



Center for Advanced Multimodal Mobility Solutions and Education

UTC Project Information – CAMMSE @ UNC Charlotte	
Project Title	Impact of Connected and Automated Vehicles (CAVs) on Freeway Capacity
University	The University of North Carolina at Charlotte
Principal Investigator	Wei Fan
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Funding Sources and Amount Provided (by each agency or organization)	U.S. Department of Transportation: \$60,000 The University of North Carolina at Charlotte: \$30,007
Total Project Cost	\$90,007
Agency ID or Contract Number	
Start and End Dates	10/01/2017 – 09/30/2019
Brief Description of Research Project	<p>Connected and automated vehicle (CAV) technologies are combination technologies of connected vehicle and automated vehicle. As widely known, CAVs can bring with them many benefits including improving safety, reducing emissions and increasing mobility of the transportation system. CAV only needs a smaller lane width and headway which will lead to a higher roadway capacity. CAVs may have coordinated weaving maneuvers which will increase weaving section capacities. For an intersection, instead of using stop or signal controlled method, CAVs can have coordinated through or turning movements to avoid collision.</p>



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	<p>As the CAVs start to penetrate into the market, the current HCM methods cannot be used to evaluate freeway capacity due to the fact that they did not account for the impacts of CAV strategies in the HCM. The limitations of the current capacity analysis methods include but are not limited to the following: 1) There is no guideline related to how current HCM methods should be adjusted in order to be suitable for use in conducting various types of analyses involving CAV strategies; 2) There is no consideration of the general impact of CAV technologies on traffic congestion and delay as well as safety in the HCM analysis; and 3) There is no information about the impact of different CAV penetration rates in the highway system on various facilities under different scenarios. In order to be better prepared for both CAV planning and operations under varying levels of market penetration and traffic demand, there is a critical need to develop and establish the HCM capacity adjustments.</p> <p>This research will develop guidelines and recommendations for estimating and predicting freeway capacity in the presence of CAVs, and therefore will leading to a better understanding of how CAV improves mobility on the freeway system.</p>
<p><i>Describe Implementation of Research Outcomes (or why not implemented)</i></p>	



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<i>Place Any Photos Here</i>	
<i>Impacts/Benefits of Implementation (actual, not anticipated)</i>	Project has not begun yet, so no impacts have been realized.
<i>Web Links</i> <ul style="list-style-type: none">• <i>Reports</i>• <i>Project website</i>	https://cammse.uncc.edu/sites/cammse.uncc.edu/files/media/CAMMSE-UNCC-2018-UTC-Project-Information-04-Fan.pdf