



Transportation Management Plan Project Level Guidance Manual

Delivery & Operations Division

Traffic Engineering Section

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Transportation Management Plan Project Level Guidance Manual

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Chapter 1: Introduction

1.0 Purpose

The Project-Level Transportation Management Plan (TMP) guidance document outlines the development, content, and purpose of the Project-Level TMP.

A Transportation Management Plan is a documented set of coordinated transportation management strategies used to manage the temporary work zone impacts of construction projects.

The purpose of the transportation management program is to minimize disruptions to public traffic, including motorists, bicyclists, and pedestrians, the freight industry and communities without compromising public or worker safety, or the quality of work being performed. A Project-Level TMP, used for either single projects or coordination of multiple projects within a given area, will provide the details behind the development of the Traffic Control Plan (TCP), including the Temporary Pedestrian Accessible Route Plan (TPARP), and other measures that will be put in place for each project or group of projects to achieve this goal.

The Oregon Department of Transportation (ODOT) has developed the Oregon Highway Plan and Oregon Transportation Plan; these plans are considered Program-Level TMP's. Corridor-Level TMPs have also been developed for significant corridors throughout Oregon. Both the Program-Level and Corridor-Level TMP's help outline the development of requirements and performance specifications for Project-Level TMPs. The goal of the project-level TMPs will be to address the traffic related impacts of the construction projects in a cost-effective and timely manner with minimal interference to the traveling public through the effective application of traditional and innovative traffic mitigation strategies. TMPs use multi-faceted and multi-jurisdictional programs of operational, communications, and demand management strategies to maintain acceptable levels of traffic flow during periods of construction activities.

1.1 Work Zone Guiding Principles and Decision Tree

Working with the Work Zone Safety Executive Steering Committee, the agency has developed and is implementing the *Work Zone Guiding Principle*:

Mission

ODOT's mission is to provide a safe, efficient transportation system that supports economic opportunity and livable communities.

Goal

Our work zone safety goal is zero fatalities and injuries, including ODOT employees, contractors, public safety professionals and the traveling public while efficiently moving people and goods.

Guiding Principle

The best work zone design and management plan will maintain safety and mobility, a balance that shall be analyzed continuously throughout the lifecycle of the facility.

Directive/Strategy

To accomplish this goal, project design teams shall consider the full range of options including, but not limited to, separation of the traveling public from workers and work areas, speed reductions, law enforcement, enhanced traffic control devices and signage, and overall roadway and work zone design.

Effective communication with travelers is essential to establish reasonable expectations and minimize unsafe driver behavior. While there is no single solution that is appropriate for all roadway designs and work zones, whenever practicable workers should be separated from traffic.

Resources

Mobility Advisory Committee (MAC)

ODOT's Mobility Committee is a resource that can provide necessary balanced guidance. Work through your mobility coordinator and the mobility committee to reach resolution. Bring issues forward early in the scoping and design stage to avoid surprises and keep everyone in the problem solving mode.

Work Zone Decision Tree Form

The [Work Zone Decision Tree](#) will help us identify separation options available per work zone. Impacts to safety, mobility, scope, schedule, budget, delay, driver convenience, and "other"

impacts shall be identified when assessing separation options. To help guide us through our decision making, the Decision Tree is intended to provide new tools and approaches.

1.1.1 Applying the Work Zone Decision Tree

The *Guiding Principle* emphasizes ODOT highway work zones are to be managed through the life of a project – from initial scoping, during project development, and throughout construction. Safety for workers and public traffic and traffic mobility must be integral parts of the traffic control plan design and construction. Manage safety and mobility throughout the life of projects.

The expectation for design teams is to apply the *Work Zone Guiding Principle* and the *Work Zone Decision Tree* at key milestones throughout the course of the project – starting with Project Scoping and continuing through construction.

1.1.2 Transportation Management Plan

As part of the commitment to safety and project integrity, ODOT makes the Transportation Management Plan (TMP) a required portion of all ODOT highway construction contracts within State highway right of way.

ODOT maintenance operations and permitted work are encouraged to use a TMP, but it is not a requirement. See *Section 1.4*, below, for more information about the TMP, its development and minimum required contents.

Background

In September 2004, the Federal Highway Administration (FHWA) published updates to the work zone regulations at 23 CFR 630 Subpart J. The updated Rule is referred to as the Work Zone Safety and Mobility Rule (Rule) and applies to all State and local governments that receive Federal-aid highway funding. Transportation agencies are required to comply with the provisions of the Rule by October 12, 2007. The changes made to the regulations broaden the former Rule to better address the work zone issues of today and the future.

