Work Zone Safety and Mobility Manual

Updated: 5-3-19

Original Published Date:
February 2017

INTRODUCTION

In September 2004, the Federal Highway Administration (FHWA) published updates to the work zone regulations at 23 CFR 630, Subpart J. This updated rule, referred to as the Work Zone Safety and Mobility Rule, applies to all state and local governments on projects that receive federal-aid highway funding. Transportation agencies were 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. On December 5, 2007, the FHWA added the new Subpart K to 23 CFR 630 to supplement the other regulations that govern work zone safety and mobility. The effective date of this regulation was December 4, 2008.

TDOT Work Zone Safety and Mobility Manual is approved.

John Schroer, Commissioner — Date
Department of Transportation

Paul Degges, Chief Engineer — 2-22-17 Date
Department of Transportation

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Department of Transportation

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TENNESSEE DEPARTMENT OF TRANSPORTATION

WORKZONE SAFETY AND MOBILITY MANUAL

Introduction
WORK ZONE SAFETY AND MOBILITY MANUAL

Policy Statement:

The Tennessee Department of Transportation's policy is to plan, design, construct, maintain, and operate safe and efficient work zones. The control of all road users (as defined by the *MUTCD,* Section 1A.13) through a work zone is an essential part of highway construction, utility work, maintenance, and right-of-way use permits.

Two principles guide the planning and implementation of the Work Zone Safety and Mobility (WZSM) program:

A. The safety of motorists, pedestrians, bicyclists, individuals with disabilities, and workers is the top priority and must be an integral part of every project.
B. Traffic mobility shall be considered on every project. The movement of all forms of traffic through work zones should be inhibited as little as possible. Traffic is inhibited by reduced speeds caused by speed limit reductions, traffic congestion, and crashes. Speed reductions should be implemented according to TDOT's Work Zone Speed Limit Policy.

Work Zone Safety And Mobility (WZSM) Program.

TDOT will systematically consider and manage work zone impacts, and it will develop, implement, and maintain work zone assessment and management procedures. Consideration and management of work zone impacts begin at project inception, continue through all phases of design, include construction activities, and conclude with a Work Zone Safety and Mobility Process Review (see Chapter 3) to enhance efforts to address safety and mobility on current and future projects. Each phase of work zone assessment and management should include implementation of improvements in work zone processes and procedures, data and information resources, and training programs.

This WZSM program shall be implemented on all federal-aid-funded and state-funded projects. All state/local agreements for projects shall include a requirement that the WZSM policy be followed. Utilities shall be required to follow the WZSM policy for all utility work done as a part of a federal aid project, regardless of whether the work is at the project expense or solely at the utility company's expense.

Goals and Objectives:

A. Maximize safety in all work zones having TDOT oversight by reducing fatality, injury, and property damage crashes statewide.
B. Minimize delay and other negative operational aspects of work zones.
C. Promote consistency in all phases of work zone development, including planning, design, implementation, and operation.

Definitions:

Exempt Project

An exempt project is a project receiving state and/or federal funds, but has been preapproved to not have a determination completed. To be exempt it must be listed as a qualifying project on the list below and meet the all the qualitative requirements listed below.

The qualifying projects listed below generally have minimal impacts to traffic and if they meet the qualitative requirements then they are considered exempt.

Qualifying Projects:

Brush Control/Mulching	Erosion Control
Litter Removal	Ditch Repair
Fence Repair	Mowing
Drainage Structure Repair *(off road)*	Slide Repair *(minor)*
Utility Projects w/o Motorist Impact	Sinkhole Repair (*minor*)
Brine/Snow Removal	Flood Damage *(minor)*
Vegetation Spraying	Weather-Related Events *(minor)*
Sweeping/Debris Removal	Pavement Marking *(moving)*
Pavement Patching	Pavement Marking
Attenuator Installation/Repair	Sign Replacement
Shoulder Repair	Sign Repair
Bridge Inspection	Guardrail Installation/Repair
Tunnel Maintenance	Deck Patching

AND

Qualitative Requirements:

Not on or over a freeway	Less than three days in duration
Work does not occur during peak traffic	

Federal-Aid Highway Project

A *Federal-Aid Highway* Project refers to highway construction, maintenance, safety, and utility projects funded in whole or in part with federal-aid funds.

