

Arizona Department of Transportation

Implementation Guidelines for
Work Zone Safety & Mobility

PREFACE

Effective: 2020

Supersedes: May 27, 2009

Review: 2025

Page 2 of 40

Pursuant to 23 CFR 630 Subpart J & K
Arizona Department of Transportation
Work Zone Safety & Mobility
Policy, Processes, Guidelines, and Procedures

ADOT practices achieve the intent of this Rule through our policy, processes, guidelines, and procedures. These guidelines will expand/enhance existing practices currently in place.

Primary responsibility for responding to Questions and Revisions of this document is the
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Introduction to Users

In September 2004, the Federal Highway Administration (FHWA) published updates to the work zone regulations at 23 CFR 630 Subpart J referred to as *Work Zone Safety & Mobility Rule* (herein referred to as the Rule). In December 2007, FHWA added new regulations at 23 CFR 630 Subpart K referred to as *Temporary Traffic Control Devices Rule*. Both are applicable to all Federal-Aid Highway Projects with the intent to improve road user and workers exposed to motorized traffic. The Rule was effective October 12, 2007, and Subpart K was effective on December 4, 2008.

These guidelines describe how ADOT has and will continue to improve Work Zone Safety & Mobility (WZSM); by identifying if projects are “significant” for all projects added to ADOT’s Five-Year Transportation Facilities Construction Program, herein referred to as the “Five-Year Program,” cycle based on the criteria defined in ADOT’s WZSM Policy and these guidelines. The use of the term “Significant” within this document is always in reference to WZSM and as defined in our Policy ENG 07-3. All projects will be continually re-evaluated and assessed for Work Zone impacts from Pre-Design through Design, Construction and Maintenance phases.

The Rule broadens some aspects of work zones in the CFR and identifies key areas where States have an opportunity to develop and strengthen their current methods for providing mobility through work zones while maintaining a safe and efficient work environment for highway workers. In response to the requirements of the Rule, ADOT WZSM Policy ENG 07-3 was developed. The policy describes the importance of the Rule and ADOT’s commitment to comply with the Rule. The policy also explains that ADOT will develop guidelines for implementation of the Rule on all ADOT projects, which is the purpose of this document.

ADOT’s Mission:

Connecting Arizona. Everyone. Everywhere. Everyday.

True North

Safely Home

Our Values

- Accountability: We take responsibility for our actions.
- Integrity: We hold ourselves to the highest ethical and professional standards.
- Respect: We treat everyone with respect and dignity.

Chapter 1

Work Zone Safety & Mobility Committee

1.1 Work Zone Safety & Mobility Committee

A team was established in 2007 to define, document and implement the Rule (23 CFR, Part 60, Subpart J & K). After the creation of the TSMO Division in 2015, the WZSM Process Review Team recognized the need to reestablish the team as a standing committee. The committee has cross-functional membership throughout ADOT.

1.2 Work Zone Safety & Mobility Committee Framework

Starting in calendar year 2018, ADOT established a standing Work Zone Safety & Mobility Committee (WZSMC) with the Deputy Director for Transportation/State Engineer as the sponsor. The Committee has ten voting members, including a Committee Chair, four representatives from the ADOT Infrastructure Delivery and Operations Division (IDO), three representatives from Transportation Systems Management and Operations (TSMO), one representative from ADOT Communications, and one representative from the ADOT Multimodal Planning Division (MPD).

1.3 WZSMC Members

The discipline areas that have voting members on the committee are:

1. Committee Chair
2. Construction (IDO)
3. Development (IDO)
4. Districts (IDO)
5. Traffic Standards (IDO)
6. Operational Traffic (TSMO)
7. Traffic Operations Center (TOC) (TSMO)
8. Traffic Safety (TSMO)
9. Communications
10. MPD

All of these representatives are selected by the division/district/group manager responsible for those areas except for the Traffic Standards representative, which is the ADOT Traffic Standards Engineer from IDO Traffic Group. The State Engineer may add or remove voting representatives at any time. The Committee Chair may add or remove voting members, but must initiate a vote and receive a majority of voting members present in favor of that action. If a voting member is unable to attend a committee meeting, they may appoint someone to represent them at the meeting. The Committee may appoint non-voting representatives to serve as advisors.

1.4 Committee Chair

The Committee Chair is one of the District Engineers or Development Group Managers and is selected by the State Engineer. The Committee Chair is selected for a two year term as a member of the committee with no limits on the number of consecutive terms.

1.5 Purpose of Committee

The Committee is responsible for the continuous improvement of work zone safety and mobility, primary responsibilities include:

1. Conducting and delivering the biennial Work Zone Safety and Mobility Process review and implementing recommendations.
2. Updating the Work Zone Safety and Mobility.
3. Implementing continuous improvements.

These responsibilities are accomplished by:

- Reviewing recent work zone data.
- Identifying and discussing work zone safety and mobility-related issues at a program level.
- Identifying potential improvements.
- Establishing action plans to implement those improvements.
- Empowering Committee members to propose changes to processes, standards, and/or guidelines within their areas through the ADOT Standards Committee process.
- Reviewing work zone practices to evaluate implementation.

1.6 Committee Procedures

The WZSMC's role is to create/update procedures to complete the Work Zone Safety and Mobility Process reviews, update Work Zone Safety and Mobility Policies, Processes, and Procedures and Implementation Guidelines and implement improvements/recommendations. The Committee has also established timeframes for the completion of tasks, including organizing the timing and frequency of committee meetings. The Committee makes decisions based on majority votes. The State Engineer may veto any decisions.

Chapter 2

Work Zone Safety & Mobility Policy

ARIZONA DEPARTMENT OF TRANSPORTATION TRANSPORTATION POLICIES AND PROCEDURES

ENG 07-3 Work Zone Safety and Mobility Policy

Effective: July 1, 2020

Supersedes: ENG 07-3 (March 10,-2017)

Review: March 10, 2022

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2.1 PURPOSE

The purpose of this document is to define the policy requirements and expand on existing guidance and requirements for systematically considering and managing work zone safety and mobility impacts on Arizona Department of Transportation (ADOT) administered projects.

2.2 SCOPE

This policy applies to all construction, maintenance, and procurement projects determined by ADOT to be a *significant project* as defined in this policy.

2.3 AUTHORITY

Current Federal Highway Administration (FHWA) regulations in this area are provided through 23 CFR 630 Subpart J *Work Zone Safety and Mobility Rule* (§630.1002 through §630.1016) and 23 CFR 630 Subpart K *Temporary Traffic Control Devices Rule* (§630.1102 through §630.1110). Arizona Revised Statutes (ARS) §28-332 *Department of Transportation, Jurisdiction, Duties, Divisions* gives ADOT exclusive control and jurisdiction over state highways and routes. ARS §28-652 *State Highway Work Zones; Definition* sets ADOT's authority to adopt standards and specifications for traffic control and mobility in state highway work zones. ARS §28-710 *State Highway Work Zone Safety; Civil Penalty; Fund* allows a civil penalty for exceeding speed limits in work zones when workers are present.

2.4 DEFINITIONS

2.4.1 Incident An Incident is any non-recurring event that causes a reduction of roadway capacity or an abnormal increase in demand. Such events include traffic crashes, disabled vehicles, spilled loads, highway construction and maintenance activities, and special events (e.g., sporting events, concerts, parades).

2.4.2 Mobility As specifically related to work zones, mobility refers to moving road users efficiently through or around a work zone area with minimal delay when compared to travel when no work zone is present, while not compromising the safety of

highway workers or road users. The commonly used performance measures for the assessment of mobility include delay, speed, travel time and queue lengths.