Growing congestion on many roads, and an increasing need to perform rehabilitation and reconstruction work on existing roads already carrying traffic, are some of the issues that have led to additional, more complex challenges to maintaining work zone safety and mobility. To help address these issues, the Rule provides a decision-making framework that facilitates comprehensive consideration of the broader safety and mobility impacts of work zones across project development stages, and the adoption of additional strategies that help manage these impacts during project implementation. At the heart of the Rule is a requirement for agencies to develop an agency-level work zone safety and mobility policy. The policy is intended to

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support systematic consideration and management of work zone impacts across all stages of project development. Based on the policy, agencies will develop standard processes and procedures to support implementation of the policy. These processes and procedures shall include the use of work zone safety and operational data, work zone training, and work zone process reviews. Agencies are also encouraged to develop procedures for work zone impacts assessment. The third primary element of the Rule¹ calls for the development of project-level procedures to address the work zone impacts of individual projects. These project-level procedures include identifying projects that an agency expects will cause a relatively high level of disruption (referred to in the Rule as significant projects) and developing and implementing transportation management plans (TMPs) for all projects.

The project-level TMP Guidance manual was developed to provide guidance to ODOT designers on how to develop TMP documents for projects. With the adoption of the Work Zone Guiding Principle and the introduction of the Work Zone Decision Tree, this manual has been significantly modified to provide guidance to staff involved with ODOT highway projects.

¹ FHWA, Jeannotte and Chandra, Developing and Implementing Transportation Management Plans for Work Zones. December 2005.

1.2 TMP and Work Zone Decision Tree throughout the Project Life Cycle

1.2.1 Scoping

Many of the high-level decisions regarding traffic management strategies become clear at the scoping stage of the project. While the outcome of scoping might not be a formal TMP report, several pieces of information that will lead into the document are first collected through scoping. The basic details of the project, such as the purpose and location of the project, are recorded in the Project Charter and the Business Case documentation. Designers should draw information from these documents as they begin to form the final TMP.

An initial Work Zone Decision Tree is required at the Scoping stage in order to promote the full evaluation of traffic management strategies. Depending on the type of project, some options included on the form might be impractical, but the main purpose of the Guiding Principle is to explore additional safety strategies on every project.

1.2.2 Preliminary Design

As the concept for a project is developed into a preliminary design, many decisions are made that shape the construction timeline, traffic control strategies, and mitigation efforts available for the remainder of the project lifecycle. The TMP at this stage should be considered as a diary for traffic management related decisions. By including this information in the TMP, users of the document later in the lifecycle can benefit from the reasoning behind the traffic management strategies that were chosen. The Work Zone Decision Tree is a vital tool at this stage of project development. Many of the high-level safety strategies must be identified by this point or they will not be able to be included in the project later. The TMP can also be the starting point for coordination with the Mobility Advisory Committee (MAC) and other key stakeholders.

1.2.3 Final Plans

As additional information becomes available and as decisions are made, the Work Zone Decision Tree is a tool for guiding and recording safety and mobility strategies. At the end of the plans development, the Work Zone Decision Tree should explain all of the safety and mobility strategies that are included in the bid package. Likewise, the TMP at this stage should include a narrative regarding all of the considerations made for safely managing the work zone and the anticipated mobility impacts to both freight and public.

1.2.4 Construction

The TMP and Work Zone Decision Tree are to be submitted to eBids for prospective bidders to understand the safety and mobility expectations for the project. Construction staff should familiarize themselves with the TMP, including any components of the TMP that need to be

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implemented by the resident engineer. Depending on whether or not the Contractor adopts the Agency-provided TCP, the TMP and Work Zone Decision Tree may need to be re-evaluated or revised. The TMP may also need to be re-evaluated or revised during the project based upon changes to the TCP.

During the project the resident engineer should monitor the TMP and TCP, and make changes as necessary based upon contract changes. The Project Office should also implement all parts of the TMP directed at the resident engineer; these could include such items as Traffic Operations Center coordination or Public Information campaigns. The resident engineer will include updated final versions of the TMP and Work Zone Decision Tree in the final project documentation.

1.3 TMP Requirements & Responsibilities

The TMP will be relative to the scope of work – the more complex the project, the more details and information should be included in the TMP.

The FHWA has identified two different categories of TMPs. The first category is intended to identify complex projects. Meanwhile, the second category deals with more-routine in nature type of projects. For routine projects, FHWA will only require a Traffic Control Plan (TCP) to satisfy the requirement of a TMP. On the other hand, FHWA requires a more detailed TMP for “significant” projects with specific components to discuss the evaluated work zone strategies, anticipated work impacts, congestion mitigation, and more details. This type of TMP, intended for “significant” project, is often referred to as “Project-Level TMP.”

