2017 Project Abstract

Project Title: Freeway Management for Optimal Reliability (Project I)

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ABSTRACT: This project will develop tools for analyzing and optimizing system reliability on freeways. These tools include analytical and simulation frameworks for the optimization and near real-time performance forecast of active traffic management (ATM) systems. The proposed traffic congestion mitigation toolbox will include local and/or system-wide adaptive ramp metering, integrated ramp metering and variable speed limit control, hard shoulder running, speed harmonization, dynamic pricing of express lanes, optimized traffic diversions and efficient incident response and management. ATM deployment is a means to meet specific reliability goals below a desirable agency specified threshold. This two-year project will develop a methodological framework, a novel integrative process of system modeling, and will select and optimize appropriate strategies from the ATM toolbox to meet reliability goals. We will also test the validity of the proposed approach using data from a minimum of three freeway facilities in the Southeast region at both rural and urban locations.