

Development of a Portable Work Zone Traffic Information System with DSRC based V2I or V2V Communication and BT Cell Phones

Each year, several hundred people get killed and many more get injured in work zones on USA highways. To save lives and prevent injuries on work zones, vehicle to vehicle (V2V) and/or vehicle to infrastructure (V2I) communication is needed which is the primary mission of IntelliDriveSM (formerly known as Vehicle Infrastructure Integration (VII)) initiative of USDOT. Dedicated Short Range Communications (DSRC) is an important tool promising partial fulfillment of this mission. In this research project, we propose to develop a portable workzone traffic information system utilizing DSRC V2I or V2V communication technology. We intend to enhance the capability of a DSRC onboard unit (OBU) by adding to it a GPS enabled communication interface device (DID) so that it can estimate important congestion parameters i.e., vehicle speed and travel time. The speed and travel time information can then be communicated from vehicle DSRC-OBU to DSRC roadside unit (RSU) or another DSRC-OBU residing on the curbside. By accomplishing this research project, we intend to do a field demonstration of a portable work zone traffic information system which (i) acquires speed and travel time information from a vehicle carrying both DSRC-OBU and CID or from a local traditional detector mechanism (ii) translates that information into safety and warning messages in the DSRC-RSU or another DSRC-OBU on the curbside which then is communicated back to all the vehicles in the range including the ones approaching the work zone, and (iii) finally, the safety and warning messages are relayed to bluetooth enabled cell phones in the vehicle facilitated by CID.