

# **Montana Department of Transportation**

## **Work Zone Safety and Mobility Goals and Objectives, Guidelines, Procedures, and Processes**

**Revised May 2015**



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**Throughout this Document, references are made to the Work Zone Safety and Mobility Toolbox, within MDT’s Vision Zero Website. Please refer to this link for additional information, documents, and guidance. The external link can be found at:**

<http://www.mdt.mt.gov/visionzero/people/workzone-mobility.shtml>

## **INTRODUCTION**

The Montana Department of Transportation (MDT) Work Zone Safety and Mobility Policy, as written in Memo dated, February 12, 2015, provides an opportunity to increase safety for MDT employees, construction workers, and the public while improving the mobility of the traveling public and our goods and services. The following goals and objectives, guidelines, procedures, and processes direct the implementation of this policy.

### ***Vision***

MDT's vision for Work Zone Safety and Mobility is to plan, design, construct, and maintain highway construction zones that optimize work zone safety and road user mobility while minimizing stakeholder and environmental impacts.

### ***Policy***

The MDT will evaluate, design, and ensure the management of construction zone impacts and mitigating measures during planning, project development, construction, and maintenance operations for Federal-aid projects.

### ***Purpose***

The purpose of this document is to implement the Policy to facilitate improved safety and mobility in construction zones by:

- Evaluating construction zone issues and impacts throughout planning and project development,
- Managing construction zones during construction and maintenance operations, and
- Assessing the process for continual improvement and uniformity throughout the State.

### ***Managing Impacts***

The best management practice is to minimize or reduce impacts before they occur. MDT will manage construction zone impacts at the Program and Project level, by using a wide variety of work zone impact management strategies.

Managing impacts at the program level is intended to lead to improvements in MDT construction zone processes and procedures, data and information resources, and training programs that ultimately enhance safety and mobility on current and future projects.

Project level strategies can be used to minimize traffic delays, improve mobility, maintain or improve traveling public and workers safety, complete roadwork in a timely and efficient manner, and maintain access for business and residences. Strategies are listed in MDT's Transportation Management Plan Worksheet and

Help Guide (See Toolbox). Some of the strategies will be applied at the planning or design stage to minimize or eliminate impacts, maximize project efficiency, and possibly reduce overall costs. Other strategies will be applied during project construction.

### ***Document Revision Team***

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## **GOALS AND OBJECTIVES**

**Goal 1: Reduce the number and severity of crashes, injuries and fatalities in construction zones.**

**Objectives:**

- Design a safe environment for the traveling public and workers
- Build and maintain a safe environment for the traveling public and workers
- Assess construction zone crash trends and follow up for future project improvements
- Assess current practices and procedures and adjust as necessary
- Review, evaluate, and document all construction zone fatal crashes

**Performance Indicators:**

- Characteristics of construction zone crashes
- Number of traffic fatalities and injuries in construction zones
- Percent of construction zone fatal crash evaluations completed

**Goal 2: Monitor and continually improve current management practices of construction and maintenance operation road user impacts**

**Objectives:**

- Minimize delays
- Maximize efficiency of Maintenance and Construction operations while minimizing construction zone hazards to road users and workers
- Coordinate operations with other projects and special events
- Develop an incident management plan when and where appropriate
- Manage queue lengths appropriate for location and project conditions

**Performance Indicators:**

- No queue impacts beyond defined limits for specific projects
- Public input
- Post construction reviews to include discussions on workzone safety and mobility.
- Significant projects include provisions for Incident Management Plans when identified as necessary during TMP development

**Goal 3:      Ensure appropriate level of knowledge, skills, and abilities for responsible parties to manage and evaluate construction zone safety and mobility.**

**Objective:**

- Implement and sustain work zone training programs which are appropriate to the job decisions each individual is required to make

**Performance Indicators:**

- Work zone safety and mobility training is provided for all individuals appropriate to the level of decision making and responsibility
- Methods are established to record individual training obtained and notify individuals when training is required
- Training plans are developed for Preconstruction, Construction, and Maintenance staff specific to their needs

