

I-440 CONSTRUCTION INCIDENT MANAGEMENT PLAN

By: Tennessee Department of Transportation

IN THIS CASE STUDY YOU WILL LEARN:

1. How a multitude of stakeholders developed an effective Incident Management Plan for the largest reconstruction project in the state.
2. How the plan outlined the priority actions when on an incident scene.
3. About the heavy marketing and enforcement campaign Tennessee Department of Transportation (TDOT) conducted at the start of the project to bring attention of drivers to project specifics.



except for a few select weekend closures. Due to the planned narrow lanes and shoulders, incident management became a concern.

BACKGROUND

Interstate 440 is a 7.6-mile bypass around the downtown Nashville core. There are four freeway to freeway interchanges along the route. I-440 was built out of concrete in the mid to late 80s. After 30 years, it was time for some serious work. In addition to the pavement



deterioration, the crash rates on I-440 are nearly double the statewide average. There have been 16 fatalities since 2008. There is also heavy congestion

at two ramps that cause queuing to back up onto the freeway. Following the passage of legislation in July 2017 to raise the gas tax, TDOT prioritized I-440 for reconstruction. A design build contract to reconstruct the highway was let in August of 2018 at a cost of \$152.9 million. Construction would be around the clock for 20 months.

Construction involves demolishing an existing grass median and the concrete pavement. It also required the relocation of highway lighting, over the road DMS, and other ITS devices. The project called



for the addition of several noise walls and adding a lane in each direction. Due to the added lane, there were

two bridge structures that required widening. The two congested ramps were also addressed to help eliminate the dangerous ramp queues. During reconstruction, the route would remain open to traffic

TSMO PLANNING, STRATEGIES, AND DEPLOYMENT

Incident management planning during a long-term major construction project is essential to transportation system operations. The incident management planning for the I-440 reconstruction project started before the contract was even awarded. Stakeholders from multiple divisions within TDOT met to brainstorm what was needed in order to have a good, well thought-out incident management plan. From those meetings, external partners were identified and included in future planning meetings.

The development of the plan itself began by looking at the current regional incident response plan to see what would work with this project and what parts needed to be adapted due to differences in resources. The new I-440 Incident Response Plan included assigning two additional highway incident response vehicles, HELP Trucks, to the corridor. Within the construction area, three median crossover points were established between major interchange points for authorized vehicles to use for quicker access to incidents. New equipment was procured to help monitor the work zone and process incidents. This included four new portable cameras for surveillance of blind spots of the existing CCTV cameras. Ten new radios were procured, and a channel was specifically dedicated for communication on this project. An incident notification strategy and contact list was established. This strategy required anyone dispatched to an incident notify the Transportation Management Center (TMC) to give notice that the responder was in route and communicate again once they were on scene in order to provide an update. The strategy required updates to the TMC anytime conditions changed.

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The plan determined the priority actions when on scene. Top priority was caring for injured parties while maintaining a safe environment. Second priority was to try to get a minimum of one lane open and working to clear the incident as soon as possible. When an incident is expected to last awhile, a detour needs to be established. Pre-planned detours were determined prior to the start of construction based on the location of the incident. The priority once a detour is established is to clear vehicles trapped between the detour point and the incident location. Good communication between TDOT, first responders, and the public was deemed essential to a good incident management plan. Throughout the construction project, especially when phasing changes, the plan is revisited to see what if any updates are necessary. Routine updates are provided to stakeholders. The news media has also been a good partner to help get the word out to the public regarding incidents and closures.

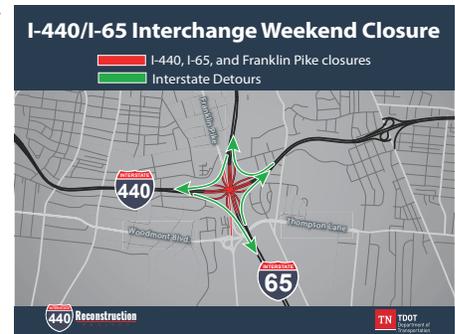
In addition to planning on how to manage an incident, thought went into how to prevent an incident. A work zone speed limit was established, and a heavy enforcement campaign was conducted at the start of the project to bring the reduction to the attention of drivers so that there would be better compliance. Oversized loads were prohibited from using this route after the start of construction. Travel time signs were installed at I-840 to provide information on an alternate route to divert pass through traffic.

COMMUNICATIONS PLANNING AND EXECUTION

During the initial planning phase for the I-440 project, several public meetings were held in order to get public feedback on their thoughts and concerns with the project. Internal meetings between various TDOT divisions including Construction, the TMC, HELP Operations, Maintenance, and Traffic Operations were held to discuss the need for a good plan knowing that a project of this size could be a major issue to operations. From these meetings external partners were identified that should also be included in the discussion of a good incident management plan. The external partners that TDOT worked with included Kiewit (the contractor), Nashville Police and the Highway Patrol, Nashville Public Works, Nashville OEM, Metro ECC, and Medcom (Vanderbilt Life Flight).

The partners then came together to identify issues they foresaw in order to preplan for those. Table-top exercises were developed and to practice how to respond during different types of incidents. Scenarios included small incidents such as a vehicle running out of gas, intermediate incidents such as a multicar crash, to major incidents like an overturned tractor trailer. The group routinely gets back together to evaluate how they think the plan is operating and what if any changes are necessary. Following incidents, there is a post event debrief to see if the plan worked. If the plan worked, what were the successes and if it didn't, why not. TDOT and the Highway Patrol have an agreement for quick clearance of incidents. This agreement was evaluated and included in the Incident Management

Plan for this project. The plan detailed the steps to follow and contact information needed during an incident. The partners understand that this contact information is needed for good communication,



which is essential to good incident management. TDOT routinely puts out press releases to the media in order to inform the public. Various social media platforms are also used to relay information. The TDOT SmartWay website is updated with information as needed.

OUTCOMES, BENEFITS, AND LEARNINGS

The number of crashes expectedly went up within the work zone, 532 compared to 456 in the same time frame the previous year. It was understood that crashes are more likely to happen under construction conditions. The Incident Management Plan for I-440 was developed to handle those incidents as quickly as possible due to the lack of shoulder area and heavier than normal congestion. This plan reduced the clearance time of incidents which in turn made the commute for area motorists better than it would have been without a plan. The plan allowed for all stakeholders to understand their role in getting the crash cleared and the road open as quickly as possible. Quickly opening the road reduces nonrecurring delays on the routes and helps ensure travel time reliability for motorists. Getting this highway open quickly after an incident also helps with congestion on other nearby routes that traffic diverts to by keeping more of those vehicles on I-440. It helps keep the nearby surface streets from getting overwhelmed.

TDOT has learned that motorists will better handle disruptions to their normal commute if they are given enough notice. The Department has had minimal complaints even though this is a major route that is being disrupted. Law enforcement is a willing partner in making travel safer and more efficient, and is willing to work together toward that goal. Proper planning can make even the largest construction project in TDOT history run smoothly. These lessons will be carried forward with new projects in order to make them as successful as the I-440 reconstruction has been.

FURTHER INFORMATION

I-440 Project PR Video

I-440 TDOT Project Website

NOCoE Knowledge Center: <https://transportationops.org/knowledge-center>