2.4.3 Significant Project A Significant project is one that, alone or in combination with other concurrent projects nearby, is anticipated to cause sustained work zone impacts that are greater than what is considered tolerable based on engineering judgment cooperation with the FHWA. This judgment is based on existing traffic volumes, duration of construction and anticipated impacts to travel time and the surrounding transportation network; these issues are discussed further in the *ADOT Guidelines for Work Zone Safety and Mobility*. In addition, all interstate system projects within the boundaries of a Transportation Management Area that occupy a location for more than three days with either intermittent or continuous lane closures are considered significant.

2.4.4 Transportation Management Area (TMA) Per the Federal Transit Administration (FTA) and FHWA, all urbanized areas with populations greater than 200,000 as determined by the 2010 Census (see <http://www.census.gov/> for more information) are designated as Transportation Management Areas.

2.4.5 Transportation Management Plan (TMP) The Transportation Management Plan outlines the strategies that will be implemented to minimize impacts to the traveling public during construction of a project. The TMP may consist only of a Temporary Traffic Control Plan and Emergency Vehicle Access Plan, and may add a Transportation Operational and Public information components/documents dependent upon if the project is Significant. On Significant projects, the TMP will define the roles and responsibilities of the project stakeholders prior to and during construction.

All projects will include:

1. Temporary Traffic Control Plan (TTC)
2. Emergency Vehicle Access Plan (EVAP)

Significant Projects will also include:

3. Transportation Operational (TO) component
4. Public Information (PI) component

2.4.6 Work Zone Safety Minimizing potential hazards to road users and highway workers in the vicinity of a work zone, defines Work Zone Safety. Measures for highway safety are the number of crashes or the consequences of crashes (fatalities and injuries) at a given location or along a section of highway during a period of time.

2.5 POLICY

ADOT will :

- A. Assess work zone impacts during project development and manage safety and mobility during project implementation as outlined in these procedures.
- B. Use field observations, work zone crash data, public feedback and operational information to manage work zone impacts for specific projects during implementation to continually pursue improvement of

work zone safety and mobility by analyzing work zone crash and operational data from multiple projects to improve State processes and procedures.

- C. Require competent personnel for the development, design, implementation, operation, inspection, and management of work zones and traffic control appropriate to their job decision-making authority. Competency may include professional registration and experience in accordance with ARS and the Arizona Board of Technical Registration (BTR) Rules or a combination of education, experience and specialized training, such as courses taken through the National Highway Institute or the American Traffic Safety Services Association. Enforcement duties shall be restricted to sworn officers in accordance with ARS §38-1101.
- D. Perform a process review every two years to evaluate and improve work zone processes and procedures with the intent to increase safety and mobility. Process reviews may include, at a minimum, evaluation of work zone crash data, review of public feedback, and a review of randomly selected Significant projects and that may involve project personnel from different project development stages, FHWA representatives and outside stakeholders.
- E. Identify a project as a Significant project before scoping is complete. This determination is based on a project's characteristics and the magnitude and extent of the anticipated work zone impacts
- F. Develop TMPs in consultation with stakeholders as determined by the project characteristics and the traffic control requirements identified for the project.
 1. For **significant projects**, the TMP should include:
 - a. A TTC describing measures designed to facilitate road users' travel through the work zone. The plan must be consistent with Part 6 of the Manual on Uniform Traffic Control Devices (MUTCD), the Arizona Supplement to the MUTCD, ADOT Traffic Guidelines and Processes, and the ADOT Traffic Control Design Guidelines.
 - b. A TO component that identifies strategies for mitigating the impacts of the work zone on the operation and management of the transportation system. This component may include demand management, corridor/network management, safety management, enforcement and work zone traffic management. Incorporate TTC using Integrated Traffic Systems (ITS).
 - c. A PI component that includes outreach and communication strategies designed to inform the traveling public, area residences and businesses, appropriate public entities and other stakeholders about the project and the expected work zone impacts. The selected communication method(s) should convey information including project characteristics, expected impacts and duration, closure details and commuter alternatives. Information should be updated as needed to reflect changing conditions.
 - d. An EVAP, which must be included in the TMP in accordance with ARS §28-332 *Department of Transportation Jurisdiction; Duties; Divisions* and §28-652 *State Highway Work Zones*;

Definition. The EVAP will be established in consultation with, and will be communicated to, area law enforcement agencies and emergency responders

2. For projects that are not designated as significant, the TMP may consist of a TTC and EVAP only. However, addressing traffic operations and public information in the plan should also be considered.
- G. Develop Plans, Specifications, and Estimates (PS&E) that include a TMP or provisions for contractors to develop a TMP. The PS&E should include appropriate pay item provisions for implementing the TMP through either method-based or performance-based specifications.
 - H. Designate a competent person, in conjunction with the competent person designated by the contractor, who has authority and responsibility for implementing the TMP and other safety and mobility aspects of the project. The competent person selected must be approved by the ADOT Engineer.
 - I. Monitor work zone impacts during construction and take corrective action to manage mobility and safety based on criteria such as travel delay, queue lengths and crash occurrences.
 - J. Initiate appropriate incident management procedures to restore the roadway to full capacity after becoming aware of an incident. The ADOT Traffic Operations Center is to respond to incidents and dispatch appropriate teams to manage and clear the incidents in a work zone.

Chapter 3

Significant Project

In compliance with 23 CFR 630 Subpart J, all projects in ADOT's Five-Year Program will be identified as "Significant" or not. If a project is Significant, it will be stated in the project description.

3.1 Definition of a Significant Project:

Per ADOT Work Zone Safety and Mobility Policy (ENG-07) and in compliance with 23 CFR 630 Subpart J, a Significant project is

"...one that, alone or in combination with other concurrent projects nearby, is anticipated to cause sustained work zone impacts that are greater than what is considered tolerable based on engineering judgment and cooperation with the FHWA. This judgment is based on existing traffic volumes, duration of construction and anticipated impacts to travel time and the surrounding transportation network; these issues are discussed further in the ADOT Guidelines for Work Zone Safety and Mobility. In addition, all interstate system projects within the boundaries of a Transportation Management Area that occupy a location for more than three days with either intermittent or continuous lane closures are considered significant."

For an Interstate system project or categories of Interstate system projects that are classified as Significant through the application of this provision, but in the judgment of ADOT they do not cause sustained work zone impacts, ADOT may request from the FHWA, an exception to the requirements triggered by the classification. Exceptions to these provisions may be granted by the FHWA based on ADOT's ability to show that the specific Interstate system project or categories of Interstate system projects do not have sustained work zone impacts.

3.2 ADOT Process for Defining a Significant Project:

The intent of ADOT's Policy is to maintain flexibility in determining if a project is Significant for all projects added to ADOT's Five-Year Program. ADOT identifies upcoming projects that are expected to be Significant as early as possible in the process and in cooperation with FHWA. All projects are continually reevaluated as they move from Pre-Design into the Design, Construction and Maintenance Phases using the Transportation Management Plan Memo.

To better anticipate the impacts associated with individual projects every project will require a Transportation Management Plan (TMP). The Transportation Management Plan outlines the strategies that will be implemented to minimize impacts to the traveling public during construction of a project. The TMP may consist only of a TTC and EVAP, and may add Transportation Operational (TO) and Public Information (PI) components/documents if the project is Significant. On Significant projects, the TMP will define the roles and responsibilities of the project stakeholders prior to and during construction.

