


<b>Project Title:</b>	Vehicle Collision Forces on a Soundwall
<b>Project Synopsis:</b>	<p><i>The AASHTO LFRD Bridge Design Specifications provides vehicle collision forces in Section 15.8.4. There are 4 different cases that have been developed based on the wall offset. These loads were based on limited data and engineering judgement. This research would be to use computer simulations to update the loads and heights of applications in this section. Also, to base loading on the height of the rail in front of the soundwall.</i></p> <p><i>In some cases, the soundwall starts and ends behind the wall, so if the rail is impacted prior to the beginning of the wall, the lean of the vehicle could cause the upper portion to impact the end post of the wall creating a lateral load instead of the transverse loads covered by the specification (as shown below). This loading information could also be used for other objects located behind the rail such as bridge columns.</i></p> 
<b>Project Goal(s):</b>	<ol style="list-style-type: none"> <li>1.) Update Section 15.8.4 of the AASHTO LFRD Bridge Design Specifications</li> <li>2.) Provide loading for objects within the Zone of Influence but behind the wall.</li> </ol>

<b>Project Background:</b>	<i>Background is covered in the project synopsis.</i>
<b>Proposed Work Plan:</b>	<ul style="list-style-type: none"><li>• Build a confidence level (validation) of the simulation model of the of heavy vehicles into soundwalls by simulating updated versions of TL-5 and TL-4 vehicle models into tested systems with a relatively tall barrier</li><li>• Conduct literature review to define the state of practice of common soundwalls configurations and installations details.</li><li>• Define critical configurations for evaluation such as offset distance from the barrier or exposed end dimensions</li><li>• Conduct impact simulations of the selected configuration to determine the impact force</li><li>• Process the impact force profile into a design table format</li></ul>
<b>Deliverables:</b>	1/ A report describing the process and the results of the project 2/ A table describe loading profile for both vertical and longitudinal directions and the selected critical impact conditions 3/ Equivalent static force of these profiles

<b>Urgency and Expected Benefit:</b>	<i>The expansion of highways and high speed roadways into more residential areas resulted into more soundwall applications that are not designed to withstand vehicular impact. This trend is not going to stop and there is a benefit to user agencies to identify design load so that they can ensure the integrity of these sound walls. The urgency stems from the risk of having these wall exposed to impact loads that they cannot withstand. Hence, there is a safety and liability risk by having these under designed walls next to the driving public and the residential population .</i>
<b>Problem Funding and Research Period:</b>	<i>The cost of conducting the research is \$89,559, it is expected to span over 12 months duration</i>
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