FHWA states, a “significant” project is one that meets the following definitions:

“...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 State policy and/or engineering.”

And, is on an Interstate highway within a designated Transportation Management Area (TMA).

To meet the ODOT Work Zone Guiding Principle, regardless of which category the project falls under, ODOT requires a Project-Level TMP, and a Work Zone Decision Tree to be prepared for all highway projects.

The TMP must include all of the following components:

- Project Summary
- Project Description
- Existing and construction, traffic conditions
- Work zone strategies
- Proposed Impacts
- Alternatives Discussion
- Contract Document (i.e. TCP, work zone decision tree...etc.)
- Construction Monitoring
- TMP Evaluation/Report

The TMP document organization and design is standardized in template form. The template for the TMP can be found on the ODOT Work Zone Traffic Control website, <https://www.oregon.gov/odot/Engineering/Pages/Work-Zone.aspx>

Chapter 2: Transportation Management Plan

2.1 TMP Goal

In conjunction with the goals of the FHWA Rule on Work Zone Safety and Mobility (23 CFR 630 Subpart J) and the Work Zone Guiding Principle, the purpose of this task is to minimize disruptions to motorists, the freight industry and communities without compromising public or worker safety, or the quality of work being performed. Project Teams will be responsible for following the guidance in this document for developing a Project-Level TMP for the specific project they have been assigned.

The goal of the TMP will be to address the safety and mobility related management of the project in a cost-effective and timely manner, coordination of construction activities with adjacent or overlapping projects; and, to minimizing the operational impacts to the traveling public. Chapters 3 and 4 discuss descriptions of possible TMP elements and strategies for the corresponding project Work Zone Decision Tree.

As the project team develops the Project-Level TMP, they must coordinate and work directly with the ODOT Region Traffic offices and Region Mobility Managers. The project team should account for project and corridor-specific conditions identified in the Corridor-Level TMPs, and input from stakeholders. The TMP must also support the staging of the construction activities of the project in order to optimize road user mobility and promote safe and efficient construction of the project.

The Project-Level TMP length will vary based on the scope of work, complexity of the project, and stakeholder involvement needs.

2.2 Project – Level TMP Components

The following components should be considered for inclusion in a Project-Level TMP. Not all components listed will be included in the TMP, depending on the complexity of the project and the level of detail required. TMP's for basic projects may not include many of the components listed.

The TMP should be scaled to the size and complexity of the project. A simple paving project may have a one-page TMP summarizing the project decisions. A more complex project's TMP could be several hundred pages.

2.2.1 Introduction/Summary

The introduction/summary should include a brief overview of the project, including a brief overview of the existing conditions and proposed improvements, recommendations for traffic control for the project, and goals and objectives of the TMP. The introduction/summary may also include table of contents, other organizational information, or TMP Roles and Responsibilities. The introduction/summary should also include pertinent project specific information that may have a large impact on the project, i.e. extremely high traffic volumes, closures, etc.

2.2.2 Project Description

The project description should include the scope and definition of the proposed project. Information included may be project background, type, limits/corridor, goals and constraints, construction phasing/staging, schedule and timeline, and related projects.

2.2.3 Existing and Construction, Traffic & Roadway conditions

This component should describe all of the pertinent existing and proposed conditions within the project limits. Include traffic information, roadway information, land use, stakeholder input, and other information pertinent to the TMP.

2.2.4 Project Work Zone Strategies

Discuss preferred Work Zone Traffic Control Strategies, including the Traffic Control Plan, Public Information Campaign, Stakeholder commitments, and Traffic Operations. Include who is responsible for each preferred strategy, most strategies will be the responsibility of the contractor, but the resident engineer office or TOC may have responsibilities.

Temporary Traffic Control

The temporary traffic control section should discuss the overall temporary traffic control strategy used for the project, including construction stages and phases. Construction schedule, lane use, lane closure hours, detours, local events, and other pertinent contract data should be included.

While there is no formal Design Exception for temporary traffic control, designers shall document assumptions, thought processes and design decisions when they differ from normal practices or current design standards in this section of the TMP.

Temporary Pedestrian Accessible Route Plan

The temporary pedestrian accessible route plan section should discuss the pedestrian specific temporary traffic control strategy used for the project, including construction stages and phases. Construction schedule, lane use, lane closure hours, detours, local events, and other pertinent contract data should be included.

Public Information

Discuss the public awareness and motorist information strategies utilized by the contract. The information programs inform the public of the overall purpose of the project so as to generate and maintain public support. The program also encourages changes in driver behavior during the project to help minimize congestion by recommending alternate routes during construction.