Significant Projects will include:

1. TTC
2. EVAP
3. TO component
4. PI component

Significant Projects: Significant projects have a high level of public interest and will likely impact a large number of travelers. This impact must be analyzed individually and also in combination with concurrent active projects. It will have moderate to high user-cost impacts and the duration is usually moderate to long. These characteristics create work zone impacts that fall outside of the typical work zone safety and mobility thresholds. Examples of this work type may include major corridor reconstruction, high impact intersection reconstruction, full closures on high volume facilities, major bridge reconstruction or repair, repaving projects that require long term lane closures, etc. It is important to note that Significant projects are unique in that they have considerable impacts to areas outside of the project area as well as the surrounding community.

A project is always Significant if the following three criteria are met:

1. It is on an Interstate
2. In a Transportation Management Area (TMA)
3. Lane closures for three or more days (can be intermittent)

ADOT or the FHWA can designate a project as Significant based on engineering judgment (e.g. I-15 in the Virgin River Gorge).

Chapter 4

WZSM Process, Guideline and Procedure

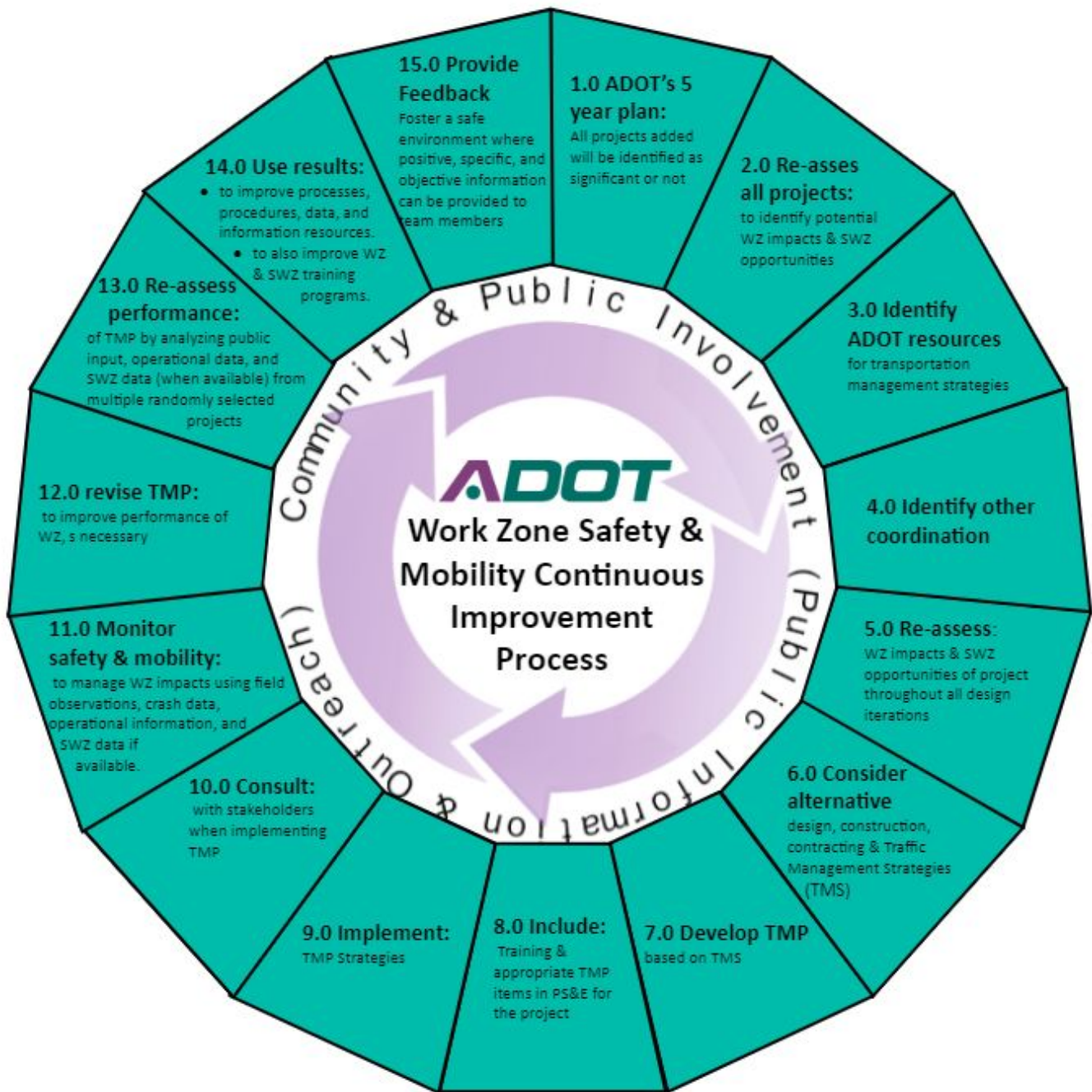


Figure 4a: ADOT's process for the identification, assessment, implementation and re-assessment of WZSM.

Table 4 WZSM Process, Guideline and Procedure	
Process Owner(s): MPD, Communications, IDO, and TSMO	Date and Revision: August 2020 Version 4.0
Activity	Tasks/Key Actions
<p>4.1 All Projects added to ADOT’s Five Year Program will be identified as Significant or not.</p> <p><u>Responsible:</u> MPD, Communications, Pre-Design and IDO/TSMO Leadership Team</p>	<p>Projects added to ADOT’s Five-Year Program will be identified as Significant or not.</p> <p>Projects within a TMA and an access controlled divided highway will be marked as "Significant for WZSM" and will include the conception of a four part TMP during the scope of the project. Additionally all Projects:</p> <ul style="list-style-type: none"> ● within the Central District ● on US60 from Superior to Miami (MP 227 to 242) ● on US60 from Chrysofile Road to Gila County/Navajo County line (MP 283 to 317) ● on US70 from Peridot to Gila River (MP 273 to 292) ● anywhere on I-10, I-17, I-19 and I-15 ● on I-40 in Flagstaff <p>The two additional parts of the TMP can be removed at a later stage if the project team deems that the project is not a Significant project.</p> <p>This will be designated in the Pre-Design Scoping document in Activity 2.0. Projects will be continually re-assessed throughout Pre-Design, Design, Construction and Maintenance for Work Zone Safety & Mobility issues.</p> <p>Review of Work Zone Impact will be included in the Stages Checklist; including a Traffic Management Plan Memo.</p>
<p>4.2 Re-Assess all Significant Projects to identify potential work zone impacts and Smart Work Zone opportunities</p> <p><u>Responsible:</u> Pre-Design, PMG, Traffic Engineering, Districts, Operational Traffic and Communications</p>	<p>The Project Manager needs to coordinate with Contracts and Specifications, Traffic Engineering, TSMO Operational Traffic and Communications Office at each phase of the project.</p>

