UTC Project Information	
Project Title	The Future of Parking: Safety Benefits and Challenges
University	Texas A&M Transportation Institute
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Funding Source(s) and Amounts Provided (by each agency or organization)	Safe-D (Federal): $66,634 State of Texas match (Non-Federal): $50,530
Total Project Cost	$117,164
Agency ID or Contract Number	Grant No: 69A3551747115 Project: TTI-06-02
Start and End Dates	04/01/2021 – 08/31/2022
Brief Description of Research Project	Although parking facilities are one of the main components of transportation infrastructure, little is known about the incidence of crashes, injuries, and fatalities that occur because of parking. Parking facilities are intense driving environments that require both drivers and pedestrians to pay close attention. Slower speeds in parking facilities give people a false sense of security. This situation is clearly reflected in non-motor traffic crash statistics (i.e. crashes that occur off-public roadways), as most non-traffic motor crashes occur in parking facilities or private roads. With the emerging technologies, parking experience is expected to be improved. Car manufacturers have been working on development of self-driving and self-parking features. The goal of this research is to explore parking facility design and operational change recommendations to improve parking safety in light of the advent of self-parking features. The research team will identify potential design changes and self-parking penetration scenarios to improve the safety. Expected changes of the parking and street design will be assessed in terms of the reduced number of conflicts for pedestrians and other vehicles using microsimulation techniques.
Describe Implementation of Research Outcomes (or why not implemented) Place Any Photos Here	• Final report and data management The project report will contain geometric, operation, policy, and safety recommendations for parking for automated vehicles in sole and mixed-use environment. Moreover, micro simulation models with the new design features will be the outputs of the research. The recommended design and operation policy will be presented at outreach activities, published in journals and presented at

	conferences. However, these recommendations should not be viewed as the official guidelines.
	• Education and workforce development
	This project will increase the understanding of the safety in parking facilities. The project findings will be shared with International Parking and Mobility Institute and will be asked to be part of the professional development webinar series. On the other hand, the micro simulation model codes will be shared with the University of Texas at El Paso (UTEP) Professors to be taught in Transportation Engineering Class.
	• Technology transfer
	The findings of the study is planned to be presented at various platforms including City of El Paso Parking Steering Committee, UTEP Research Expo, ITE Regional Student Chapter, ITE Texas District Meeting, TRB Annual Meeting, and International Parking and Mobility Institute Conference.
Impacts/Benefits of Implementation (actual, not anticipated)	There is no specific study representing the safety benefits of autonomous vehicles from parking perspective. In the long term, the findings of this project will lead to a better understanding of the future needs of parking and street design to accommodate fully automated vehicles so that developers can incorporate such needs in their projects from now on. Considering the service life of parking infrastructure, it is important to plan and prepare of the transition because that will lead to savings in future project costs.
Web Links • Reports • Project website	https://safed.vtti.vt.edu/projects/the-future-of-parking-safety-benefits-and-challenges/