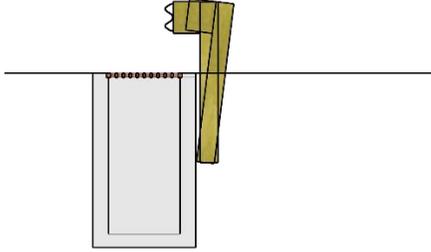


<p><b>Project Title:</b></p>	<p><b>Placement of Underground Obstruction by Posts (2023-03-LSRB)</b></p>
<p><b>Project Synopsis:</b></p>	<p>Beam Guard posts occasionally need to be placed close to underground obstruction. When does the placement of an underground obstruction interfere with post operation?</p>  
<p><b>Project Goal(s):</b></p>	<ol style="list-style-type: none"> <li>1.) How close an object can be to a beam guard post without interfering with post operation?</li> <li>2.) Is there a different offset depending on which side of the post the underground obstruction (impact side, backside, left, right)?</li> <li>3.) Is there a different post response depending on elevation of underground obstruction?</li> </ol>
<p><b>Project Background:</b></p>	<p>Occasionally utilities, drainage features are placed close to beam guard posts. Some examples are:</p> <ul style="list-style-type: none"> <li>• A utility may run parallel with a beam guard installation.</li> <li>• A pipe may intersect a beam guard run.</li> <li>• An inlet may be close to a post.</li> </ul>
<p><b>Proposed Work Plan:</b></p>	<ol style="list-style-type: none"> <li>1.) Task 1 – Literature Review             <ul style="list-style-type: none"> <li>- Review studies and/or test reports to identify                 <ul style="list-style-type: none"> <li>- currently used posts, existing posts, and/or previously tested posts that closely placed underground obstructions</li> <li>- Obstacle types</li> </ul> </li> </ul> </li> <li>2.) Task 2 – Computer modeling of different underground obstruction             <ul style="list-style-type: none"> <li>- Based on data from Task 1, develop computer simulation models for different types of posts and underground obstructions</li> <li>- Find critical cases: combinations of a post and an obstruction / side of post impacting the obstructions / distance between post and obstruction</li> </ul> </li> <li>3.) Task 3 – Bogie testing             <ul style="list-style-type: none"> <li>- Conduct bogie tests on critical cases based on Task 2</li> </ul> </li> <li>4.) Task 4 – Calibrated simulations             <ul style="list-style-type: none"> <li>- Compare bogie tests and preliminary simulation</li> <li>- Calibrate and upgrade the computer simulation models</li> <li>- Find a range of offsets from the post faces to the obstruction to eliminate effect on a beam guard operation.</li> </ul> </li> </ol>
	<ol style="list-style-type: none"> <li>1. A range of offsets from difference post faces to underground obstruction that will not interfere with beam guard operation.</li> <li>2. Approximate force imparted at a given distance from post.</li> </ol>

<b>Urgency and Expected Benefit:</b>	States will have a better understanding of how close underground obstructions can be to a post. States can provide information to a utility what forces will be imparted to their equipment at a given offset.
<b>Problem Funding and Research Period:</b>	<b>Total Estimated Cost = \$181,822</b>
<b>Developer(s) of the Problem Statement:</b>	Name: Erik Emerson, Wisconsin DOT Email: Erik.Emerson@dot.wi.gov Phone: