

# Better Transportation Management Plans Steer Transportation Project Success

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A highly customized transportation management plan can help enhance safety and mobility in and around work zones during the construction of complex projects.



Transportation management plans (TMPs) are well-thought-out plans that document the impacts that a significant transportation project's work zones will have on the broader transportation network. TMPs help proactively identify solutions for potential operational and safety problems that may arise as a result of changes in traffic patterns.

In 2004, the Federal Highway Administration's (FHWA) Work Zone Safety and Mobility Rule was enacted to support the continuous improvement of work zones. Within the rule, the TMP is identified as a strategic tool used for guiding the design and implementation of work zones within project sites. As a result, TMPs are required for federally funded transportation projects and are recommended for all work zone projects regardless of the funding source. While the FHWA does not mandate a format or approach to a TMP, each state has guidelines for the development of these plans for locations within its boundaries.

Historically, TMPs were written to meet the requirements of the FHWA and the state for which they were written. While these were written, reviewed and implemented, performance measures were not actively tracked or reported for future use.

Project owners genuinely concerned about improving work zone outcomes for workers and the traveling public have realized they can use TMPs to gather data that will inform future TMP development and further enhance safety and mobility in work zones.

## Breaking Down a TMP

A TMP is developed and used to coordinate the strategies needed to manage work zone impacts resulting from transportation projects. In order to estimate the impact a project may have on the area around an immediate worksite, project owners must consider a variety of factors. (See Figure 1.)

The FHWA Work Zone Safety and Mobility Rule identifies many components that should be included in a TMP. While there have been advances in technology, prediction modeling and other tools that enhance planning, these basic components outlined in the rule are crucial:

- Project introduction
- Executive summary
- Roles and responsibilities
- Project description

- Existing and future conditions
- Work zone impacts assessment report
- Selected work zone impacts management strategies
- TMP monitoring
- Contingency plans
- TMP implementation costs

Crash prediction methodology estimates the safety impact a project will have on the broader area around the immediate worksite, given specific conditions, and it is the insight on which a TMP is developed.

## The Road to Safety and Mobility

As highways and other transportation infrastructure in the U.S. become more congested and age, more preservation and maintenance projects will be required, resulting in an increased number of work zones. This increase in construction activity comes at a time when traffic volumes, number of crashes and severity of crashes remain elevated. According to the National Highway Traffic Safety Administration, annual traffic fatalities have increased by over 10,000 in the last decade, reaching nearly 43,000 in 2023.

Work zones are both temporary and unique environments, and while limited data is available to help determine potential impacts, project managers can create effective TMPs by utilizing crash prediction methodologies. This could help lead to the development of more insightful work zone impact management strategies that result in minimized traffic delays,



**Figure 1:** Although no federally mandated standards exist for creating TMPs, a plan’s overriding goal should focus on how to serve the mobility and safety needs of everyone who could be impacted by a significant transportation project.

improved mobility, increased motorist and worker safety, and better road access for businesses and residents.

TMP creators should document the expected safety impact of the work zone for use as a comparison against the actual safety performance of the work zone. There are several strategies for helping predict this impact including a review of existing crash patterns and hot spots, application of crash modification factors to account for any work zone safety strategies that will be used, highway safety manual procedures for estimating crashes based on changed traffic volumes and roadway geometry, and a review of human factors such as driver and worker expectations.

For example, in predicting driver and pedestrian behavior for a work zone, crash prediction models should incorporate seasonal conditions to assess the potential impact on diverted road traffic flow. Increased recreational traffic, winter storm conditions, high winds or sun glare are all factors that can be used to determine the potential for different types of road crashes and other work zone impacts.

## Accelerating Project Improvements

In addition to serving as a valuable planning tool to address safety and mobility concerns, a TMP engages and aligns teams early in project development and helps keep complex transportation projects on track.

Case in point: Modifications to the layout of the TMP and the development of the TMP manager concept for a project implemented for the Kansas Department of Transportation resulted in positive outcomes for the project owner, construction contractors and traveling public. Modifications included a succinct list of goals and conditions to look out for during construction.

The modification to the TMP included additional safety guidance and monitoring for the project. This allowed the team to use the identified mitigation measures to address impacts due to lane closures, ramp closures and changes in traffic patterns. Having a proper TMP in place made it possible for traffic switches and closures/detours to be handled in the most appropriate manner possible.

The following considerations are critical to the development of a successful TMP:

- **Starting early** at the project formation stage and establishing the goals of the TMP, the physical areas it will cover, how it will be developed and who will be involved.
- **Setting expectations** that the TMP will be a guiding document for all involved on a project. The TMP should be created before the design phase and should be used during the entire project.
- **Creating a feedback loop** to allow the active project team to adapt the plan and future project owners to learn from observations made during construction. This approach will continuously improve the TMP development process and facilitate safer work zones.
- **Defining the area of impact**, including the immediate work zone, local streets, pedestrian accommodations, roads and lanes, local businesses, schools, and nearby communities.
- **Determining a baseline** that will help those working on a project understand the traffic events of a work zone.
- **Using existing insight and data**, such as crash modification factors and predictive safety models, to comprehend and highlight potential impacts that will help set goals.
- **Applying scenario planning** to predict safety, traffic and impacts, as well as identify the most appropriate strategies to include in the TMP.
- **Exploring new technologies** — such as queue warning systems, intelligent transportation systems and other systems — which could help with tracking, setting and monitoring goals.
- **Establishing quantifiable goals** for both safety and mobility that look beyond crashes and fatalities to include additional daily traffic surges, side street impacts and crash rate increases.
- **Determining goal tracking** methods by considering what data and tools will be used and how crash and

traffic delay data will be accommodated to make adjustments to the TMP.

- **Requiring safety training** for work zone workers and creating agile traffic control plans to accommodate driver and worker behavior.

## Driving Results with TMPs

TMPs provide project owners with the framework needed to build better roads more safely and efficiently. The most effective TMPs are developed at the outset of a transportation project and continue to be a living, changing document throughout the life of a project's execution.

The FHWA has outlined many benefits that TMPs add to construction projects, including:

- Addressing safety and mobility impacts of work zones.
- Promoting efficient construction phasing and staging while minimizing contract duration and controlling costs.
- Improving work zone safety for construction workers and the traveling public.
- Enhancing public awareness of projects and safety measures.

While work zone impacts and issues vary by project and different types of TMPs may be warranted, all plans should focus on how to properly serve the mobility and safety needs of all impacted, including highway workers, the public, businesses and the surrounding community.

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