**Goal 4:      Minimize stakeholder impacts**

**Objectives:**

- Ensure early and continued public involvement for significant projects
- Review design and construction options as early as possible in project development to minimize impacts to businesses and access requirements
- Keep stakeholders informed during project development and construction
- Minimize impacts to the immediate environment (such as noise, dust control, pedestrian and bicycle accommodation, wetlands, etc.)
- Public information and law enforcement elements are tailored to the project needs

**Performance Indicators:**

- Response to public comments is timely
- Work Zone Safety and Mobility reviews are completed, documented, and shared with appropriate personnel
- Public opinion survey feedback is reviewed and used for process improvement

**Goal 5:      Optimize construction zone traffic control design and implementation**

**Objectives:**

- Manage fiscal impacts of transportation management plan components
- Design and implement consistent construction zone traffic control for like conditions
- Ensure statewide compliance with plans and specifications
- Develop and implement transportation management plans
- Properly identify significant projects/corridors (e.g.back-to-back projects along a corridor lead to significant impacts)
- Deploy practices and technologies that provide consistent and predictable speeds in the construction zone to minimize vehicular maneuvers
- Establish design detour speeds during design stage and assess/review those speeds during construction
- Incorporate work zone safety and mobility requirements in impact assessment process for privately-funded work

**Performance Indicators:**

- Contract expenditures for itemized work zone Transportation Management Plan (TMP) components are tracked
- Evaluate posted speed limits in work zones and technology deployed, when requested.
- Traffic control conformity and effectiveness are determined by plan package and field reviews
- Site specific Traffic Control Plans reviewed and approved prior to start of projects

## **GUIDELINES**

As noted in the Introduction, the MDT Work Zone Safety and Mobility Policy, as written in Management Memo dated February 12, 2015, provides an opportunity to increase safety for MDT employees, construction workers, and the public while improving the mobility of the traveling public and our goods and services.

**All construction, maintenance, and utility work on Montana highways require a Transportation Management Plan (TMP).** The amount of detail that is included in the TMP varies depending on the anticipated level of impact of the construction zone on the highway users and others who depend on the highway corridor. These considerations are further explained in the guidance that follows.

### ***Significant Projects***

A significant project is one that alone or in combination with other concurrent projects nearby is anticipated to cause sustained construction zone impacts greater than what is considered acceptable based on MDT guidelines and engineering judgment. Significant projects require the highest level of planning and design considerations, and are those that fall into the Level 1 category as defined below:

- Level 1: Significant regional impact for highway users and businesses
- Level 2: Moderate, localized impact to highway users, businesses, and adjacent properties
- Level 3: Little to no impact

The selection of an impact level is flexible, with the recognition that every project is unique. Many factors contribute to the level of impact resulting from construction zones. These include:

- Timing
- Location
- Potential impacts to highway users
- Exposure of workers

### **Level 1 (Significant Projects)**

In general, a significant project is one for which

- Work impacts the traveling public at the regional level
- There are high user costs
- The construction project has a high level of public interest
- Construction work will directly impact a large number of travelers
- Construction will have high user cost impacts and the duration is usually very long
- Significant construction impacts occur, either alone or in combination with other projects



More specifically, construction work takes place on a Level 1 highway corridor, such as:

- Interstate routes through urban areas
- Non-interstate principal arterials within the federally designated urban areas
- AADT greater than 10,000 vehicles per day
- Corridors with high volumes of tourist and freight traffic

And includes:

- Through-lane closures for more than 3 continuous days
- Through-lane closures during morning, lunch time or evening peak directional traffic flow periods for more than 3 continuous days
- Impairment to critical movements at a major intersection for more than a 3-consecutive day period

Other factors that will indicate Level 1 significance:

- Concurrent timing with other projects in the same corridor resulting in compounded impacts
- High level of public interest, political influences, or tribal involvement
- Critical movements at major intersections impaired for more than 3 continuous days (not necessarily within the construction zone).
- Impacts to adjacent roadways, intersections, or interchanges (outside the project limits) that increase delay by 15 or more minutes or will cause noticeable queues to form in new locations.
- In a confined setting with no room for detours (for example, a road corridor confined by a steep cut on one side and a river on the other)
- Major highway through an urban area with no alternate accesses for businesses
- Construction impacts are anticipated to be significant
- In an area with safety concerns

Examples of Level 1, or Significant, work can include: major corridor reconstruction, full or partial roadway closures on high volume facilities, major bridge repair, reconstruction or mill/fill operations on urban arterials, intersection or interchange work causing impact to other intersections, repaving projects that require lane closures for more than three days and result in significant increases in congestion, and other high impact road work.

## **Level 2**

Level 2, or moderate, impacts occur when:

- Work impacts the traveling public at the local level
- There are low to moderate user costs
- It has a moderate level of public interest

- It will directly impact a moderate level of travelers

More specifically, construction work takes place on a Level 2 highway corridor, such as:

- Rural interstate routes
- Non-interstate National Highway (NH) routes
- Projects on through roadways in any incorporated city/town
- Corridors with a mix of tourist and freight traffic
- Routes with an Annual Average Daily Traffic (AADT) greater than 3,000 and less than 10,000 vehicles per day

And will have:

- Moderate to long durations
- Lane closures or detours with the potential for delay
- Moderate level of worker exposure

Examples of Level 2 work can include: Repaving work on roadways on the National Highway System (NHS) with moderate AADT, mill/fill operations that require lane closures for several days, minor bridge repair, shoulder repair or spot reconstruction on roadways with moderate to high AADT and in areas with safety concerns, minor interchange or intersection work, etc.

**Level 3**

Level 3 or minor impacts occur when:

- Work impacts the traveling public to a small degree
- There are low user costs
- Public interest is low and AADT is low
- Duration of work is short to moderate
- Construction zones can be mobile, and typically this work is recurring

Examples of Level 3 work can include: Low impact striping work, guardrail repair, minor shoulder repair, pothole patching, very minor joint sealing, minor bridge painting, sign repair, mowing, off-system bridge replacement, traffic signal work, reconstruction work on low volume roadways, and other short duration or low impact work.

**WZSM IMPACT LEVELS**

| LEVEL 1 (SIGNIFICANT PROJECT)  |  |
|--|--|
| High user costs  | TMP Components <ul style="list-style-type: none"> <li>• Traffic Control Plan (TCP)</li> <li>• Transportation Operations (TO)</li> <li>• Public Information (PI)</li> </ul> |
| High interest level – statewide/interstate implications                              |  |
| Political  |  |
| Long duration and closures   |  |
| Level 1 corridor (see <b>Corridor Levels</b> tables below)                           |  |
| Significant construction impacts, either alone or in combination with other projects |  |

| LEVEL 2 (MODERATE IMPACTS)                                 |  |
|--|--|
| Low to moderate user costs                                 | <b>TMP Components</b> <ul style="list-style-type: none"> <li>• TCP</li> <li>• TO (include in TCP)</li> <li>• PI</li> </ul> |
| Moderate interest level – mainly at the local level        |  |
| Moderate to long duration and lane closures                |  |
| Level 2 corridor (see <b>Corridor Levels</b> tables below) |  |
| LEVEL 3 (MINOR IMPACTS)                                    |  |
| Low user costs   | <b>TMP Components</b> <ul style="list-style-type: none"> <li>• TCP</li> <li>• PI optional</li> </ul>                       |
| Low interest level – only local involvement                |  |
| Short to moderate duration with minor lane closures        |  |
| Minimal disruptions  |  |

**CORRIDOR LEVELS**

|                | Route/Functional Classification  | Location                                | Traffic Volumes  | Other Considerations                     |
|----------------|--|---|--|--|
| <b>Level 1</b> | NHS Interstate/Interstate<br>NHS Non-interstate/Principal Arterial         | Urban setting or<br>Confined setting    | AADT >10,000<br>Local+Freight+Tourist                      | Politically important<br>Safety concerns |
| <b>Level 2</b> | NHS Interstate/Rural<br>NHS Non-interstate/Rural<br>Primary/Minor Arterial | Through<br>incorporated city<br>or town | 3,000 < AADT < 10,000<br>Local+Freight or<br>Local+Tourist | Safety concerns                          |
| <b>Level 3</b> | All other roadways   |   |  |  |