Highway

A *highway* includes:

- A road, street, and parkway;
- A right-of-way, bridge, railroad-highway crossing, tunnel, drainage structure (including public roads) on dams, signal, guardrail, and protective structures in connection with a highway; and
- A portion of any interstate the cost of which is assumed by a state transportation department, including such facilities as may be required by the United States Customs and Immigration Services in connection with the operation of an international bridge or tunnel.

Highway Worker

A *highway worker* includes, but is not limited to, personnel of the contractor, subcontractor, Tennessee Department of Transportation, local agency, and law enforcement performing work within the right-of-way of a transportation facility.

Freeway

A *freeway* is a divided highway with full control of access.

Non-Significant Projects

A *non-significant project* is one that does not meet the significant project criteria described herein.

Positive Protection Device

A *Positive Protection Device* refers to a device that contains and/or redirect vehicles and meets the crashworthiness evaluation criteria contained in the *AASHTO Manual for Assessing Safety Hardware (MASH)*.

Professional Engineer
A *Professional Engineer* is an engineer licensed in the State of Tennessee as a Professional Engineer.

Public Information Strategies
The *Public Information (PI) strategies* are 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 work zone impacts, and the changing conditions on the project. Public information may include information on the project characteristics, expected impacts, closure details, and commuter alternatives. If needed, a PI Plan will be completed by TDOT's Community Relations Division and attached to the TMP document.

State Highway System
The *State Highway System* includes all interstates, U.S. highways, and State highways.

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. Use the following criteria to determine if a project is Significant:

- All freeway projects within the boundaries of a designated Transportation Management Area (TMA) that occupy a location for more than three days with either intermittent or continuous lane closures.
- All freeway system projects where all lanes in one direction will be closed.
- A project on a non-freeway with an AADT of at least 50,000 vehicles per day, where all lanes in one direction will be closed.
- A project that meets TDOTs Delay / Qualitative Criteria
- A freeway project that cannot maintain horizontal lane widths of 11ft with 2ft shoulders at all times.
- A freeway project where lane closures are required during any phase of construction.

Temporary Traffic Control Plan
A *Temporary Traffic Control (TTC) plan* describes measures used for facilitating road users through a work zone. A TTC plan shall be consistent with the provisions under Part 6 of the *MUTCD* as adopted by the State, and with work zone hardware recommendations in Chapter 9 of the *American Association of State Highway and Transportation Officials (AASHTO) Roadside Design Guide*. The TTC plan shall either be a reference to specific TTC elements in the *MUTCD*, be approved standard TTC plans, or be designed specifically for the project (required for all projects that are not "No Plans Projects").

Transportation Management Area (TMA)
For the purposes of this manual, Tennessee's TMAs are the MPO and TPO areas, and the counties below:

Region 1	Region 2	Region 3	Region 4
Anderson	Bradley	Davidson	Fayette
Blount	Hamilton	Maury	Madison
Carter		Montgomery	Shelby
Hamblen		Robertson	
Jefferson		Rutherford	
Knox		Sumner	
Loudon		Williamson	
Sevier		Wilson	
Sullivan			
Washington			

Transportation Management Plan
A *Transportation Management Plan (TMP)* is a complete evaluation of work zone issues for a project. It describes all projected impacts of the work zone and lays out a set of coordinated transportation management strategies and describes how they will be used to mitigate those impacts. Transportation management strategies for a work zone include temporary traffic control measures and devices, transportation operations strategies, and public information strategies.

Transportation Operations Strategies
The *Transportation Operations (TO) strategies* are strategies that will be used to mitigate the impacts of the work zone on the operation and management of the transportation system within the work zone impact area.

Work Zone
The *Work Zone* is an area of a highway with construction, maintenance, or utility work. A work zone is typically marked by signs, channelizing devices, barriers, pavement markings, and/or work vehicles. It extends from the first warning sign or high-intensity rotating, flashing, oscillating, or strobe lights on a vehicle to the *END ROAD WORK* sign or the last temporary traffic control device.

Work Zone Crash
Work Zone Crash means a traffic crash in which the first harmful event occurs within the boundaries of a work zone or on an approach to or exit from a work zone, resulting from an activity, behavior, or control related to the movement of the traffic units through the work zone. This includes crashes occurring on approach to, exit from, or adjacent to work zones that are related to the work zone.

Work Zone Data
Work Zone Data is useful to make an informed assessment of the success of efforts to manage work zones and their impacts. Available data and information can provide the basis for assessing performance and taking appropriate actions to improve performance on individual projects as well as district-wide and statewide processes and procedures. Before the process review, relevant information will be gathered for selected projects by the Traffic

Operations Division.