Traffic Operation

The traffic operation section should discuss any traffic operations employed by the project to lessen traffic impacts of the project. Items may include demand, work zone safety, traffic/incident, or enforcement management strategies.

2.2.5 Work Zone Strategies Proposed Impacts

The Work Zone Impact assessment should discuss all of the potential impacts the project will have on public traffic, other projects, and the stakeholders. The Impact Assessment may be qualitative or quantitative, but generally will involve a brief discussion on how the project is expected to impact project users.

The adoption of the Guiding Principle has resulted in changes to the Mobility coordination process. The Mobility Procedures Manual remains as the policy document to be observed for all projects. The Mobility Considerations Checklist (PD-16 Checklist) is now incorporated into

the TMP process for all projects. The mobility impacts must be documented and receive a signature of review and acceptance from SPDB Mobility Services Team.

Discuss other adjacent projects (County, municipal, utility) that may affect the current project. Information collected from affected stakeholders may help identify or further clarify additional issues - including special events, seasonal or daily restrictions, local property developments, local ordinances (such as noise-related ordinances that may restrict night work), and access issues.

Construction schedule-related limitations should be discussed in this section, including lane closure restrictions, typically provided by Region Traffic Analysts or through outsourced parties, seasonal lane or closure restrictions, and environmental issues. This section should also include access management details and possible impacts to emergency and public services (buses, postal, sanitation).

2.2.6 Work Zone Strategies Alternatives Discussion

Discuss other viable temporary traffic control, public information, and traffic operation strategies that were considered for the project but not implemented. The purpose of this section is to inform readers what other strategies were considered and why they were not chosen.

2.2.7 Contract Documents and Backup, Design & Construction

Insert copies of all important contract documents, including Contract Traffic Control Plans, Specifications, Approvals (i.e. Speed Zones, Temporary Signal Plans), Estimates, Contact lists, etc.

2.2.8 TMP Construction Monitoring

The construction project management staff, in conjunction with the TCP designer, should monitor the work zone and TMP and if necessary make changes. Any changes to the work zone or TMP should be consistent with the decisions made in the original TMP and involve the TCP Designer. All changes to the work zone and TMP should be documented in the TMP.

Monitoring typically includes construction staff observing the work zone, but could include traffic measuring tools, cameras, or other types of monitoring equipment.

2.2.9 TMP Evaluation/Report

The TMP should include an evaluation report upon completion of construction to document lessons learned and provide recommendations on how to improve the TMP process and/or modify guidelines.

The evaluation report should include an overall statement reflecting the usefulness, suggested improvements or changes for similar future projects, Traffic Control CCO's, and incidents related to the TMP.

For a small project, a TMP evaluation could be a discussion with the TCP designer regarding what elements of the TCP plan went well and which could be improved upon. For larger projects, an actual evaluation report should be developed. The evaluation report not only helps the designer with lesson learned, but could also help policy makers improve the overall design process.

2.3 Project – Level TMP for Minor Projects

TMP are required for all projects, including minor projects. The scope of the TMP should be scaled to the size and impact of the project, but must include a baseline of information so that project impacts are communicated through the TMP. Minor projects, like all TMP's, are required to use the TMP template provided on the ODOT Work Zone Traffic Control website, <https://www.oregon.gov/odot/Engineering/Pages/Work-Zone.aspx>. Minor projects may consolidate the TMP template to minimize the size of the document, but need to follow the structure of the TMP template.

The following information elements are required for all projects, regardless of project size:

Project Description: Provide the location, purpose, and general scope of work for the project.

Estimated Duration and Anticipated Dates: Provide the best available information for the timeline for the project. This information is critical to Commerce and Compliance Division (CCD) for managing restrictions and stakeholder coordination and is needed as early in the process as possible.

Traffic and Delay Analysis: Provide key details regarding current roadway operation, including volume, truck volume, or presence of significant crash history. The appropriate analysis methodology and output will vary by project type. At a minimum, delay analysis should identify whether construction will result in a decrease of traffic performance. The analysis should also include a sensitivity analysis by increasing anticipated traffic volumes by 5%-10% to identify projects that have higher risk of experiencing a major delay event.

Mobility Impacts: CCD requires that each project provide details regarding impacts and restrictions to freight mobility, include information in the TMP required by PD-16 and relevant to the CCD and the mobility of the project.

Project Coordination: For projects on an identified critical route pairing per the Mobility Procedures Manual, the design team must include actions taken by the Region Mobility Liaison in the TMP. For all projects, provide information about any projects, including local agency or permit work, and actions taken to coordinate so that impacts are minimized.

