Developing Design Guidelines for Commercial Vehicle Envelopes on Urban Streets

Tuesday, February 16
11:00am - 12:00pm PST

Registration Link: https://washington.zoom.us/webinar/register/WN_gVfLxYHQSTetSnBZq2WhQQ

Commercial vehicles using urban curbside loading zones are not typically provided with a consistent envelope, or a space allocation adjacent to the vehicle for delivery operations. While completing deliveries, drivers are required to walk around their vehicle, extend handling equipment, and maneuver goods; these activities require an envelope around the vehicle This research aimed to improve the understanding of this envelope. Observations of delivery operations by trucks determined common practices such as door location and accessories used. This information guided simulated loading activities that quantified different loading space requirements. This resulted in a robust measurement of the operating envelope required to reduce conflicts between truck's delivery actions with adjacent pedestrian, bicycle, and motor vehicle activities.

A bicycling simulator experiment examined bicycle and truck interactions in a variety of commercial vehicle loading zones (CVLZ) designs, informed by the field work and simulated loading activities. The bicycling experiment was completed by 50 participants. The bicycling simulator collected data regarding a participant's velocity, lane position, and acceleration. Three independent variables, sourced from the field work, were included in this experiment: pavement marking (No, Minimum, or Recommended CVLZ), Courier Position (none, behind vehicle, on driver's side), and Accessory (none or hand truck). The results support the development of commercial loading zone design recommendations that will allow our urban street system to operate more efficiently, safely, and reliably for all users.

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Dr. Edward McCormack is a Research Associate Professor and the Director of the on-line Master of Sustainable Transportation Program in Civil and Environmental Engineering at the University of Washington. At the UW, his research has focused on the use of technology to improve people and freight mobility. His projects have included exploring the impacts of e-commerce in urban areas, developing truck performance benchmarks using global positioning systems (GPS), testing the use of unmanned aircraft for transportation agencies, and exploring the use of electronic security seals to facilitate freight movements over international borders.

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Hisham Jashami is a research associate in the School of Civil and Environmental Engineering at Michigan State University. He received his Doctor of Philosophy from Oregon State University in Transportation Engineering. His research has been focused in areas related to transportation safety, human factors, driving & bicycling simulation, and autonomous vehicle simulation. He also minored in statistics during his graduate studies at OSU. Prior to his graduate studies at OSU he accumulated 5 years of consulting engineering experience designing roadway and civil utility projects at a consulting firm based in Turkey.