

Utilization of TSMO Practices in Highway Construction Work Zone – A Case Study:  
I-35 in Warren County, Iowa (2017) – Iowa Department of Transportation

In 2016, the Iowa Department of Transportation (Iowa DOT) adopted its Transportation Systems Management and Operations (TSMO) Plan to improve the safety, efficiency, and reliability of the state's transportation system. Through the identified strategic goals, the plan utilizes a TSMO Program Plan and TSMO Service Layer Plans to develop objectives and initiate improvement areas within the state's transportation system. One of the Service Layers identified is the Work Zone Management Layer. The primary objective of the Work Zone Management Layer of TSMO is the planning and deployment of various strategies to maintain traffic flow and safety through highway work zones. Work zone traffic flow is a key area of focus for the Iowa DOT, because prevention of traffic queuing within the work zones reduces the potential for secondary accidents in these back-ups. Often, these secondary accidents result in more serious injuries, and greater potential for fatalities, than the original incident. Other safety considerations include special treatments or considerations at potential conflict points within work zones, which could mitigate the seriousness of incidents that may occur.

A current 2017 Iowa DOT project on Interstate 35 south of Des Moines is utilizing many work zone technologies to reduce or eliminate traffic queuing and potential safety conflict point concerns. Items added to the project in the design and contracting process that adopt the TSMO philosophy include: using temporary barrier rail (TBR) between the opposing traffic lanes in the head-to-head condition; utilization of intelligent work zone (IWZ) devices, such as traffic cameras, queue detection devices, portable dynamic message signs (PDMS); speed feedback trailers; utilization of 24-hour traffic monitoring with incident response; and traffic queue protection and response vehicles. Another TSMO component is the coordination with the DOT's Traffic Management Center (TMC) to provide incident notification to the DOT's 511 system, and optimize coordination effort with emergency response efforts. A Transportation Incident Management (TIM) Plan was also prepared and is being utilized in the event of a serious incident requiring an off-site detour. Routine communication between multi-disciplinary agencies (DOT, law enforcement, emergency management, contractors, towing services), including a pre-action meeting prior to beginning work, and after-action reviews following incidents, have helped all parties learn better ways to adapt and improve performance in the event of an incident in the work zone. In comparison to the companion project at this location in 2016, as a result of the actions taken, the seriousness of accidents has reduced, the length of traffic queuing events has shortened, and length of delays to restore normal traffic flow have reduced.

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