Discussion of Traffic Management Strategies/Work Zone Decision Tree

Narrative: Provide detailed explanation for the selection of traffic management, temporary traffic control devices, and the traffic control plan strategies. The purpose of this section is to provide information for how and why the traffic control plan was developed and to support stakeholders and construction offices in delivering the plans as intended.

Chapter 3: Project Data/Management Strategies

3.1 Project Data

Prior to developing a Project-Level TMP, important work zone information should be collected and organized. Only include information that is imperative to the TMP.

3.1.1 Data Collection

A list of possible work zone information is below.

Traffic Data: Data related to the movement of vehicles, pedestrians, bikes, etc. on a highway. Typical traffic data examples are: Average daily traffic (ADT) volume and peak-hour volume, hourly traffic volumes, vehicle classifications, accident data, etc.

Roadway information (roadway types, conditions, capacity, etc.):

Information related to the roadway prism and network. Roadway classification, Terrain, Speed Limits, design speeds, design vehicle, horizontal and vertical alignment, super-elevation, grade, slopes(cut/fills), pavement type, clear zone, barriers, lane and shoulder widths are typical roadway characteristics.

Land use (location of residences, businesses, industry, etc.): How the land adjacent to the project is being used and how that impacts the project. Typically used for economic impact analysis, stakeholders identification, management strategies, and the TCP. May include Right of Way constraints and road approaches.

Existing Size Restrictions: Width, height, weight, or other highway restrictions that limit vehicles travelling on a highway. Identify any existing height, width, or weight restrictions that are present on the highway as well as routes that may be used as marked or for emergency detours.

Environmental, Geotechnical, and Hydraulic issues: Project site conditions that may impact project temporary traffic control. Environmental, geotechnical and hydraulic issues may impact construction schedules, staging, etc. (in-water work windows, etc.).

Transit service within area (type, frequency, etc.): Public transportation facilities located or serviced within the work zone. Typically these services have to be maintained during the project.

Project location/limits/length: Physical limits of the project and temporary traffic control.

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Location of other construction projects: Other projects near the work zone that may impact the temporary traffic control. Typically used to determine conflicting projects and overall delays.

Special events: Local or regional events that may impact the temporary traffic control. Used to determine if the proposed construction schedule may need to be altered to accommodate local events. This information should be gathered through coordination with local officials and/or chambers of commerce, as well as through coordination with ODOT Region staff. Examples include bike rides, football games, parades, etc.

Utilities: Public utilities (gas, power, water, sewer, etc.) that travel through or are in the vicinity of the project. Utility conflicts may impact construction schedules, staging, etc.

ADA/Pedestrian accommodations: Existing ADA/pedestrian facilities located within the work zone. ADA/pedestrian accommodation should be maintained during the project.

Mobility Requirements: Specific Mobility requirements and standards requiring a minimum roadway prism and a maximum amount of delay. See ODOT Mobility Procedures Manual.

Structures, including bridges, retaining wall, sound walls, sign bridges: Structures within the vicinity of the work zone that impact the traffic control plan. Structures usually confine the roadway prism.

Signs, Signals, & Illumination: Traffic features located within the roadway prism. Project may be able to use the feature, provide temporary features, or have to cover/remove features during the project.

Railroad, Rest Areas, Transit, Bus, Weigh Stations, Parks, Stadiums, Schools, etc.: differing types of adjacent facilities may have broad impacts to the project.

Funding: The origin of the funds and the amount of funds may impact the level of traffic control that can be supported for the project. Safety should not be sacrificed because of budget constraints.

Right of Way: Land owned and occupied by a public entity where a public road exists. Width of right of way may impact TTC strategies.

Emergency Services/School Bus Routes: Services that are maintained through the work zone. Depending on whether or not these services are disrupted the TTC strategy may need to accommodate these services.

Seasonal restrictions: (traffic variations, weather-related work windows, etc.) Restrictions that only occur during a certain time of year. May impact the TTC strategy.

List of project stakeholders and others potentially impacted by the project:

The stakeholders for each project must be identified and coordinated with throughout the design and construction process. The stakeholders may include, but are not limited to: Agency representatives, motor carriers, local agencies, state police, emergency service providers, hospitals, schools, regional shopping malls, utility owners, and community leaders.

Project contacts: contacts for the project, including Incident Response and Emergency.

3.1.2 Temporary Traffic Control Devices

See the MUTCD and ODOT Traffic Control Plan Manual for a list of work zone devices.

3.1.3 Project Coordination, Contracting, and Innovative Construction Strategies

Coordination: Coordinating the project with other nearby projects or events can provide benefits to the project and the travelling public. Coordination with a regional TOC, utilities, business's, and other project stakeholders can also benefit the project.