Work Zone Impacts

Work Zone Impacts refer to work zone-induced deviations from the normal range of transportation system safety and mobility. The extent of the work zone impacts may vary based on factors such as road classification, area type (urban, suburban, and rural), traffic and travel characteristics, type of work being performed, time of day/night, and complexity of the project. These impacts may extend beyond the physical location of the work zone itself and may occur on the roadway on which the work is being performed, as well as other highway corridors, other modes of transportation, and/or the regional transportation network.

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CHAPTER 1
WORK ZONE ASSESSMENT AND IMPACT MANAGEMENT

Implementation of the Work Zone Safety and Mobility Rule

Project Classification

All operations (highway construction projects, utility projects, maintenance work, right-of-way use permits, etc.) shall be classified as significant, non-significant, or exempt.

The determination of the project classification shall be made prior to the constructability review or as early in the project life as possible. See Responsibility Table in Appendix B for when and who should complete this determination for various project types; (not all possible project types are listed). If your project is not one of the types listed, the project manager should ensure that the significance determination and TMP are completed.

These classifications allow TDOT to manage work zone impacts of individual projects and help determine what mitigation strategies should be considered in the TMP.

Transportation Management Plan

For both significant and non-significant projects, the agency shall develop a Management Plan (TMP.) In addition to the significance determination, a TMP shall include all relevant information regarding the project background, anticipated project challenges as well as reflect the engineering judgement used in developing the Work Zone Impact Management Strategies.

A. Project Description
    a. Project scope and background
    b. Project limits
    c. Traffic restrictions
    d. Project schedule
    e. Connecting roadways that may be impacted and concurrent projects
B. List all personnel that are involved with TMP implementation. This would include but is not limited to TMP management, monitoring, and emergency contacts.
C. Work Zone Impact Assessment
    a. Roadway classification
    b. Evaluation of detour routes (if applicable)
    c. Pedestrian Impact
    d. Projected Queueing / Traffic Analysis
    e. Specifics of Work Zone Impacts
    f. Special Events occurring during project
D. Work Zone Impact Management Strategies

    All projects shall have a TTC Plan as part of its TMP. Significant projects shall additionally include TO and/or PI strategies. The scope, content, and level of detail of a TMP will vary based on the anticipated work zone impacts of the project.

    a. A Significant Project TMP shall include a TTC plan, TO strategies, and PI strategies. The TMP should be an ongoing process, from the scoping process through project development, and continuing through the design and construction phase of a project. Coordination with TDOT's Community Relations Division is required.
    b. A Non-Significant Project TMP shall include a TTC plan. Non-significant projects

may include TO and PI strategies depending on project specific circumstances. Coordination with TDOT's Community Relations Division is required.

c. An Exempt project does not require a formal TMP document, but all projects must comply with *MUTCD* and TDOT Standard Drawings with respect to the TTC.

Forms located in Appendix A will help determine the project classification. Complete forms shall be stored on Filenet or with project files.

- Significance Determination Form– Work Zone Significance Determination is the worksheet to help determine if a project is significant or non-significant. This form must be completed for all projects that are not on the exempt list. The TDOT project manager must sign this form.

- TMP Form – Transportation Management Plan (TMP) Summary Sheet, shall be completed for all significant and non-significant projects. This form will be the TMP cover sheet. The TTC plan must be signed by the regional traffic engineer, the TO strategies must be signed by the TDOT project manager, and the PI strategies must be signed by the region communications office. Significant projects will require the signature of the State Work Zone Engineer. TTC and TO strategies considered must be discussed in detail (description of the strategy, reason for using or not using the strategy, and any assumptions made). The complete TMP shall be stored on Filenet or with project files. If the TTC plan is altered at any time in the field, the TMP shall be updated and reapproved. The District Construction Engineer is responsible to ensure this is done.

Temporary Traffic Control Plan

The TTC plan shall:

1. Be consistent with the provisions under Part 6 of the *MUTCD*.
2. Be consistent with the work zone hardware recommendations in Chapter 9 of the *American Association of State Highway and Transportation Officials (AASHTO) Roadside Design Guide*.
3. Be a reference to either specific TTC elements in the *MUTCD*, to approved standard TTC plans, or to TDOT Department Manuals and Standards, and/or be designed specifically for the project (required for all projects that are not "No Plans Projects").
4. Consider longitudinal traffic barriers or other Positive Protection Devices in work zone situations that place workers at increased risk from motorized traffic, and where positive protection devices offer the highest potential for increased safety for workers and road users, such as:
    - Work zones that provide workers no escape from motorized traffic (tunnels, bridges, etc.),
    - Work zones with durations of 2 weeks or longer,
    - Operating speeds of 45 mph or greater,
    - Work operations that place workers close to travel lanes open to traffic, and
    - Work zones with roadside hazards, such as drop-offs or unfinished bridge decks, that will remain in place overnight or longer.

