UTC Project Information	
Project Title	Design and Evaluation of a Connected Work Zone Hazard Detection and Communication System for Connected and Automated Vehicles (CAVs)
University	Virginia Tech
Principal Investigator	Mike Mollenhauer
PI Contact Information	mmollenhauer@vtti.vt.edu 970-227-3373
Funding Source(s) and Amounts Provided (by each agency or organization)	Safe-D (Federal): $210,851 VDOT (Non-Federal): $245,653 Virginia Tech (Non-Federal): $31,020
Total Project Cost	$510,710
Agency ID or Contract Number	Grant No: 69A3551747115 Project: 03-050
Start and End Dates	03/01/18 – 02/28/19
Brief Description of Research Project	The overarching goal of this research is to increase roadway workers' situational awareness and to inform drivers of CAVs about detected hazardous situations to avoid imminent safety hazards through the development of reliable real-time threat detection as well as localization and communication strategies. To this end, this research will utilize current and emerging transformative technologies that will work in conjunction with CAVs to minimize the increasing safety risks associated with roadside WZs. Equipping roadway WZ actors with the technology to ultimately communicate with approaching CAVs can help eliminate imminent safety hazards associated with passing motorists before they occur and reduce the occurrence of accidents by alerting workers to unsafe exposures.
Describe Implementation of Research Outcomes (or why not implemented) Place Any Photos Here	**Deliverables:** • Final Report • Dataset per DMP **EWD Plan:** • Add project results to current undergraduate level course (BC 2114: IT in Construction) and one new undergraduate/graduate level course (BC 4114: Smart Construction Environments) in the Department of Building Construction at VT taught by Dr. Roofigari-Esfahan. • The resulting database will also be used to create two new projects for the course BC 4114, focusing on safety, data analysis and technology evaluation. • Present research results at educational seminars

	• Hold educational workshops to demonstrate the system • Utilize one graduate student and one undergraduate student potentially resulting in a Masters' thesis and journal articles to be presented at academic conferences **T2 Plan:** • Engage stakeholder group to provide input into opportunities and challenges of deployable system • Demo the system on the SR • Market IP package and system prototype to original stakeholder group and applicable commercial entities • Publish results in peer-reviewed journals
Impacts/Benefits of Implementation (actual, not anticipated)	This research will seek to improve upon previous results by developing reliable real-time threat detection as well as localization and communication strategies. As such, the overarching goal of this research is to increase roadway workers' situational awareness and to inform drivers of CAVs about detected hazardous situations to avoid imminent safety hazards. To this end, this research will utilize current and emerging transformative technologies that will work in conjunction with CAVs to minimize the increasing safety risks associated with roadside WZs. Equipping roadway WZ actors with the technology to ultimately communicate with approaching CAVs can help eliminate imminent safety hazards associated with passing motorists before they occur and reduce the occurrence of accidents by alerting workers to unsafe exposures.
Web Links • Reports • Project website	