



UNIVERSITY TRANSPORTATION CENTER RESEARCH BRIEF

PROJECT TITLE: Rural Bridge Safety: Evaluation of Atypically Large Farm Vehicles

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INSTITUTION: SINGLE-INSTITUTION PROJECT

ESTIMATED COMPLETION DATE: JANUARY 2018

SPONSORS: THE PACIFIC NORTHWEST TRANSPORTATION CONSORTIUM, UI



Background

The Pacific Northwest region has no data on the assessment and recommendations on rural bridge design and safety subjected to Farm Vehicle (FV) loading.



Research Project

The proposed study will determine how different types of FVs with different characteristics distribute their loads on bridge superstructures. These will be realized through actual load testing, computer simulation, and statistical analysis. At least two bridges, one in ID and one in OR, will be physically tested, subject to a variety of FVs. The structural behavior of the bridges will be monitored using wireless sensors to assess the behavior of bridges' superstructures and the corresponding load distribution factors for girders under the critical loading conditions will be determined. The selected bridges will be representative of rural bridges problematic for FV traffic in the region. The field investigation of the proposed bridges will be used to validate computer models in order to explore a broad number of bridges under various FVs. The research team will develop a FV profile that represents worst-case scenarios for use in determining load limits and distribution factors which will lead to increased infrastructure and operators' safety. With the information developed, unique traffic sign designs, that will include variations of tractor symbols and weight limits, will be developed and evaluated through an online comprehension survey of FV operators. The survey results inform supplemental traffic signage to be added to rural bridges to increase infrastructure and operator's safety.