**Work Zone Safety and Mobility Requirements**

A TMP is required for every construction and maintenance project. Each TMP will include up to three components, depending on the level of impact as described above. These components are:

- Traffic Control Plan (TCP)
- Transportation Operations (TO)
- Public Information (PI)

| TMP COMPONENTS                  | Traffic Control Plan (TCP) | Transportation Operations (TO)   | Public Information (PI)   |
|---------------------------------|----------------------------|----------------------------------|---------------------------|
| LEVEL 1<br>Significant Projects | Required                   | Required                         | Required                  |
| LEVEL 2                         | Required                   | Include brief description in TCP | Encouraged                |
| LEVEL 3                         | Required                   | Not necessary                    | Consider minor strategies |

**Transportation Management Plan**

A TMP lays out a set of coordinated transportation management strategies and describes how they will be used to manage the construction zone impacts of a

road project. The scope, content, and level of detail of a TMP may vary based on project impact level and the anticipated construction zone impacts of the project.

For **significant projects (Level 1)**, the TMP will consist of a Temporary Traffic Control plan (TCP) as well as Transportation Operations (TO) and Public Information (PI) components. A TCP addresses traffic safety and control through the construction zone. The TO component addresses sustained operations and management of the construction zone impact area, and the PI component addresses communication with the public and concerned stakeholders.

For projects that are **not classified as significant projects (Level 2 or 3)**, the TMP may consist only of a TCP. However, consider TO and PI strategies for these projects as well. Keys to a successful TMP are:

- Developing it as early as possible
- Using a multidisciplinary approach
- Ensuring communication and understanding between all entities affected
- Implementing, monitoring, and revising the TMP throughout the life of project
- Assessing the performance of the TMP strategies and execution

Developing the TMP will involve identifying applicable strategies to manage the impacts of the construction zone. The costs for the management strategies need to be incorporated in early project estimates and the budgeting process to ensure that funding is available for the TMP implementation. Steps for developing the TMP are outlined in the TMP Development Process, TMP Worksheet, and TMP Help Guide tools, located on the MDT Work Zone webpage (See Toolbox).

### **Traffic Control Plan**

A TCP is required for every Project. The level of detail will vary dependent on the complexity of the Project. Standard specifications and detailed drawings along with site-specific considerations provide adequate guidance for most projects. Attention should be placed on producing special provisions that manage the critical aspects of operations.

### **Transportation Operations Component**

The TMP team will review and consider the following Transportation Operations strategy areas to mitigate construction zone impacts.

- Demand Management
- Corridor/Network Management
- Construction Zone Safety Management
- Traffic/Incident Management and Enforcement

### **Public Information Component**

The size and nature of the PI Component will be determined by the characteristics of a project, its location, and the anticipated construction impacts. Aspects to consider include size and duration of construction, the amount of

delay anticipated, special traffic and safety conditions such as heavy truck traffic, agricultural use, wide and oversized loads, and disruptions to other modes and key facilities such as airports, stadiums, hospitals, and business accesses. The level of public involvement will depend on the nature of the project. Informing the public can begin in planning and continue through design. Public information and outreach effort during construction involve communicating with road users, the general public, area residents and businesses, and appropriate public entities to explain the road construction project and its implications for safety and mobility.

## **PROCEDURES**

### ***Nomination and Planning Stage***

Work Zone Safety and Mobility is an important aspect of every project. Strategies for managing the impacts should be considered during corridor and project planning, and nomination. Planners and Nominators will:

- Identify significant projects
- Identify potential corridor and regional impacts
- Assess budget and schedule implications

### ***Design Stage***

Ideally, the TMP process should start with the Preliminary Field Review (PFR). The Project Design Manager (PDM) is responsible to ensure that the TMP is developed for each project and to ensure that the components of the TMP are incorporated into the project design and plans package as appropriate. A worksheet and a help guide are available to facilitate the process (See Toolbox).