Table 4 WZSM Process, Guideline and Procedure (continued...)	
Process Owner(s): MPD, Communications, IDO, and TSMO	Date and Revision: June 2020 Version 4.0
Activity	Tasks/Key Actions
<p>4.3 Identify ADOT resources for Transportation Management Strategies (TMS)</p> <p><u>Responsible:</u> Pre-Design, PMG, Traffic Engineering, Districts, Operational Traffic, Communications, Environmental, Local Governments, IPA and IGA</p>	<p>Starting from typical ADOT strategies in limiting traffic restrictions, closures and closure times, examine contract acceleration and construction phasing. Communication is at the same time identifying Public Notice and feedback strategies.</p> <p>Environmental strategies (Hazard Identification and Reduction plans) are developed to eliminate hazards such as; vehicle collisions with wildlife, tree removal, etc.</p>
<p>4.4 Identify other coordination needs</p> <p><u>Responsible:</u> Pre-Design, PMG, Traffic Engineering, Districts, Operational Traffic, Communications, Environmental, Local Governments, U&RR, IPA and IGA</p>	<ul style="list-style-type: none"> ● Utility and Railroads (U&RR) ● Enforcement (Uniformed Law Enforcement/DPS) ● Local Government coordination ● Environmental strategies ● Contact all affected first responders including Fire and Ambulance services and potentially towing services ● Develop EVAP concepts
<p>4.5 Re-Assess WZ impacts and SWZ opportunities of the project throughout all design iterations</p> <p><u>Responsible:</u> Pre-Design, PMG, Traffic Engineering, Districts, Operational Traffic and Communications</p>	<p>This re-assessment should be completed at all phases of the project starting with Pre-Design, Traffic Engineering, Construction and Maintenance (Districts), and Operational Traffic. Review of Work Zone Impact, SWZ opportunities, and EVAP concepts will be included in the Stages Checklist; including a Traffic Management Plan Memo identified at Stage 1 and updated as necessary during each successive design phase.</p>
<p>4.6 Consider alternative design, construction, contracting and TMS</p> <p><u>Responsible:</u> PMG, Traffic Engineering, Districts and Operational Traffic</p>	<ul style="list-style-type: none"> ● Design continues coordination as in Pre-Design ● Update TMP Memo to reflect any changes

Table 4 WZSM Process, Guideline and Procedure (continued...)	
Process Owner(s): MPD, Communications, IDO and TSMO	
Date and Revision: September 2020 Version 4.0	
Activity	Tasks/Key Actions
<p>4.7 Develop TMP based on TMS</p> <p><u>Responsible:</u> PMG, Traffic Engineering, Districts, Operational Traffic, Communications and Traffic Operations Center</p>	<ul style="list-style-type: none"> Develop TMP for contract documents from TMP Memo. <p>All projects will include:</p> <ol style="list-style-type: none"> TTC EVAP <p>Significant Projects will also include:</p> <ol style="list-style-type: none"> TO component PI component
<p>4.8 Include Training and appropriate TMP items in PS&E for the project</p> <p><u>Responsible:</u> PMG, C&S, LTAP, Traffic Engineering, Districts, Operational Traffic, Communications and Traffic Operations Center</p>	<ul style="list-style-type: none"> Training on new technologies should be a continued practice that is renewed as technology changes. PMG should plan for enough budget in CE costs for the Districts and Operational Traffic to effectively review and participate with the operational component aspect of the project. Likewise, PMG should include enough budget for Communications to perform their required tasks. Smart Work Zone items and specifications should always be included on Significant projects.
<p>4.9 Implement TMP strategies</p> <p><u>Responsible:</u> Districts and Communications</p>	<ul style="list-style-type: none"> Reference TMP Project Specifications in the Contract and the Project Plans. Hold periodic meetings with Stakeholders as specified.
<p>4.10 Consult with stakeholders when implementing TMP</p> <p><u>Responsible:</u> Districts and Communications</p>	<p>ADOT hosts TSM and ESM meetings with Contractors, TOC , Operational Traffic and Safety, ADOT Technical staff, PM’s, Traffic Engineering, Local Government, Schools, Hospitals, Uniformed Law Enforcement/DPS, Fire, Ambulance services and any other previously identified stakeholders.</p>
<p>4.11 Monitor safety and mobility to manage WZ impact</p> <p><u>Responsible:</u> Districts, Communications and Traffic Safety</p>	<ul style="list-style-type: none"> Monitor safety and mobility to manage WZ impacts using field observations, crash data, operational information and SWZ data, if available. Solicit community feedback.

Table 4 WZSM Process, Guideline and Procedure (continued...)	
Process Owner(s): MPD, Communications, IDO and TSMO	Date and Revision: September 2020 Version 4.0
Activity	Tasks/Key Actions
<p>4.12 As necessary, revise TMP to improve performance of WZ, as necessary</p> <p><u>Responsible:</u> Traffic Engineering, Districts, Operational Traffic and Communications</p>	<p>ADOT uses community input, operational data and crash reports (done by RE's) to determine if any changes are necessary.</p>
<p>4.13 Monitor safety and mobility to manage WZ impacts using field observations, crash data, operational information and SWZ data if available.</p> <p><u>Responsible:</u> MPD, Pre-Design, PMG, Traffic Engineering, Districts, Operational Traffic and Communications</p>	<p>Use Community feedback and Operational data from multiple randomly selected projects.</p> <p>Conduct Process Reviews as required.</p>
<p>4.14 Use results to improve Work Zone Safety & Mobility</p> <p>MPD, Pre-Design, PMG, Traffic Engineering, Districts, Operational Traffic and Communications</p>	<ul style="list-style-type: none"> ● Eng 07-3 Work Zone Safety & Mobility Policy ● Processes ● Procedures ● SWZ Data and Information resources ● WZ Training programs
<p>4.15 Provide Feedback</p> <p>MPD, Pre-Design, PMG, Traffic Engineering, Districts, Operational Traffic, and Communications, Partnering Office.</p>	<p>Foster a safe environment where positive, specific and objective information can be provided to team members in an effort to continually improve our process.</p> <ul style="list-style-type: none"> ● Hold facilitated lessons learned workshops on all Significant Projects upon project completion.

Chapter 5

Transportation Management Plans (TMP)

TMP's are strategies/methodologies that will be implemented to manage mobility and ensure a safe work zone in and around transportation projects. The project's classification as Significant or not will determine what is required for the TMP.

To better anticipate the impacts associated with individual projects every project will require a TMP. A TMP memo will be initially submitted for all projects at Stage 1 in the development process and then updated as needed at each successive submittal to re-assess work zone impacts. The TMP memo will guide the project team on what should be included in the contract documents for the contractor and what is expected from ADOT during the project's construction. The TMP memo is a "dynamic document" that will be maintained and revised by the project team as project development progresses. As the TMP evolves, it is important to reassess the management strategies to confirm that the work zone impacts are addressed and the necessary funding is available.

5.1 All projects will include a TMP that consist of at least:

1. TTC: A TTC plan describes temporary traffic control measures to be used for facilitating road users through a work zone or an incident area. The TTC plan plays a vital role in providing continuity of reasonably safe and efficient road user flow and highway worker safety when a work zone, incident or other event temporarily disrupts normal road user flow. The TTC plan shall be consistent with the provisions of the ADOT State Supplement of the MUTCD and AASHTO Roadside Design Guide. The Traffic Control Design Guide is intended to provide design guidelines for the State of Arizona Highway System and should be used in addition to the ADOT State Supplement of the MUTCD. IDO Traffic Engineering Group is ultimately responsible for developing the temporary traffic control plans for inclusion within the TMP.
2. EVAP: Pursuant to ARS 28-652 Part C: For projects requiring a traffic management plan (all projects) the standards and specifications for work zone safety and mobility adopted will provide for consultation with stakeholders, including area law enforcement and emergency responders. ADOT will establish an EVAP emergency vehicle access plan as part of the TMP in consultation with area law enforcement and emergency responders and communicate the EVAP to area law enforcement and emergency responders by electronic mail, fax or other effective means. IDO Traffic Engineering Group is ultimately responsible for developing the TTC temporary traffic control plans for inclusion within the TMP, but will consult with the Traffic Operations Center.

5.2 For Significant projects the TMP will also include:

3. TO component: The TO component shall include the identification of strategies to mitigate impacts of the work zone on the operation of the transportation system within the work zone impact area. The work zone impact area consists of the immediate work zone as well as affects to the surrounding roadways and communities. TSMO OTAS is ultimately responsible for developing transportation operations plans for inclusion within the TMP.