Contracting Strategies: Contracting strategies that are different than the standard Design-Bid-Build project can be used to provide a benefit to the project.

- **Lane Rental:** Lane rental involves a charge assessed to the contractor when a portion of the roadway is obstructed and unavailable to traffic. The lane rental charge can vary according to time of day, day of week, number of lanes impacted, and duration. The contractor's bid includes an estimate of the number of hours that closures will be in place, with the actual payment to the contractor based on the actual use of closures.
- **Incentives/Disincentives Program:** This strategy involves the use of incentives and/or disincentives in the construction contract to minimize construction duration.
- **Design Build:** This strategy involves the use of one contract to design and build the project thus reducing project duration by allowing construction to begin prior to design completion.
- **Day/Night Evaluation:** Given that each project is unique, the types of risks will vary from one project to another. Therefore, the decision on whether the work should be performed at night versus day should be investigated for each work activity/project.

Innovative Construction Techniques: These strategies involve the use of special materials such as quick curing concrete or precast items (e.g., culverts, bridge deck slabs, and pavement slabs) to minimize the duration of construction or maintenance activities where traffic restrictions need to be minimized.

3.2 Public Information Possible Management Strategies

Public information strategies have the potential to reduce work zone impacts by providing specific information concerning road projects to road users and the community. Public Information strategies are meant to lessen the impact of the project to road users by alerting them to potential impacts and ways to avoid the impacts.

3.2.1 Public Awareness Strategies

Public Awareness strategies include ways to provide the public with information about the project.

Websites: Websites dedicated to providing information about the project. Information included in the website could include videos, slides, and presentations.

Public meetings/hearings: Presentation of project information to public via a public forum. Public comments on the project can be gathered at these forums.

Press Releases: Using media sources to spread information about the project. Sources could be TV, Radio, newspaper, etc. Most sources of media will generally distribute the information for free, but paid advertisements can also be used.

Brochures: Brochures about the project. Brochures can either be passively or actively distributed. Active distribution would include mailing the brochure to certain groups. Passive distribution is placing the brochure in public areas around the project.

Coordination with interested parties: Actively pursuing communication with parties that are known to have a stake in the project.

3.2.2 Road User Information Strategies

Information strategies provide current road users traveling through or near work zones valuable information about the work zone and possible mitigation steps.

Radio: Radio dedicated to providing information about the project to certain users. Traffic reports, dedicated Highway Advisory Radio, radio targeting certain groups, i.e. Trucks, etc.

Variable Message Signs: Portable or permanent message signs that are able to relay information to road users. Various types of information can be included on VMS, including warning messages, travel times, incidents, etc.

511 / Tripcheck: Web or phone based traveler information systems that can provide road users valuable information about a work zone.

3.3 Transportation Operation Possible Strategies

Transportation operation strategies are methods to manage the transportation system by varying demand within the system.

3.3.1 Demand Management Strategies

Demand management serves the purpose of reducing the travel demand through the construction area.

Transit modifications/incentives: Using transit alternatives to move travelers through the project. Removing vehicles traveling through the project can help project. Methods include providing, modifying, or diverting transit options through the work zone. Another method is providing incentives to use transit to get people out of vehicles. Incentives can get people to use the bus, a park-n-ride, work variable hours, telecommute, or a carpool.

Shuttle Services: Using shuttle services to transfer travelers through or around the work zone. Used when certain modes of transportation are excluded from the work zone. Usually used for pedestrians, but can be used for other modes like bicycles.

HOV Lanes: Web or phone based traveler information systems that can provide road users valuable information about a work zone.

TOLL/congestion pricing: Using or increasing tolls to vary the demand through the work zone.

Signal/Ramp Metering: Using signals to vary the demand on a highway or through a work zone.

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Chapter 4: Work Zone Decision Tree

4.1 Work Zone Decision Tree Layout and Instructions

The [Work Zone Decision Tree](#) has two primary purposes: guide the user to consider the full range of work zone safety and mobility options as prescribed by the Guiding Principle and to communicate this evaluation to all involved later in the project lifecycle, including industry stakeholders. The current version of the document can be downloaded from the Traffic Control Plans unit's website.

The Work Zone Decision Tree consists of a list of work zone safety and mobility strategies that are to be considered for all projects. The form is expandable to include any number of additional options that project staff considers to be relevant. Each strategy to be considered for a project is evaluated at each stage, including options that might have previously been deemed unworkable. As the project lifecycle advances, the strategy is analyzed for inclusion with the ultimate decision noted.