    The need for longitudinal traffic barriers or other Positive Protection Devices shall be determined on a case-by-case basis.

During construction, existing pedestrian access must be maintained and be fully ADA compliant.

In developing and implementing the TTC plan, pre-existing roadside safety hardware shall be maintained at a level equivalent or better than that which existed prior to project implementation.

Approved traffic control devices should all be in place in accordance with the approved traffic control plan before other work activities within the work zone commence.

The regional traffic engineer must sign off on the TTC plan.

Transportation Operation Strategies

When the TO strategies are needed, the TMP shall include the identification of strategies that will be used to mitigate impacts of the work zone on the operation and management of the transportation system within the work zone impact area. The TO strategy details shall be included in the TMP. The project manager must sign off on TO strategies.

Public Information Strategies

The TDOT Community Relations Division (CRD) will determine if a public information plan is needed and will provide it to be included with the TMP document. If CRD determines that a plan is not needed, smaller strategies may still be employed provided that region CRD agrees and signs off on their use. The PI plan shall be included with the TMP and any TO strategies.

Additional Information

A. The significance determination shall be made during the Right-of-Way stage of the project and redone if the scope or traffic control plan changes.

B. The Title page of the plan sets should identify the projects significance. The TTC notes section of proposal books should also include the significance determination, and should list the TO, and PI strategies as applicable.

C. The Plans, Specifications, and Estimates (PS&E) package shall include either a TMP or provisions for contractors to develop a TMP at the most appropriate project phase. A contractor developed/modified TMP shall be subject to the approval of TDOT and shall not be implemented before it is approved by the design manager and Traffic Engineering representative.

D. The PS&E package shall include appropriate pay item provisions for implementing the TMP, which may only include the TTC plan, either through method- or performance-based specifications.
    - For method-based specifications, individual pay items, lump sum payment, or a combination thereof may be used.
    - For performance-based specifications, applicable performance criteria and standards may be used (e.g., safety performance criteria such as number of crashes within the work zone; mobility performance criteria such as travel time through the work zone, delay, queue length, and traffic volume; incident response and clearance criteria; and work duration criteria).
    - Major categories of traffic control devices, safety features, and work zone safety activities funded through the project, including but not limited to Positive Protection Devices and uniformed law enforcement activities, shall be paid according to the TDOT specifications book.

E. The Contractor and TDOT shall each designate a trained person at the project level who has primary responsibility and sufficient authority for implementing the TMP and other safety and mobility aspects of the project. The Regional Traffic Engineering Office and the Construction supervisor are both responsible to ensure the TMP is implemented and updated as needed throughout the project. If the TTC plan is changed, the Regional Traffic Engineer shall review and must resign the TMP document.
    - An inspector trained in traffic control should be assigned to monitor the approved traffic control plan and recommend changes.
    - Traffic control setups and the maintenance of the traffic control devices should be reviewed regularly. Assistance in reviews should be requested from the Region Traffic Engineer's office as appropriate.

F. Personnel involved in the development, design, implementation, operation, inspection, and enforcement of work zone related transportation management and traffic control shall be trained appropriately for the job decisions each individual is required to make.
    - Training shall be retaken to keep employees current with changing industry practices and TDOT processes and procedures.

G. TDOT shall work in partnership with the FHWA in the implementation of TDOT's policies and procedures to improve work zone safety and mobility. At a minimum, this collaboration shall involve an FHWA review of conformance of TDOT's policies and procedures with 23 CFR 630 Subpart J-Work Zone Safety and Mobility, Subpart K-Temporary Traffic Control Devices, and reassessment of the implementation of TDOT's procedures at appropriate intervals. Implementation of this regulation is addressed in the *Stewardship and Oversight Agreement* with the FHWA.