4. PI component: The PI component shall include communication strategies that seek to inform the general public of work zone impacts and the changing condition of the project. The general public may include road users, area residences and businesses, and other public entities. Communications is ultimately responsible for developing public information and outreach plans for inclusion within the TMP.

Even though a group within ADOT is listed as “ultimately responsible” for different parts of the TMP, the appropriate counterpart on a consultant designed project will develop these plans and only consult with the ADOT Group as needed.

Chapter 6

Work Zone Impact Assessment

6.1 Work Zone Impact Assessment Tools

The work zone impact assessment is a process for understanding the safety and mobility impacts of road construction/maintenance/rehabilitation projects. For all projects, work zone impacts are continually re-assessed at all stages of the project; including Systems Planning (MPD), Pre-design, Design, Construction and Maintenance.

These stages can be summarized into three types:

1. During project development, the likely work zone impacts are estimated and, where possible, mitigated.
2. During construction, the TMP is implemented and the actual impacts are gauged against what was expected. If actual impacts are greater than allowable, alternative work zone strategies may be implemented.
3. Following project completion an assessment is helpful to determine what worked and what did not. The results of the assessment should be used to improve future TMPs.

Factors that will influence the level of impact in a work zone include traffic conditions and characteristics, project characteristics, geographic/physical features and aspects of the surrounding area (e.g., alternate routes, nearby businesses).

Work zones can cause a variety of impacts that affect different stakeholders.

Worker safety is critical since workers are subject to the direct dangers of moving traffic. Motorist safety is critical as drivers are subjected to unfamiliar driving conditions in work zones. Work zone capacity reductions impact the mobility of traffic, including freight, leading to queues and delays that can reduce mobility.

The transportation network is impacted when a work zone can't serve all the demand, or detours traffic to surrounding roads. Depending on the location, size and complexity of a project, a work zone can also impact the access, mobility and safety of pedestrians, bicyclists, transit users, and business and property owners, as well as emergency services.

Environmental Impacts like noise and dust can be a primary concern as they tend to generate complaints from the public.

A work zone impacts assessment should consider all the potential impacts.



Figure 6.1a: Types of Work Zone Impacts

Beginning work zone impacts assessment early in the life of a project can significantly increase the chances of successful traffic management for the project.

An assessment of work zone impacts during the early planning stages of the project will help identify issues or uncover problem areas that should be considered during project development. This provides ADOT with an opportunity to evaluate the work zone impacts along with the design alternatives analysis,

which can lead to the selection of a design alternative that alleviates many of the work zone impacts. This also helps to allocate adequate funding in the project budget for TMP implementation.

Start impacts assessment early in project development to to:

- Identify issues/problem areas
- Consider WZ impacts in design alternative analysis
- Ensure MOT alternatives analysis is done along design alternatives analysis
- Choose a design alternative that alleviates many WZ impacts
- Ensure TMP development and implementation costs are included in the project budget

It is difficult to change options at a later stage due to issues such as:

- Affecting the chosen preferred alternative
- Environmental impact study already done
- Need for additional analysis
- May incur additional costs

There are four general steps in assessing the impacts of work zones during the project development stages. These steps lead to identifying strategies for the TMP:

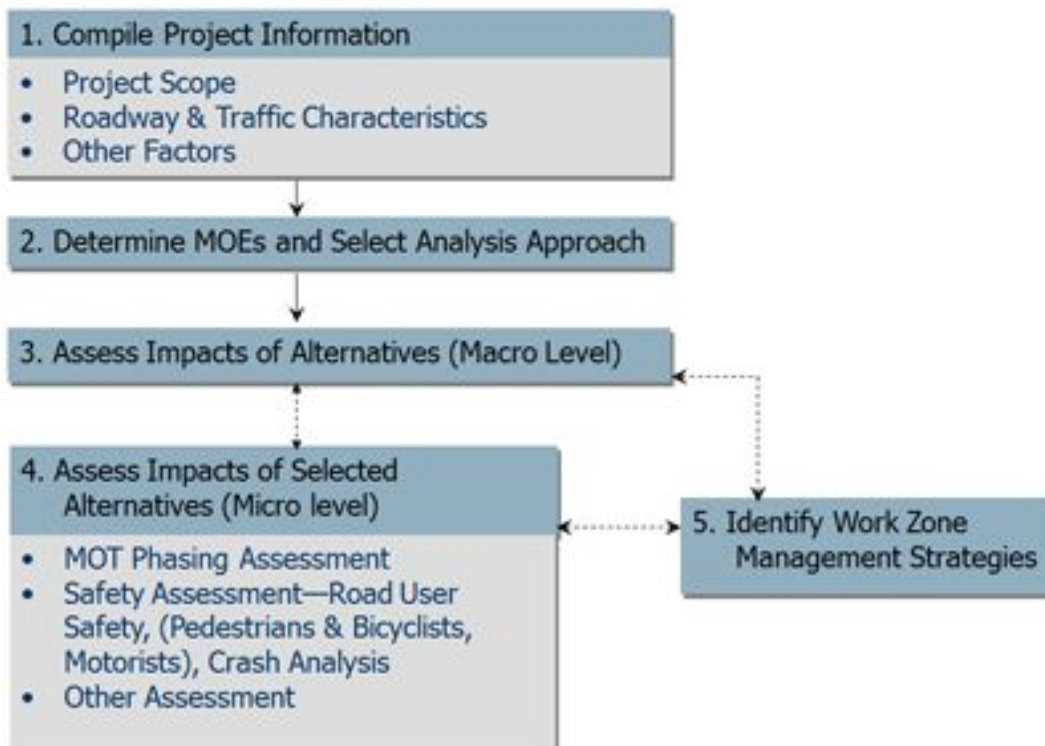


Figure 6.1b: Work Zone Impact Assessment Process

Work zone impacts assessment leads to identification and understanding of potential impacts, brings work zone considerations into project alternatives analysis, enables more effective selection of TMP

strategies to manage impacts, provides information for a more accurate cost estimate, and targets resources to projects with the greatest need.

6.2 INCIDENT MANAGEMENT

A highway incident is any non-recurring event (such as a vehicle crash, a vehicle breakdown, or a special event) that causes a reduction in roadway capacity or an abnormal increase in traffic demand that disrupts the normal operation of the transportation system. Most highway incidents are random events that occur with little or no advance warning. They can vary widely in terms of severity, ranging from a minor crash involving a single response agency (such as law enforcement) to a natural disaster or other catastrophe requiring a multi-agency response from multiple jurisdictions and disciplines. Incidents are a major source of congestion on the roadway system and can contribute to problems away from the actual incident scene (for example, secondary crashes caused due to unexpected congestion).

Traffic Incident Management (TIM) is defined as the coordinated, preplanned use of technology, processes, and procedures to reduce the duration and impact of incidents, and to improve the safety of motorists, crash victims, and incident responders. Specifically, TIM involves the use of technology, procedures, and processes to accomplish the following:

- Reduce the amount of time to detect and verify that an incident has occurred,
- Shorten the time required for appropriate response personnel and equipment to respond to the scene,
- Facilitate the management of response apparatus and personnel on site so as to minimize the amount of capacity lost due to the incident and the response equipment,
- Reduce the amount of time required to clear the incident from the travel lanes,
- Provide for the rapid notification of travelers upstream of the incident so as to encourage a reduction in traffic demand entering the incident area and to reduce driver frustration.

TIMs are successful when they are built on a foundation of cooperation and collaboration. When planning or organizing a construction project, it is essential that work zone planners and construction personnel coordinate with the incident responders in the area. This includes identifying and meeting with agencies to discuss current response policies, procedures and practices.