The details or explanation included as part of the Work Zone Decision Tree should be brief; in most cases one or two sentences are sufficient. An in-depth discussion of an option and any supporting data or analysis can be included with the TMP. This documentation occurs for each stage in the following four steps:

4.1.1 Possible/Viable

The first step in the evaluation process for an available traffic control strategy is to consider if the basic concept fits within the boundaries of the project's purpose. Strategies that are more effective at providing positive separation of workers from live traffic should receive the highest scrutiny and consideration. Notes regarding the possibility or viability of a strategy can be minimal, provided the record indicates that the strategy was actively considered. It is reasonable that certain options are obviously inappropriate given the project scope.

4.1.2 Impacts

This section asks the user of the form to consider the potential costs and tradeoffs for each strategy. These impacts could include monetary expense, lane-width reductions, lengthening the construction schedule, potential safety risks to other road users, etc. The listed impacts should include the key details that drive the ultimate decision on whether or not to include the strategy in the design. The designer should make every attempt to include these impacts from an objective point of view; the decision will be made later.

4.1.3 Stakeholders and Input

A clear procedure has previously been established to follow when the stakeholder to be impacted by a traffic control strategy is the freight industry. The [Mobility Procedures Manual](#) details the traffic flow and minimum clearances to be maintained through work zones. Where these commitments are implicated, project staff coordinates with CCD to advance complex issues to the appropriate stakeholders for resolution.

ODOT construction projects impact additional parties including the construction industry, law enforcement, and the public-at-large. This step in the evaluation process requires the designer to identify the impacted parties for each given strategy. There might not be a formal committee or specific person to be consulted in the evaluation, but the perspective and needs of each party must be considered and documented.

4.1.4 Decision Status

The expectations for documenting the decision to include or exclude a traffic control strategy are to notate that a definitive determination was made and the staff member responsible for that decision. This step is a matter of transparency for stakeholders and staff within the agency. In providing a clear statement towards the inclusion or exclusion of a strategy, downstream users will understand why a strategy was chosen and thus prevent wasteful investigation later in the project lifecycle. A brief statement supporting the decision should be included.

The conclusion of each phase of the project lifecycle will potentially leave a strategy in a pending status for further consideration at a later stage of the project. For example, two strategies for additional exposure mitigation might be viable and under consideration while the project advances. It is acceptable that a decision is not reached for stages prior to final plans.

Once a stage has been completed, the form is designed to lock the prior stage's form entries from further editing. Additional information gained later in the project lifecycle can certainly be used to change a decision or eliminate a previously viable strategy. However, the documentation pertaining to prior stages should be preserved. Include additional documentation with the TMP.

4.2 Temporary Traffic Control Management Strategies

Temporary Traffic Control construction strategies, devices, and coordination are utilized to provide mobility, safety, and efficiency within a construction project. This document is meant to supplement the MUTCD and provide additional strategies/measures that use the devices in the MUTCD to provide temporary traffic control. The Work Zone Decision Tree contains the option to add an unlimited number of custom strategies. This list compliments the list that is included with the form as a starting point for consideration.

4.2.1 Construction Strategies

The following construction strategies list is intended to be a list of possible strategies/measures that a designer can pick from to provide temporary traffic control. The traffic control plans should be developed based upon the strategy chosen.

The traffic control elements should be developed by following the MUTCD and the ODOT Traffic Control Plans Design Manual. The ODOT Traffic Control Plans Design Manual discusses many Traffic Control Management Strategies that are formally used in Oregon, but refers to the strategies as Traffic Control Measures (TCM). The Work Zone Traffic Analysis Manual discusses how ODOT work zone traffic analysis should be calculated. Below is a list of possible Temporary Traffic Control management strategies.

Off-peak/day/night/weekend/off seasonal work: Scheduling the work so that impacts to users is minimized. May include avoiding peak travel times, weekends, or busy seasons for the entire project or for pieces of the project.

Temporary Pavement: Building temporary surfacing to move traffic around the project.

Two way traffic on one side of divided facility (Crossover): Moving all traffic to one side of a divided facility so that the other side of the facility can be free of traffic. Construction work can be completed in the area free of traffic.

Lane/Ramp Closure: Closing lanes of traffic with traffic control devices to be able to perform the project. Lane closures should take into account traffic that will be moving through the project, ODOT uses the Work Zone Traffic Analysis Manual to determine lane closure restrictions.

- **Reduced Lane/Shoulder Width:** The lane or shoulder width can be reduced to maintain lane configurations.
- **Additional lane closures for worker safety:** Taking an additional lane to increase lateral buffer space.
- **Shoulder Closures:** Closing the shoulder to perform work.

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Total Closures: Totally closing the facility to perform work. Traffic is usually diverted around the project via an official detour or alternate routes. Total closures usually allow the project to be completed in a shorter timeframe.