Guidance for Implementation

Work Zone Assessment procedures can provide a framework within existing project development and construction processes to help the Tennessee Department of Transportation:

5. Identify and understand the work zone safety and mobility implications of alternative project options and design strategies.
6. Identify significant projects and better allocate work zone management resources to projects likely to have greater work zone impacts.
7. Identify transportation management strategies to manage the expected work zone impacts of a project. Compile a Transportation Management Plan which will include a TTC and may include TO and PI Strategies.
8. Estimate costs and allocate appropriate resources for the implementation of the work zone management strategies.
9. Implement the strategies and monitor and manage work zone impacts during construction, maintenance, or utility work and adjust the (TMP) when needed.
10. Conduct post-construction work zone performance assessment to evaluate the performance of work zones and to improve work zone policies, practices, and procedures.

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CHAPTER 2
TRAINING

Requirements of the Work Zone Safety and Mobility Rule

The WZSM program requires personnel involved in the development, design, implementation, operation, inspection, and enforcement of work zone-related transportation management and traffic control to be trained appropriately to the job decisions each individual is required to make. Periodic training updates that reflect changing industry practices and TDOT processes and procedures are also required for these personnel

Guidance for Implementing Training Plan

Each division or project will potentially have different personnel do the significance determination and/or TMP. Any potential individual who would be involved with the significance determination, TMP, and/or design of TTC shall receive the appropriate training.

External personnel that need to be trained include those doing project development (design or engineering service consultants), those doing construction activities (engineering service consultants), and utility work. The Tennessee Department of Transportation shall require that external partners are trained appropriately to each individual's job responsibilities and to the job decisions that each individual needs to make. These requirements shall be included in all Consultant Agreements (limited to projects on the STIP) and utility's Notice to Proceed.

TDOT Training

The TDOT Traffic Operations Division will provide appropriate work zone-related transportation management and traffic control training to applicable TDOT staff. A course that covers the Work Zone Safety and Mobility Rule and TDOT's Work Zone Safety and Mobility Manual, strategies for proper work zone TTC design, and Work Zone TTC set up for field operations will be provided. TDOT staff directly involved with the design or field operations of a project should take the training.

Equipment operators and flaggers shall be required to obtain the appropriate training per TDOT specifications.

Training of contractors and utility workers for such activities as designing, implementing, setting up, or maintaining work zone traffic control is required. TDOT requires training for Traffic Control Supervisors and flaggers. Contractors and utility workers are responsible for acquiring the required training and certifications.

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CHAPTER 3
WORK ZONE SAFETY AND MOBILITY PROCESS REVIEW

Requirements of the Work Zone Safety and Mobility Rule

The Department shall perform a process review at least every two years to assess the effectiveness of work zone safety and mobility procedures.

Guidance for Implementation

The objective of the process review is to enhance efforts to address safety and mobility on current and future projects.

The work zone performance assessment addressed by the process review may involve a review of randomly selected projects and/or the evaluation of statewide work zone data. A post-project review that includes objective outcome reviews of what went right/wrong on projects may be performed to provide additional feedback to continually improve work zone practices, policies, processes, and procedures.

A Work Zone Safety and Mobility Review Team should perform the process review on a minimum of 2-3 projects (at least one significant project) selected by the Regional Traffic Engineer, and should be led by the Traffic Operations Division with a representative from Design, Maintenance, Construction, Strategic Transportation Investments, Employee Safety and Risk Management, the Region Traffic Engineers, and the Federal Highway Administration. Others may be included as needed.

The following are examples of questions that may be used when performing the process review:

A. Are good decisions being made in planning, designing, and implementing our work zones?
B. How are work zones performing with respect to safety and mobility?
C. How do work zone performance, the effectiveness of strategies, and areas of improvement vary between day work and night work?
D. Can areas for improvement be identified?
E. 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 work zones?
F. Should policies or agency procedures be adjusted based on what has been observed or measured?
G. How have areas for improvement that were identified in the past been addressed?
H. Are customer expectations being met with respect to maintaining safety and mobility and to minimizing business and community impacts through, in, and around the work zone?
I. What other strategies can be considered for implementation?
J. Are there certain combinations of strategies that seem to work well?
K. Can any work 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?
L. Can consistency be brought about in the identification of such trends, issues, problems, and in the standardization of tools and guidelines for application at the agency, state, and/or national level?

Conducting process reviews should include the following actions:

A. Develop review objectives.
B. Determine review methods.
C. Conduct review.
D. Analyze and interpret results.
E. Develop inferences, recommendations, and lessons learned.

F. Prioritize recommendations and lessons learned.
G. Develop an action plan to implement the prioritized recommendations.
H. Identify performance objectives for next review.
I. Report recommendations and lessons learned.