To improve the nation's preparedness to respond to incidents of all magnitudes, the Department of Homeland Security has developed the National Incident Management System (NIMS). NIMS was developed so responders from different jurisdictions and disciplines can work together better to respond to natural disasters and emergencies. Part of the NIMS structure involves the use of the Incident Command System (ICS). ICS is a systematic tool used for the command, control and coordination of an emergency response. It is designed to facilitate agencies working closely together through the use of common terminology and operating procedures to control personnel, facilities, equipment and communications at a single incident scene. The guiding concepts and principles of ICS are as follows:

- Most incidents are managed locally by local agencies to provide a coordinated, cooperative response.
- The field command and management functions should be performed in accordance with a standard set of ICS organizations, doctrine and procedures.
- ICS is modular and scalable so that responses can be adapted as situation, technology, size and complexity of the incident changes.
- All components of the response are managed interactively in a coordinated manner.
- ICS establishes common terminology, standard, and procedures that enable diverse organizations to work together effectively.
- Incidents are managed by objectives, which are measurable and begin at the top and are communicated throughout the entire response.
- Implementation of ICS should have the least amount of disruption of existing systems and processes as possible.
- ICS should be user friendly and be applicable across a wide spectrum of emergency response and incident management disciplines.

The overwhelming majority of highway incidents do not require the formal implementation of the ICS. Instead, most highway incidents involve just law enforcement or highway personnel and a tow truck. In these situations, there is usually no need for the organization and command structure of the ICS. Only when traffic incidents are large and more complex does the ICS become necessary because of the need for multiple responders from multiple agencies. In these situations, it is critical for work zone planners and construction personnel to understand what the ICS is and how emergency responders use the ICS to manage all types of incidents, not just highway traffic incidents.

The term Unified Command (UC) is used to define the application of ICS when there is more than one agency with incident jurisdiction or when an incident crosses political jurisdictions. In situations where an incident crosses multiple jurisdictions or in the case where multiple agencies have jurisdiction over the same incident (for example, a wreck with injuries or fatalities), unified command allows all agencies that have statutory authority for an incident to jointly participate in the development of the overall response strategy.

More information on the ICS and its application to highway incidents, can be found in *Simplified Guide to the Incident Command System for Transportation Professionals*.

The process to be used to develop a TIM program for a particular construction or maintenance project is not unlike the process used to develop a traditional incident management program. What is different about the TIM program for a construction or maintenance program is who commonly initiates the development process – the construction project manager or the contractor. This process needs to begin at the very early planning stages of the project, predominantly well before traditional incident responders are aware that the project is going to be let. Work zone and construction planners need to first assess if there is a need to implement special incident management procedures with a particular work zone.

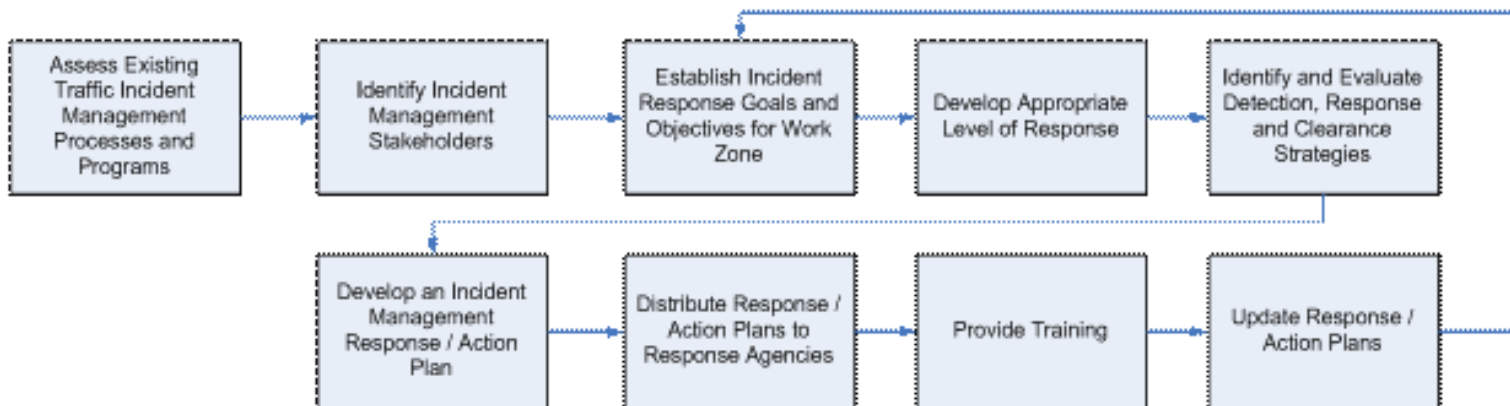


Figure 6.2a: Process for Planning Traffic Incident Management for Highway Work Zones

In many locations throughout the United States, comprehensive incident management programs and processes already exist; therefore, the first step in developing a TIM program for a specific construction or maintenance project is to determine and assess what incident management processes and procedures already exist in the area where the work zone will be in effect. In many cases, it may be wasteful and counterproductive to develop new and different response procedures. Work zone planners need to first check to see if the project lies within the boundaries and jurisdiction of any existing incident management program. If it does, work zone planners and contractors need to coordinate with appropriate response and traffic operations personnel to determine if the existing processes and procedures are adequate for the project. Together, these agencies can identify those changes, additions and modifications to the existing procedures and responses that may be needed to accommodate the project. In the situation where existing TIM practices and procedures are already in place, at a minimum, work zone planners should contact appropriate response agencies in the corridor to discuss issues and concerns about managing incidents in the proposed work zone and agree upon the procedures and strategies that will be implemented to support TIM in the work zone. On more complex projects, it is necessary for the work zone planner, project administrators and construction personnel to become active partners in the existing incident management program for the duration of the project. On projects with multiple phases, it may be necessary to develop a plan for each phase of the project.

If the proposed project lies outside the jurisdiction of any existing TIM program, it may be necessary for work zone planners and contractors to identify, develop, and deploy TIM strategies that are appropriate for the type and level of work zone. In most regions, multiple agencies are involved in the TIM process. At a minimum, work zone planners and contractors should meet with key incident response agencies to discuss how the project will impact TIM responses. The following is a list of potential agencies and organizations that are traditionally involved in the development of TIM programs in a region:

- Federal, state and local transportation agencies
- State and local law enforcement personnel
- Public and volunteer fire and rescue agencies
- Regional, county or local 911 dispatch
- Towing and recovery providers
- Emergency medical service providers
- State and local hazardous material recovery personnel
- Media
- Other response personnel (as defined by the project area), including state and local offices of emergency management, coroner's office, etc.

Work zone planners and contractors must be aware that multiple agencies may have jurisdiction over incident responses within the limit of a construction project. It is not uncommon for multiple police, fire and rescue and emergency service providers to have incident management responsibilities on a given highway. Work zone planners need to make sure that all appropriate incident responders are identified for any given project.

Agencies have at their disposal a large number of strategies, technologies, techniques and procedures for providing incident management in work zones; however, not all are appropriate for every work zone situation or incident scenario. Each strategy, technology and procedure needs to be evaluated within the context of project needs and duration, the infrastructure requirements, the level of cooperation and coordination between incident responders, and the costs and perceived effectiveness of the strategy. Some strategies are needed to provide a solid foundation for other strategies, while other strategies are more appropriate when the work zone project is expected to impact traffic operation for extended periods (years, for example). Agencies need to carefully evaluate each strategy and incident scenario and determine the appropriate level of response for each type of incident. Agencies also need a realistic assessment of the likelihood that an incident of major severity may occur when the work zone is in effect.