Depending on the complexity and level of significance for any given project, the PDM is encouraged to enlist members of the design team to assist with the TMP development. Headquarters and district construction staff are a critical part of the TMP team for most projects. In addition, the District Construction Operations Engineer (DCOE) has been assigned the role of TMP Coordinator for all projects. This means that he/she will be involved in the project design decisions through all phases of design, by participating in project meetings and plan reviews, and in construction decisions including those involving the TMP components. Design team members will:

- Identify/confirm significant projects
- Develop TMP appropriate to project level
- Include TMP provisions in Plans, Specifications and Estimate (PS&E)
- Review and revise as necessary schedule and project cost estimates
- Refer to the Design Steps for Work Zone Safety and Mobility document for further detail as well as the Impact Level Checklist (See Toolbox).

### ***Construction Stage***

The Planning and Design stages develop strategies to minimize or eliminate impacts, maximize project efficiency, and possibly reduce overall costs. The Construction stage advances these strategies through real time implementation. Key actions that must take place during construction include:

- Implement TMP
- Manage TMP
- Assess performance during construction

- Post-project assessment

The DCOE has been assigned the duty of TMP Coordinator. It will be his/her responsibility to attend the design plan review meetings, in addition to the TMP Team Meetings, and participate in the decisions related to the project-specific TMP components. This will ensure consistency between design and construction.

Prior to the start of construction, it is critical that the DCOE and the Engineering Project Manager (EPM) assess the contractor-developed traffic control plans and sequence of operations. The plan and sequences are compared to the TMP components included in the plan package to ensure consistency and full implementation. Approval of the contractor's plans is contingent upon the balancing of safety, mobility, construction efficiency, contract requirements, and stakeholder impacts, and needs.

During construction, project inspectors are responsible to observe active construction zone traffic operations. Inspectors must determine if the safety and mobility concepts are being effectively implemented and managed. At a minimum, traffic operations must be inspected as follows:

- Daytime Projects
  - Daily inspections during active operations
  - One nighttime inspection per week
- Nighttime Projects
  - Nightly inspections during active operations
  - One daytime inspection per week

When the inspector notes locations where safety and mobility should be improved, the inspector will inform the EPM of the location. The EPM will work with the DCOE and the contractor to ensure corrective action is taken which meets the TMP objectives.

In addition to the information detailed above, additional duties and support are available to ensure successful TMP implementation and effective work zone safety and mobility management. These duties and assistance include:

### **Headquarters Staff**

- Provide support to district and project level staff in understanding construction zone policies and guidelines. Perform quality assurance inspections of construction zones to promote consistency and compliance with policies and guidelines.
- Provide district staff with input on construction zone design modifications and operations.
- Ensure construction and work zone speed limits are appropriate in active and inactive construction zones.
- Provide safety and mobility training opportunities for district and field personnel appropriate for the level of their responsibilities.

- Establish a line of communication with law enforcement to obtain notification and data for construction zone incidents and crashes.
- Analyze construction zone crash data to determine any construction zone impacts and development of corrective measures if necessary.

### **District Office Staff**

- Ensure field staff is implementing MDT policies and guidelines established in this document. It is vitally important that the DCOE ensures continuity between design and construction.
- Ensure project staff has attended training appropriate to the level for the job decisions each individual is required to make.
- Ensure trained personnel are present at the project level with the primary responsibility and sufficient authority to manage the safety and mobility of the construction zone.
- Ensure the required traffic control inspections are being conducted during the construction stage.
- Provide field project staff with input on contractor proposed modifications to construction zone design and operations.
- Perform quality assurance inspections of construction zones to promote consistency and compliance with policies and guidelines.
- Determine if project-specific law enforcement is needed and implement law enforcement agreements when a need is identified.

