


UTC Project Information	
Project Title	Impact of Autonomous and Connected Truck Platoons in the Pacific Northwest on Transportation Infrastructure
University	University of Idaho
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Funding Source(s) and Amounts Provided (by each agency or organization)	University of Washington PacTrans \$40,000 University of Idaho \$ 40,000
Total Project Cost	\$80,000
Agency ID or Contract Number	69A3551747110
Start and End Dates	March 16, 2021-March 15, 2022
Brief Description of Research Project	<p>The operational characteristics of freight shipment will significantly change after the implementation of Autonomous and Connected Trucks (ACT). This change will have major impacts on mobility, safety, and infrastructure service life. Truck platooning is one of truck arrangements that will become feasible in the near future with the connected vehicle technology. It allows and enables trucks to be connected with themselves and with the surrounding infrastructure. The advantage of platooning is reducing traffic congestion, and improving transport and fuel efficiency.</p> <p>The main goal of this study is to investigate various truck platooning configurations on load rating of existing bridges' superstructure. A proposed matrix is presented in the approach section.</p>
Describe Implementation of Research Outcomes (or why not implemented)	
Place Any Photos Here	

	<p>The research results will be reported to the department of transportation for future implementation.</p> <p>An extensive parametric study of 59,200 models considering a wide range of parameters has been conducted. Four bridge cases were included: simple span, two spans, three spans, and four spans. The effect of bridges' continuity was demonstrated by the two, three, and four-spans. Spans varied from 20 ft. to 200 ft. (6 m to 60 m) with an increment of 5 ft. (1.5 m). The HS-20 design truck has been arranged, according to the parametric study, to form different platooning configurations using up to twenty trucks at headway spacing varied from 10 – 30 ft. The results are then used to provide a guideline of the optimum parameters and load rating charts for future truck platooning application.</p>
<p>Impacts/Benefits of Implementation (actual, or anticipated)</p>	<ul style="list-style-type: none"> • The implementation of the results will help bridge owners to assess the structural integrity of bridges under the effect of platooning trucks. • Charts were developed to determine the percentage of bridge load rating reduction based on the number of trucks and the headway distance. Those charts are only applicable to HS-20 standard AASHTO trucks. If the number of axles and the distance between axles are different than the ones used in this research, another study need to be conducted.
<p>Web Links</p> <ul style="list-style-type: none"> • Reports • Project Website 	<p>Report submitted</p>