Agencies need to keep in mind that all incident situations are not the same and that not all incidents require or mandate the same level of response. Recognizing this fact, the *Manual on Uniform Traffic Control Devices 11* divides incidents into three general classes based on duration, each of which has unique traffic control characteristics and needs. These classes are as follows:

- Major – typically traffic incidents involving hazardous materials, fatal traffic crashes involving numerous vehicles and other natural or man-made disasters. These traffic incidents typically involve closing all or part of a roadway facility for a period exceeding 2 hours.
- Intermediate – typically affect travel lanes for a time period of 30 minutes to 2 hours, and usually require traffic control on the scene to divert road users past the blockage. Full roadway closures might be needed for short periods during traffic incident clearance to allow traffic incident responders to accomplish their tasks.
- Minor – typically disabled vehicles and minor crashes that result in lane closures of less than 30 minutes. On-scene responders are typically law enforcement and towing companies and occasionally highway agency service patrol vehicles. Diversion of traffic into other lanes is often not needed or is needed only briefly. It is not generally possible or practical to set up a lane closure with traffic control devices for a minor traffic incident. Traffic control is the responsibility of on-scene responders.

Agencies can use these general criteria for classifying incident levels as a beginning point for determining appropriate levels of responses. However, these criteria should be refined to be consistent with agency goals and objectives.

One underlying principle of the ICS is that it allows responses to be scaled to the level that is appropriate for the situation and existing conditions. An initial small response can be transitioned to a large, multi-agency operation with only minimal adjustment for the agencies involved.

Once the appropriate level of response has been determined for the work zone, the next step in the process is to identify and evaluate candidate strategies for detecting, responding to, and clearing incidents from the roadway.

After determining which strategies are appropriate for a particular work zone, agencies then need to develop criteria and conditions for when and how these responses should be executed. This is typically called a response or action plan. The response or action plan lays out the conditions and criteria for what types of responses are needed for different levels of incidents that might occur in the work zone.

Once the response plans have been developed, the next step in the process is to distribute the response plans to the appropriate response agencies. Because the response plans are usually developed in cooperation and collaboration with emergency responders, dissemination of the plan to the incident responders often occurs naturally, but it is important for traffic operators to ensure that the response/action plan is disseminated to the appropriate response and field personnel. As part of the plan development process, stakeholders should also discuss methods and procedures for distributing and disseminating the response plan to appropriate personnel within their organization—both at the administrative and field personnel levels.

A critical aspect of planning for TIM in work zones is ensuring that emergency response procedures and practices remain valid through all phases of construction. Agencies should also plan to meet routinely to ensure that the important elements of the plan remain valid and up-to-date. On large construction projects, incident responders, transportation agencies and construction personnel should meet routinely throughout the project to review actual responses to incidents that have occurred during the project and update response and communication plans as needed. Response plans often need to be updated and/or revised as conditions, lane closures, and access to the work zone changes. It is essential that incident responders be notified when new conditions might impact response times or access to the site.

Furthermore, response plans may need to be revised based on feedback from the public, agency decision-makers and field personnel. If any part of the response plan or program is revised, it is critical that all responding agencies receive notification of how the established response procedure or access needs have changed. Likewise, incidents that damage the pavement or other infrastructure within the work zone need to be communicated to work zone traffic planners as these may impact or change the construction sequences in the work zone. Good two-way communication between incident responders and construction personnel is critical.

Chapter 7

Work Zone Training

7.1 Work Zone Training

The provision that pertains to training is provided in Section 630.1008(d) of the Rule. This provision:

1. Specifies that agencies require appropriate training for personnel involved in the development, design, implementation, operation, inspection and enforcement of work zone related transportation management and traffic control. Further, the Rule also states that agencies require periodic training updates for these personnel. These periodic training updates are to reflect changing industry practices and agency processes and procedures.
2. Clarifies appropriate training as training that is relevant to the job decisions that each individual is required to make.

ADOT in partnership with the Arizona Chapter of the American Traffic Safety Services Association (ATSSA) developed a two tiered training program for workers, and supervisors and managers:

- TCH1168 ATSSA Workzone Traffic Control Technician
- TCH1167 ATSSA Workzone Traffic Control Supervisor

The partnership also developed a third course for flagging:

- TCH1114 ATSSA Flagger Certified Training.

International Municipal Signal Association(IMSA) work zone safety specialist is equivalent to the ATSSA Traffic Control Technician or Traffic Control Supervisor. ADOT Signals, Lighting and Technical Electrical (SLATE) employees take the IMSA classes, and therefore do not need to take the equivalent ATSSA classes.

Designer Training will be required for those with responsibility or authority to decide on specific maintenance of traffic requirements including the Engineer responsible for work zone traffic control phasing and plans; and Technicians drafting or electronically generating work zone traffic control plans.

ADOT Point of Contact (POC) is:
AZ LTAP Program Manager
602-712-4252

As training courses become available, notice of the new training for Work Zone Safety and Mobility will be distributed to those affected.

ADOT has also partnered with other groups to provide Traffic Incident Management (TIM) training. The Arizona TIM program is made up of a consortium of Federal, State, County, Local Government agencies as well as private industry partners such as tow and utility companies. Although TIM is not focused solely on work zones, when incidents are within a work zone, the trained staff will increase safety and efficiency of those responding

For questions about TIM training, please visit their website @ tim.az.gov

Chapter 8

Process Reviews

8.1 Process Review Stages

The provision that pertains to process reviews is provided in Section 630.1008(e) of the Rule. This provision:

- Requires agencies to perform a process review at least every two years to assess the effectiveness of their work zone safety and mobility procedures.
- Provides two options for ADOT to conduct the process review. The first option is to evaluate work zone data at the ADOT level and the second option is to review randomly selected projects across their jurisdictions. A combination of these approaches can also be used.
- Recommends that appropriate personnel, representing the project development stages and various divisions within ADOT, as well as the FHWA, participate in the process reviews.
- Allows the participation of other non-ADOT stakeholders in the reviews as appropriate.
- Explains that the process review results are intended to lead to improvements in ADOT work zone processes and procedures, data and information resources and training programs that ultimately enhance efforts to address safety and mobility on current and future projects.

Periodic evaluation of work zone policies, processes, procedures and work zone impacts aid in addressing and managing the safety and mobility impacts of work zones. Reviews help assess the effectiveness of a program and its processes and procedures, enabling ADOT and respective FHWA Division Office to confirm that an issue does not exist and to make recommendations to improve situations where shortcomings might exist.



Figure 8.1a: Process review stages

8.2 ADOT's approach for FHWA Work Zone Self Assessment

To help evaluate work zone practices, ADOT uses the Work Zone Safety & Mobility Self Assessment Tool (WZSM-SAT). The WZSM-SAT consists of 46 questions designed to assist with work zone management responsibilities, assessing our programs, policies and procedures against other work zone practices used.

Modeled after the AASHTO Systems Operations and Maintenance guidance, this tool assesses work zone management capability in the same six dimensions — Business Processes, Systems and Technology, Culture, Organization and Workforce, Performance Measurement and Collaboration. However, in this tool, work zone management is viewed as a subset of the larger TSMO program. The capability levels and the actions are more focused and defined from a traffic manager's perspective. The actions may require other agencies to be the responsible party, which is intended to foster multi-agency collaboration and dialogue about work zone management at the regional level. Users that take this assessment are encouraged to share this tool with agencies that they collaborate and work with on work zone management of their respective agency's transportation systems.