Lane Shifts: Maintaining lanes through a project but using available surfacing to shift traffic over a certain distance to move traffic around a work area.

Construction Staging/Phasing: Breaking the project into manageable pieces to be able to construct the project while maintaining traffic. The project is usually broken down into stages, which are further broken down into phases. Different stages/phases will use different configurations of alignments and traffic control devices.

Mobility Restrictions: Restricting oversize load access through the project to minimize the roadway prism during construction.

Reduced Speed Limits: Reducing the speed limit through the project with the aims of increasing safety for both traffic traveling through the project and workers. Reducing the speed limit by a large amount may be counterproductive as large speed variances may decrease safety.

Enforcement Program: using police to either enforce the work zone or provide a presence in the work zone, aim is to safely maintain traffic through the work zone and increase worker safety. Usually used when workers are exposed to traffic in an adjacent lane. Currently ODOT's work zone enforcement grants administered through the Work Zone Safety program are the method to get enforcement on a project.

One-lane, Two-way Operation: using flaggers, pilot cars, or temporary signals to move traffic through a one lane section of roadway while the other lane is closed. Construction work can be performed in the closed lane.

Rolling Slowdown: using construction vehicles to slow traffic to allow a large gap in the traffic stream (up to 20 minutes) to perform short duration construction work.

Lane Closure Restrictions: Restricting the time frames when lane closures can occur to limit the impact to traffic travelling through the project. Usually this is completed by a traffic analysis that is scaled to the size and location of the project.

Detours/Alternate Routes: Detours and alternate routes are used to divert traffic around a project. A detour is a dedicated route where traffic that would normally go through the project is diverted; the traffic will then be brought back onto the normal route at the end of the detour. An alternate route is a dedicated route that traffic is encouraged to use to bypass the project.

Traffic Operations Center: A project specific Traffic Operations Center to manage traffic through a project. On mega-projects a Traffic Operations Center specific to the project may be worth the expense to provide real time traffic monitoring.

Traffic Control Supervisor: Dedicated trained traffic control personnel on the project to monitor and adjust the temporary traffic control.

4.2.1 Construction Strategies (Continued)

Emergency Communications Plan: Written plan that describes what to do and who to contact in the case of an emergency located with the work zone. Emergencies will have to be defined and specific roles and responsibilities should be developed for each emergency.

Contingency Plan: The traffic contingency plan addresses specific actions that will be taken to restore or minimize effects on traffic when the congestion or delay exceeds original estimates due to unforeseen events such as work zone crashes, higher-than-predicted traffic demands, or unavoidable lane closures that remain in-place beyond contract limitations. The contractor's contingency plan addresses activities under the contractor's control in the work zone.

Incident Response Plan: As minor incidents can potentially become major issues, an Incident Management plan should be developed for each construction project. Incident Management plans are well-thought out and well-executed programs that detect and address roadway incidents within a work zone and restore traffic capacity as safely and quickly as possible.

Access: maintaining or removing access adjacent to or through the project to different user or stakeholders may improve the functionality of the work zone. Side streets, driveways, and pedestrian access are a couple of examples of types of users whose access may impact the project.

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Chapter 5: TMP Resources

5.1 Rules, Regulations, and Policies

Rules, regulations, and policies that are related to TMPs may be found in the following publications (use the most recently Oregon Department of Transportation (ODOT) -approved documents):

- [FHWA Transportation Management Plan \(TMP\) Development Resources](#)
- [FHWA Assessing the Effectiveness of Transportation Management Plan Strategies: Feasibility, Usefulness, and Possible Approaches](#)
- [Manual on Uniform Traffic Control Devices \(MUTCD\)](#)
- [Oregon Supplement to the Manual on Uniform Traffic Control Devices \(MUTCD\)](#)
- [Highway Capacity Manual \(HCM\)](#)
- [Oregon Standard Specifications for Construction](#)
- [ODOT Traffic Manual](#)
- [ODOT Highway Design Manual](#)
- [ODOT Traffic Control Plans Design Manual](#)
- [ODOT Mobility Procedures Manual](#)
- [ODOT Work Zone Traffic Analysis Users' Guide](#)
- [A Policy on Geometric Design of Highways and Streets \(AASHTO Green Book\)](#)
- [ODOT Sign Policy and Guidelines](#)
- [ODOT Technical Guidance – Directives, Bulletins, and Advisories.](#) These documents are prepared with the purpose of providing technical direction and advice on the proper and accepted policies, processes, and procedures to be followed when conducting engineering and related business on behalf of ODOT.
- Traffic Control Supervisor Training Manual
- Contract Document