### **Construction Project Staff**

- Conduct pre-construction timing of travel through projects with the potential for traffic delays. Compare travel times through the construction zone to pre-construction zone travel time if there are a relatively high number of public complaints related to delays.
- Conduct required daytime and nighttime traffic control reviews to ensure the construction zones are maintained in a neat, orderly, and effective manner for the safety and mobility of highway workers and the traveling public.
- Suggest necessary adjustments to construction zone traffic control to improve the safety and mobility for highway workers and the traveling public. Discuss suggested adjustments with the DCOE to ensure compliance with the TMP.
- Evaluate contractor's proposed traffic control plans with the DCOE to ensure compliance with the TMP.
- Enforce the quality of temporary traffic control devices.
- Ensure construction zone speed limits are appropriate in active and inactive construction zones.
- Monitor the presence and effectiveness of uniformed law enforcement.



### **Contractor Expectations**

- Designate a person trained appropriately to the level of duties required at the project level with the primary responsibility and sufficient authority to implement the TMP and other safety and mobility aspects of the project.
- Ensure all contractor personnel are trained in traffic control to a level commensurate with their responsibilities.
- Ensure construction zones are neat, orderly and effective for the safety of highway workers and the traveling public.
- Minimize delay and disruption experienced during construction.
- Perform quality control review of construction zones to promote consistency and ensure compliance with contract documents, policies, and guidelines.
- Recommend traffic control improvements to the EPM to address field conditions pertaining to traffic flow, visibility, and the safety of highway workers and the traveling public.

### **Law Enforcement Coordination (MDT)**

- Impart basic knowledge of construction zone traffic control components and operations to law enforcement personnel.
- Ask law enforcement personnel to help identify and report to the EPM any construction zone safety and mobility concerns.
- Invite law enforcement personnel to the Preconstruction Meeting for significant projects.
- Invite law enforcement personnel to assist during construction traffic control reviews.

### ***Maintenance Work***

Work Zone Safety and Mobility is important to all work on Montana highways, including Maintenance projects and repair work. During project development the WZSM impact level will be identified for each project by the Maintenance Division Bureau Chief. The WZSM impact level will determine what components of the TMP are required for the project. The Maintenance Division Bureau Chief or District Traffic Engineer will review and approve the TMP, typically consisting of a contractor-developed traffic control plan and sequence of operations, to ensure that they are in compliance with the Manual on Uniform Traffic Control Devices (MUTCD) and MDT's current detailed drawings.

It's unlikely that Maintenance projects and repair work will meet the criteria to be identified as a significant project. If this were to happen then procedures identified in the Design Stage and Construction stage should be followed.

Monitoring for compliance will be administered by a person or persons having the primary responsibility, with sufficient authority for reviewing the TMP and other safety and mobility aspects of the project. This individual and their authority will

be identified during the pre-construction meeting. Key actions that must take place during maintenance work include:

- Implement TMP
- Manage TMP
- Assess Safety and Mobility

## **PROCESSES**

### ***Training Plan***

The successful development, implementation, and management of Work Zone Safety and Mobility concepts are directly related to the training of appropriate individuals. Appropriate staff within Preconstruction, Construction, and Maintenance will evaluate training plans regularly with their training coordinator to ensure employees are adequately trained in Work Zone Safety and Mobility procedures.

A number of training opportunities are available through MDT resources and through resources outside the agency. Those outside resources include but are not limited to the Montana Local Technical Assistance Program (LTAP), National Highway Institute (NHI), American Traffic Safety Services Association (ATSSA), Federal Highway Administration Work Zone Safety and Mobility, and the Transportation Learning Network (TLN) sponsored by North Dakota State University.

Training will be provided in the following areas corresponding to the level of responsibility for individual staff. Training topics relating to each stage of Work Zone Safety and Mobility are:

#### **Nomination, Planning, and, Design Stage**

- Work Zone Safety and Mobility – MDT Process
- Traffic Control Design
- Urban and Pedestrian Traffic Control Design
- Developing and Implementing TMP's

All MDT design project managers and supervisors are required to complete training on developing and implementing TMPs. In addition, all design staff involved in project plan development directly related to construction traffic operations or traffic control must complete training on MDT's process for Work Zone Safety and Mobility. Training is available in many formats, and can include participation in a TMP work session.