CHAPTER 4
Local Agency Guidelines

Policy Statement

In order to ensure compliance with the Work Zone Safety and Mobility Rule and to ensure safe and operational roadways for users, all projects that receive Federal-Aid must complete a project significance determination, and complete a TMP.

Requirements of the Work Zone Safety and Mobility Rule

A. All local agencies should identify personnel responsible for ensuring a significance determination is made and an appropriate TMP is completed. If a project is designed by a contractor, the local agency may require contractor to do these tasks in accordance with this manual.

B. All operations (highway construction projects, utility work, maintenance operations, and right- of-way use permits) that impact motorists shall include a Temporary Traffic Control (TTC) plan. Utility projects involving work that does not impact motorists are outside the scope of the rule.

C. A project shall be classified as *significant*, *non-significant*, or *exempt/recurring*. These classifications allow agencies to manage the work zone impacts of individual projects and will help determine what mitigation strategies should be considered.

D. For significant and non-significant projects, the agency shall develop a Transportation Management Plan (TMP) that includes a TTC plan. Significant projects shall also address both Transportation Operations (TO) and Public Information (PI) components. Non-significant projects should consider TO and PI components.

Training

A. The local agency should ensure that any individual who designs or sets up TTC or who is responsible for ensuring compliance with the Work Zone Safety and Mobility Rule is appropriately trained.
B. The local agency may contact the TDOT Traffic Operations Division for assistance in identifying appropriate training. Training courses may be provided by, but are not limited to, ATSSA, NHI, or TTAP.
C. Training should be updated periodically.

Process Review

The local agency should develop a method to review its process to determine the effectiveness of work zone safety and mobility procedures. A review should be completed at least every two years.

Assistance

A local agency may request assistance from the regional traffic engineering office to meet the requirements of the Work Zone Safety and Mobility Rule and this manual.

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APPENDIX A

TN TDOT Department of Transportation

DATE: _____

Work Zone Significance Determination

County: _____
PIN: _____
State Project Number: _____
Federal Project Number: _____
Route, BLM - ELM: _____
Project AADT: _____
Project Description: _____
_____

Significance Determination Questionnaire

YES ___ NO ___ A project lasting at least 3 days on and freeway route within a Transportation Management Area (TMA) with intermittent or continuous lane closures. (23 CFR 630 Subpart J)

YES ___ NO ___ A project where all lanes in one direction will be closed on any freeway. (23 CFR 630 Subpart J)

YES ___ NO ___ A project where all lanes in one direction will be closed on a non-freeway route having an AADT of at least 50,000 vpd. (23 CFR 630 Subpart J)

YES ___ NO ___ A project that meets TDOT delay/qualitative criteria (See page 2).

YES ___ NO ___ A freeway project where 11' lanes and 2' shoulders cannot be maintained at all times. See Appendix C, Project Development Directive - 2.

YES ___ NO ___ A widening project, bridge replacement or bridge repair project on a freeway, where any existing or preconstruction lanes cannot be maintained throughout all phases of construction. See Appendix C, Project Development Directive - 2.

If you answered YES to any of the above questions, your project is significant. Please complete the TMP document located in Appendix A of the Work Zone Safety and Mobility Manual.

f you answered NO to all of the above, the project is considered non-significant. A TMP with a TTC plan is a required element of non-significant projects. TO and PI strategies are not required, but may be considered.
Please place this document and TMP on Filenet. For No-plan projects, include with project files once signed by TDOT Project Manager.

Prepared by: _____

TDOT Design Manager: _____

TN TDOT Department of Transportation

DATE: _____

TDOT Delay and Qualitative Criteria

Delay Criteria

YES	NO	Is the project AADT greater than the max allowable AADT from the Delay Criteria Table(See Page 3)?

Qualitative Criteria

YES	NO	Is a work zone design deviation required? Please attach form.
YES	NO	Is there an impact to businesses?
YES	NO	Is there a public interest?
YES	NO	Are there exposure impacts due to long duration?
YES	NO	Is there a required alternate route/detour?
YES	NO	Are there impacts due to other concurrent projects?

An affirmative answer to Delay and/or Qualitative criteria does not automatically trigger project significance. The Regional Directors of Project Development and Operations, or their appointee, shall evaluate the overall project impacts of one or more affirmative responses and provide justification in favor of or against including Transportation Operations (TO) Strategies and Public Information(PI) Strategies.