A. **8.2.1 Assemble a multi-disciplinary team.**

There are several groups, teams, or divisions responsible for carrying out a program or operation. It is important that these different perspectives are represented in a process review team. A practice that works well for one unit may cause difficulties for the other units (e.g., decisions made independently by the design unit could make development of effective TMP's or traffic control plans problematic for the traffic engineers). Or a step taken by one unit might be more effective if taken earlier in the process by another unit (e.g., identifying significant projects). The appropriate personnel, who represent the various project development stages and the different offices within ADOT, as well as the FHWA, should participate in the process reviews. Non-ADOT stakeholders should be invited to participate in the reviews, as appropriate. They can provide a useful perspective and may have insights that ADOT personnel are not in a position to see.

The maximum effective team size is generally around eight people. If the team is too large, the participation of some members will likely be limited. Other people can support the review but not be a member of the core review team. For example, the review team may interview other stakeholders on specific topics of interest or make use of data collected by others.

B. **8.2.2 Develop a review plan**

Preparing a review plan can be helpful to ensure that all team members have a common understanding and remain focused on the scope of the review. What needs to be considered to plan for a review?

- a. Purpose
- b. Function/processes reviewed
- c. Expected results
- d. Information needed
 - i. What do we know now?

- ii. Gaps in information and possible sources
 - e. Team members and roles
 - f. Schedule and resources
 - a. **8.2.2.1 Purpose:** Having a clear purpose and scope for the review and an agreed upon set of objectives is vital to the success of a review.
 - b. **8.2.2.2 Function/processes reviewed:** The review should identify the limits to ensure it remains focused on the key processes and should specify the timeframe to be covered by the review (e.g., the most recent two years). ADOT and the FHWA Division Office generally work together to identify the review, based on the Stewardship Agreement and a risk assessment.
 - c. **8.2.2.3 Expected results:** The process review should have clear and concise goals that define what the review is trying to accomplish and identify the expected results and performance metrics. The review team should base the selection of topics on opportunities for improvement and consider a fairly uniform distribution of review topics among the various program areas to serve the desired purpose.
 - d. **8.2.2.4 Data needed:** Data for review should come from a variety of sources. After determining the type of data the review team needs, it should next assess what information is already available and identify what needs to be generated. Data sources may include field data collection, data records (e.g., crash reports), project logs, and interviews with key stakeholders, post-construction reports and other sources. This may include:
 - Collection of data including project related information as well as public and stakeholder perception.
 - Synthesis and analysis of data at multiple levels (project, local, regional, State and national) and comparison of findings to performance metrics.
 - Application of the analysis results toward continually improving work zone practices, policies, processes and procedures.
 - e. **8.2.2.5 Team members and roles:** The team members should know their roles, limitations and authority.
 - f. **8.2.2.6 Schedule and resources:** The review team should identify target dates for conducting the review and presenting the results, as well as the resources available for the review. Resources should include staff time and expertise, data availability and budget.
- C. **8.2.3 Conduct review**
- This step involves carrying out the review plan developed by the team. The review team leader should designate appropriate assignments to the team members to promote active participation

by everyone. It is valuable to document the steps taken and data collected during the planning phase to have a good basis for any conclusions reached and recommendations made.

D. 8.2.4 Analyze and Interpret results

In this step, the team should compile and analyze the collected data and compare the results with the stated goals of the processes and functions being reviewed to identify the gaps and problem areas. If the goals are not being met in certain areas, then the analysis should attempt to identify the “root cause.” It is valuable to identify the “root cause(s)” as much as possible, rather than focusing on the symptoms and how to treat them.

E. 8.2.5 Develop inferences, recommendations

Once the root causes of problem areas or gaps are identified, the team needs to develop recommended improvements targeting these areas. The team may find it helpful to brainstorm solutions or conduct follow-up interviews to identify or assess alternatives for improvements.

During the review, the team may also identify weaknesses, as well as best practices that should be documented in the findings. Documenting best practices is an opportunity to give credit for good things that are discovered, can help build rapport with partners and may lead to solutions that can be shared.

Recommendations/solutions should be:

- Conceivable
- Achievable
- Valuable
- Manageable
- Constructive

F. 8.2.6 Prioritize recommendations

The team should suggest a prioritization to the recommendations based on several considerations, including the amount of influence the recommendation will have on the desired outcomes and ability to implement it.

G. 8.2.7 Present the findings from the review

A close-out meeting should be held with the non-ADOT stakeholders to present the findings and receive feedback. The review team should provide a brief overview of the process followed; the information considered and the basis for each recommendation. The review team should be prepared to support its findings and may encounter the need to defend the recommendations.

H. 8.2.8 Apply recommendations and lessons learned

Based on the team’s findings, proposed recommendations and the feedback during the closeout meeting, the team should develop an action plan that identifies the actions, responsible parties, timeframe for implementation and expected outcomes. The results of the review and carrying out the action plan should lead to improvements in ADOT policies, processes and procedures.

8.3 Work Zone Crash Review

When a work zone experiences a significant crash or a pattern of vehicular crashes, a Work Zone review is performed by the RE and the Regional Traffic Engineer. It shall review the adequacy of the existing Traffic Control Plan (TCP) and consider refinements and / or alternative traffic control. At a minimum it shall include:

- 1) A site visit
- 2) A review of police crash reports (if available)
- 3) Interviews with the construction staff and contractor
- 4) Collaboration with the Roadway & Traffic Design Engineers/ District staff / Traffic Safety / Regional Traffic Operations.

When the review is complete, a report containing recommended changes (if any) is sent to the Regional Traffic Engineer (RTE) and District Engineer (DE) for review. The intent is a timely review to implement changes as necessary, not the creation of a lengthy or formal report – the use of email is encouraged.

If change(s) are implemented, changes to contract documents shall be made in accordance with the Standard Specifications. A paper copy of the report / email shall be filed with project records.

- Each project will conduct process reviews, similar to the crash review, to examine adjustments to traffic management strategies when the TCP is not meeting desired outcomes.
- Mitigation / changes to the TCP are then agreed to and implemented, by the appropriate RTE and DE.

Chapter 9

Compliance with 23 CFR630 Subpart K

9.1 ADOT Compliance with Subpart K (Traffic Control Devices)			
Category	Use	Status & Location	Responsible
Positive Protection Devices	Based on an Engineering Study (ADOT-wide or to determine measures to be applied on an individual project)	Addressed in Traffic Control Design Guidelines and Standard drawings	Traffic Engineering Group & OTAS
Exposure Control Measures	Considered to avoid or minimize exposure for workers & road users (Full road closures, ramp closures, median crossovers & night work)	Addressed in Traffic Control Design Guidelines and Standard drawings Valley Transportation White Paper on lane closure	Traffic Engineering Group & OTAS
Other Traffic Control Measures	Considered to reduce work zone crashes, risks & consequences of intrusions into the work space	Addressed in Traffic Control Design Guidelines	Traffic Engineering Group & OTAS
Uniformed Law Enforcement/DPS	Develop Guidelines and Procedures	See: Construction Bulletins	Construction Group
Safe Entry/Exit for Work Vehicles	Develop Guidelines and Procedures	Being Developed Traffic Control Design Guidelines	Traffic Engineering Group & OTAS

9.1 ADOT Compliance with Subpart K (Traffic Control Devices)(continued...)			
Category	Use	Status & Location	Responsible
Payment for Traffic Control Features & Operations	Incidental to the contract or included in payment of work unrelated to traffic control and safety	Standard Specifications/Special Provisions Bid Tabs	Contract & Specifications (C&S)
Quality Guidelines	Maintain quality & adequacy of TCC devices during project	Quantlists See: Construction Bulletins	Construction Operations