#### **Construction and Maintenance Stage**

- Traffic Control Technician and Supervisor
- Developing and Implementing TMP's
- Work zone traffic control design and operations

Additional training is available for various construction topics such as

- Speed limit guidelines
- Law enforcement guidelines
- Pedestrian traffic control

- Nighttime traffic control
- Construction zone safety inspections
- Daytime and nighttime mobile operations
- Incident management strategies

At a minimum, all permanent construction and maintenance field personnel will complete training equivalent to the Traffic Control Technician. Additionally, all construction (Senior Level Technicians and Civil Engineers) and EPM's, along with all Maintenance Superintendents and additional Maintenance staff as designated by the Maintenance Administrator will complete training equivalent to the Traffic Control Supervisor. This training will be completed according to the Training Plans developed by Preconstruction, Construction, and Maintenance,

## ***Process Reviews***

### **Purpose**

Process reviews are used to assess the effectiveness of a program or a set of processes and procedures. Work Zone Safety and Mobility Program process reviews are intended to lead to improvements in work zone policies, processes, and procedures which, when implemented, will have the effect of improving work zone safety and mobility for the traveling public.

### **Scope**

The review may include the evaluation of work zone data and/or a review of randomly selected projects across districts. A combination of these approaches can also be used. The review may be limited to specific procedures (e.g., review payment methods for traffic control devices) or may be broader in scope (e.g., review of overall performance measures of the construction zone safety and mobility goals and objectives). Guidance on conducting process reviews can be found on the FHWA Work Zone website:

[http://www.ops.fhwa.dot.gov/wz/prtoolbox/pr\\_toolbox.htm](http://www.ops.fhwa.dot.gov/wz/prtoolbox/pr_toolbox.htm).

### **Frequency**

An annual assessment should be performed each year to determine potential topics for the process review. A process review will be performed at least every two years to comply with 23 CFR 630.1008(e).

### **Lead**

The Construction Traffic Control Engineer will lead the annual assessment and the process reviews, in collaboration with FHWA. Other participants may include appropriate personnel from the various functional areas within MDT, including planning, design, construction, and maintenance. Additional stakeholders, particularly Law Enforcement, should be encouraged to participate in the annual assessment and process reviews as appropriate.

**Process Reviews may include the following actions:**

- Assemble multi-disciplinary team
- Develop review objectives
- Determine review methods
- Conduct review
- Analyze and interpret results
- Develop inferences, recommendations, and lessons learned
- Prioritize recommendations and lessons learned
- Develop implementation plan
- Set performance objectives for next review
- Refine and update the MDT Work Zone Safety and Mobility Goals and Objectives, Guidelines, Procedures, and Processes as appropriate

**The following are examples of questions that the process reviews may help answer:**

- How are construction zones performing with respect to mobility and safety?
- Are the best possible decisions in planning, designing, and implementing our construction zones being made?
- Are customer expectations being met with respect to maintaining safety and mobility, minimizing business and community impacts?
- Can areas for improvement be identified?
- How have areas for improvement that were identified in the past been addressed?
- What has both worked and not worked – which strategies have proven to be either more or less effective in improving the safety and mobility of construction zones?
- What other strategies can be considered for implementation?
- Are there certain combinations of strategies that seem to work well?
- Can any construction zone safety and mobility trends be identified, at the national level or local level? What can be done to advocate characteristics associated with good trends? What can be done to remedy the problems associated with bad trends?
- How do construction zone performance, the effectiveness of strategies, or areas of improvement vary between day work and night work?
- Should policies or MDT procedures be adjusted based on what has been observed or measured?
- Can consistency be brought about in the identification of such trends, issues, and problems and in the standardization of tools and guidelines for application at the MDT, and/or national level?