YES____ NO____ TDOT Delay / Qualitative Criteria Met?

Justification _____

_____

_____

_____

_____

_____

_____

_____

_____

TN TDOT Department of Transportation

DATE: _____

DELAY CRITERIA TABLE

Number of Lanes (in 1 direction) (A)				Maximum Allowable 2-Way AADT (B)					
Total	**Open**	**Closed**		**Urban**	**Rural**	**Urban**	**Rural**	**Urban**	**Rural**
				Freeway	Freeway	Arterial	Arterial	Other	Other
1	1	0 (C)				31,000	17,000	33,000	24,000
	0	1 (D)				20,000	14,000	16,000	11,000
2	2	0		89,000	87,000	83,000	59,000	67,000	45,000
	1	1		45,000	43,000	41,000	29,000	34,000	21,000
3	3	0		131,000	130,000	124,000	88,000	101,000	64,000
	2	1		87,000	87,000	83,000	59,000	67,000	40,000
	1	2		44,000	43,000	41,000	29,000	34,000	40,000
4	4	0		174,000	173,000				
	3	1		131,000	130,000				
	2	2		87,000	87,000				
	1	3		44,000	43,000				
5	5	0		218,000					
	4	1		174,000					
	3	2		131,000					
	2	3+		87,000					
6	6	0		254,000					
	5	1		212,000					
	4	2		169,000					
	3	3		127,000					
	2	4+		85,000					

(A) Lane configuration is presented for one direction of travel (that direction being affected by the work zone). (B) AADTs are presented as typical 2-way, 24-hour volumes.

(C) Zero lanes closed designates shoulder or roadside work where all travel lanes remain open.

(D) Represents configuration of a 2-lane roadway with one lane closed and flagger/temp. signal in operation.

Note: Delay Criteria Table is presented as a qualitative estimating tool for predicting the "significance" of a project as it relates to TDOT's TMP process. It is not intended for other purposes and/or as a direct measure of travel delay based on travel volumes.

Work Zone on…	Affects a signalized intersection…	Multiply max AADT by…
Urban arterial	Another arterial	0.5
Urban arterial	A non-arterial	0.65
Rural Arterial	Another arterial	0.5
Rural Arterial	A non-arterial	0.7
Urban other	An arterial	0.45
Urban other	Another non-arterial	0.5
Rural other	An arterial	0.3
Rural other	Another non-arterial	0.5

*Based on department research conducted by Vanderbilt University

TN TDOT Department of Transportation

DATE: _____

Transportation Management Plan

County: _____

PIN: _____

State Project Number: _____

Federal Project Number: _____

Route, BLM - ELM: _____

Project AADT: _____

Project Description: _____

_____

_____

Significant Project: YES NO

Required TMP Strategies:

All projects, regardless of significance, require a TMP. All TMPs are required to have TTC strategies, regardless of project significance. Significant projects shall have TO and PI strategies, non-significant projects should have TO and PI strategies considered. Applicable details, drawings and strategy descriptions shall be included on the following pages to expedite TMP reviews.

TMP Review:

All TMPs developed by consultants or in-house staff shall be reviewed to ensure compliance with the current Work Zone Safety and Mobility manual.

Signatures required for each category of TMP strategies selected.

Temporary Traffic Control (TTC)

_____

Regional Traffic Engineer

Transportation Operations (TO)

_____

Regional/HQ De Manager

Public Information (PI)

_____

Regional Communications Rep.

Significant Project Approval

_____

State Work Zone Engineer

Common Transportation Operations Strategies Defined

Off-Peak Work Hours

Restriction of construction work hours from holidays, special events, and/or peak travel times to limit impact on traffic. Weekend construction hours begin after the Friday peak period and end before the Monday peak period.

Pedestrian/ Bicycle Access Improvements

Alternate facilities are provided for bicyclists, pedestrians, and people with disabilities in places where the work zone impacts their accessibility.

Police Cooperation

A cooperative agreement between police and an agency to provide enforcement support for a work zone.

Work Zone ITS

Technology used in work zones to monitor traffic flow, crashes, errant vehicles, and driver behavior. These technologies can communicate with TMCs so that information relevant to drivers can be communicated through message boards. Work zone layout can be adjusted if traffic monitoring cameras detect drivers having difficulty navigating the current arrangement.

Alternate Route/Detour

Some, or all, traffic is re-routed from the roadway under construction to other existing roadways.

