

# Caltrans Transportation Management Plans Reduce Work Zone Congestion

Spring 2007



California Department of Transportation

FACT SHEET

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The California Department of Transportation (Caltrans) minimizes disruption to the traveling public during construction or other planned activities necessary on the State Highway System (SHS). Caltrans uses innovative means to minimize work-related traffic delays and accelerate completion of highway work activities while taking necessary steps to maintain public and worker safety and the quality of the work being performed. To help accomplish this objective, Caltrans began requiring Transportation Management Plans (TMPs) in 2000 for all planned activities on the SHS. A TMP is a program of activities for alleviating or minimizing work-related traffic delays by the effective application of traditional traffic handling practices and an innovative combination of various strategies encompassing public awareness campaigns, motorist information, demand management, incident management, system management, construction methods and staging, and alternate route planning. TMP strategies also strive to reduce overall duration of work activities where appropriate. These strategies include: full facility closures, extended weekend closures, continuous weekday closures, and performance-based traffic handling specifications, where appropriate.

During project initiation and planning, Caltrans reviews each project to determine which mitigation strategies will need to be deployed based on project conditions and the anticipated work zone safety and mobility impacts. The Department stipulates that motorists must not be delayed more than 30 minutes above normal recurring delay when work is being performed on the highway. Caltrans considers a delay of 30 minutes or longer to be a significant traffic impact.

## TMP Categories

Caltrans TMPs are categorized into three types based on project characteristics and projected delay: Blanket TMP, Minor TMP, and Major TMP. Table 1 lists the types of conditions and possible strategies for each of these three TMP categories. A Blanket TMP is a standard set of actions taken to minimize delay when performing maintenance activities or projects. Minor TMPs are used for improvement projects when minimal impacts are expected (e.g., night-time construction). Major TMPs are implemented for projects where significant traffic impacts are anticipated and multiple TMP strategies are required to manage impacts.

**Table 1 – Three types of TMPs: Conditions and potential strategies.**

| LEVEL OF TMP  | TYPES OF CONDITIONS   | TYPES OF STRATEGIES  |
|---|---|--|
| "Blanket" TMP   | <ul style="list-style-type: none"> <li>No expected delays</li> <li>Off-peak work</li> <li>Low volume roads</li> <li>Moving lane closures</li> </ul>                                 | <ul style="list-style-type: none"> <li>Portable changeable message sign (CMS)</li> <li>Freeway service patrol (FSP)</li> <li>Traffic management team (TMT)</li> <li>Only working in off-peak hours</li> </ul>  |
| "Minor" TMP<br>(Majority of TMPs fall into this category) | <ul style="list-style-type: none"> <li>Minimal impacts expected</li> <li>Lane closure required for project</li> <li>Some mitigation measures required for project</li> </ul>        | <ul style="list-style-type: none"> <li>Only working at night</li> <li>Portable and fixed CMS</li> <li>Construction Zone Enhanced Enforcement Program (COZEEP) or MAZEPP for maintenance activities</li> <li>TMT</li> <li>Highway advisory radio</li> </ul>                           |
| "Major" TMP<br>(~5% of TMPs are major)                    | <ul style="list-style-type: none"> <li>Significant impacts expected</li> <li>Multi-jurisdictional in scope</li> <li>Longer duration</li> <li>Multiple contracts involved</li> </ul> | Same as for Minor TMPs plus: <ul style="list-style-type: none"> <li>Public awareness campaigns</li> <li>Extended closures to expedite work</li> <li>Moveable barriers to reverse lanes during peak periods</li> <li>Detours</li> <li>Reduced lane widths</li> <li>Website</li> </ul> |

OPTIMIZING PERFORMANCE

MOBILITY & SAFETY

MAKING WORK ZONES WORK BETTER



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## Roles and Responsibilities

Three individuals are responsible for developing and implementing TMPs: the district traffic manager (DTM), the TMP manager, and the construction traffic manager. The DTM has four main responsibilities: acting as the single focal point for all traffic impact decisions resulting from planned activities; working with the TMP Manager to determine the extent of each TMP; facilitating review and approvals of TMP measures and lane closures; and directing termination or modification of planned lane closure operations when traffic impacts become significant. The TMP manager acts as the focal point for development of every TMP. TMP responsibility shifts from the TMP Manager to the DTM during conduct of the work. For large-scale projects, the TMP manager leads a TMP team that includes the division involved, as well as the Public Information Officer and California Highway Patrol. The construction traffic manager serves as the liaison between the construction project personnel and the DTM during construction.

## Lessons Learned

Some of the lessons Caltrans has learned from its experience in implementing TMPs include:

- The most effective strategies facilitate decision-making by the public to avoid the work zone. Examples of these strategies are public awareness and advance signage in locations prior to key motorist decision points.
- Use strategies that keep lanes open, especially during peak traffic times. Some examples are imposing damages for late lane opening; contract incentives/disincentives; narrowing lane widths or occasionally using shoulders during peak periods to maintain the number of lanes; night work.
- Consider using extended closures or full closures versus numerous night closures.
- Use "Triggers," e.g. when 75% of maximum delay is approached, the lane(s) will be opened to accommodate traffic.
- Include funding for monitoring traffic conditions during construction to track TMP effectiveness in case strategies need to be modified.
- Maintain close coordination with local agencies on detours and signal timings.
- TMP training is important for all divisions involved in TMPs. Management support is needed for effective TMP efforts.

Caltrans found the following actions may increase efficiency in the TMP process:

- Encourage design and project staging that minimizes potential traffic impacts.
- Have the DTM and TMP Manager sign off on TMP just prior to bid to make sure strategies reflect current traffic conditions, especially for "shelved" projects.
- Produce standardized forms for both blanket and minor projects.
- Produce a brief, standardized report for each major project.
- Standardize practices for monitoring the effectiveness of TMPs in the field.

## Results

The implementation of TMPs in California has helped to significantly reduce delays in work zones. One example of the successful use of TMPs is from Caltrans District 7 on the I-10 Long-Life Pavement Project, where the TMP helped reduce traffic demand by an estimated 57 percent, queue lengths to 2 miles from the originally projected 44 miles, and projected delays from an estimated 1,000,000 to 16,000 total vehicle hours of delay. For the I-15 Devore Pavement Reconstruction project, Caltrans used two extended closures on a 3.4-mile section – one for each direction. Through the TMP preparation process, Caltrans compared construction options and the estimated delays that would result, and was able to minimize lane closures and the overall cost compared to other options for the I-15 project.

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### TMP Strategy Categories

- Public information
- Motorist information
- Incident management
- Construction strategies
- Demand management
- Alternate routes

Caltrans continues to study the use of TMPs and their effectiveness to improve agency practices and procedures and make further progress in mitigating the impacts of work zones.



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