The results of the review are intended to lead to improvements in work zone processes and procedures, data and information resources, and training programs so as to enhance efforts to address safety and mobility on current and future projects.

## **REFERENCES**

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## **GLOSSARY**

### **Annual Average Daily Traffic (AADT)**

The AADT is the total annual traffic volume divided by the number of days in the year.

### **Construction Zone**

An area on a public highway or on the adjacent right-of-way where construction, repair, maintenance, or survey work is being performed by MDT, a local authority, a utility company, or a private contractor under contract with MDT or a local authority. A construction zone may include a work zone. The use of the phrase “construction zone” in Montana is analogous to “work zone” in the Rule. Construction zone is a broader term than work zone since a work zone is defined in Montana statute as an activity area within the construction zone.

### **Manual on Uniform Traffic Control Devices for Streets and Highways (MUTCD)**

The MUTCD is the national standard for all traffic control devices installed on any street, highway, bikeway, or private road open to public travel. (Private roads open to public travel include private toll roads and roads within shopping centers, airports, sports arenas, and other similar business and/or recreation facilities that are privately owned, but where the public is allowed to travel without access restrictions.)

### **Preliminary Field Review**

The Preliminary Field Review is an official review of the project, usually including a site visit. This milestone review takes place after a project is approved by the Montana Transportation Commission to determine and document the appropriate project scope. Major project features and level of design team member involvement in project plans development are identified.

### **Public Information Plan**

The Public Information (PI) component of the Transportation Management Plan (TMP) includes communication strategies that seek to inform affected road users, the general public, area residences and businesses, and appropriate public entities about the project, the expected construction zone impacts, and the changing conditions on the project.

### **Significant Project**

In general terms, a significant project is one that alone or in combination with other concurrent projects nearby is anticipated to cause sustained construction zone impacts greater than what is considered tolerable based on MDT guidelines and engineering judgment.



**Stakeholders**

People who are affected by the construction project, including business owners, road users, government officials, regulators, tribal officials, etc.

**Traffic Control Plan (TCP)**

The Traffic Control Plan is considered equivalent to the Temporary Traffic Control Plan (TTC).

A TCP describes measures within the contract (plans, specifications, etc.) to facilitate road users through a construction zone, work zone or an incident area. The TCP addresses traffic safety and control through the construction and work zone, and generally incorporates the specifications and details to manage the traffic control operations within the construction zone.

**Transportation Management Plan (TMP)**

A TMP is comprised of strategies to manage project construction zone impacts. Significant projects must include a TCP a Public Information (PI) plan and a Transportation Operations (TO) plan. For all other projects, the TMP must consist of at least a TCP plan and may include TO and PI strategies as well.

A TCP describes measures to be used for facilitating road users through a work zone or an incident area. A TCP plan addresses traffic safety and control through the construction zone. The TO component addresses sustained operations and management of the construction zone impact area, and the PI component addresses communication with the public and concerned stakeholders.

The latest approved TCP should reflect what is in the field traffic control setup.

**Transportation Operations Plan**

The Transportation Operations (TO) plan includes the identification of strategies used to mitigate impacts of the construction zone on the operation and management of the transportation system within the construction zone impact area. The construction zone impact area can extend to an area well beyond the immediate project area, and should cover such items as traffic signal timing on detour routes, signing requirements for detour routes, and road/intersection capacity issues created by detouring traffic.

**Traveling Public**

Users of the public transportation infrastructure, including highways, bridges, sidewalks, etc., for means of getting from one place to another.

Traveling public refers to all users, and includes private and public cars, buses, trucks, motorcycles, bicyclists, and pedestrians etc.

**Work Zone**

The area where the construction, repair, maintenance, or survey work is actually taking place. The boundaries of the work zone must be clearly identified by the posting of signs.

**Work Zone Mobility**

In general terms, work zone mobility is the ability to move the traveling public efficiently through and around a work zone area with minimum delay compared to a baseline travel when no work zone is present.

**Work Zone Safety**

Safety refers to minimizing hazards to the traveling public and highway workers in a work zone.

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