Help Truck Service

The use of Help trucks to improve the clearance time of disabled vehicles. Extended truck hours, extra patrols, or trucks dedicated to a work zone (on or near site) may be required.

Turn Restrictions

The restrictions of turning movements for driveways and/or intersections to increase roadway capacity, reduce potential congestion and delays, and improve safety. Restrictions may be applied during peak periods or all day.

Truck Restrictions

The restriction of truck-travel through work zones on routes with high truck volumes to improve passenger vehicle capacity. These restrictions may apply to specific periods of time or the duration of the project. When restricting truck access, 23 CFR Part 658.11 (d)
(1) and (g) must be followed.

Temporary Traffic Signals

The use of fixed or portable, temporary traffic signals to regulate traffic flow in or near the work zone for improved safety and capacity.

Contractor Safety Incentives

The incorporation of a monetary reward in a contract to be paid at the end of a project for the contractor and all of his or her subcontractors and suppliers for meeting set safety criteria.

Construction Phasing/Staging

Staging typically refers to how the contractor positions equipment and materials within the work zone. Phasing refers to the sequence in which major portions of a project are constructed. The impacts of a work zone on traffic may be reduced by using operationally-sensitive phasing and staging for the duration of the project.

Traffic Surveillance

The use of surveillance equipment, such as detector stations or cameras to help detect, identify and verify traffic problems and incidents in the work zone.

Speed Reduction

Due to the nature of the project, the speed limit is reduced. This is done in compliance with the Guidelines for Establishing Work Zone Speed Limits.

Construction Safety Inspectors

The contractor provides at least 1 ATSSA certified Traffic Control Supervisor (TCS) to be on-call 24/7 and have the authority to stop a project should safety concerns arise.

Incident Management Coordination

Coordination with regional TMCs improves quick clearance of incidents from work zones. TMCs can dispatch help trucks and notify emergency personnel of incidents. Additionally, TMCs can communicate lane closure and other work zone information to motorists via the DMS network.

Protect the Queue

The use of TDOT PTQ (Protect the Queue) trucks to alert drivers of a queue forming ahead due to a work zone.

Parking Restrictions

Parking restriction can be used to reduce traffic conflicts, improve access to the site, or increase capacity where a parking lane is converted to a travel lane. These restrictions may apply to all or part of a work zone, including alternate routes, for specified periods of time, or for the duration of the project.

Common Public Information Strategies Defined

Digital Message Signs

DMS signs display information posted by the TMC. These messages can alert drivers about road complications due to work zones.

Highway Advisory Radio (HAR)

Longer, more detailed messages than can be provided using signage may be necessary for some work zone situations. HAR involves the dissemination of information to motorists while en route over wide-area wireless communications directly to in-vehicle radios. Signs are used to inform motorists of the radio frequency where the information is available.

511 Message

This strategy provides motorists with work zone-related information, static (e.g., project dates) and/or real time (e.g., potential delays), using such technology as cell phones, pagers, in-vehicle systems, and e-mail notifications.

Portable Message Boards

These are portable DMS boards that can be moved to a project location that is outside the TMC/DMS network. They provide drivers with custom messages concerning the work zone.

TENNESSEE DEPARTMENT OF TRANSPORTATION

WORKZONE SAFETY AND MOBILITY MANUAL

APPENDIX B

Responsibility Table

TDOT Division	Project Type	Significance Determination Timing	Significance Determination	Transportation Management Plan
Project Delivery				
	Roadway spot improvement	Made prior to completion of preliminary plans	Project designer	Section manager
	Bridge replacement	Made prior to completion of ROW plans	Project designer	Section manager
	Intersection modification	Made prior to completion of preliminary plans	Project designer	Section manager
	Roadway widening	Made prior to completion of ROW plans	Project designer	Section manager
	Roadway reconstruction	Made prior to completion of ROW plans	Project designer	Section manager
	Interchange	Made prior to completion of ROW plans	Project designer	Section manager
	Resurfacing	Made after paving limits are set	Project designer	Section manager
Traffic Operations				
	Signal design	Made during final plans development	Project designer	Section manager
	ITS project	Made prior to completion of utility plans	Project designer	Section manager
Structures				
	Bridge rehabilitation	Made after bridge and scope work is identified	Project designer	Section manager
ROW/Utilities				
	Utility work	Submitted with permit request	Project designer	Section manager
Strategic Transportation Investments				
	Road safety audits	Made during plans development	Safety manager	Safety manager
Regional Operations				
	Culvert replacement	Made after work location is identified	District manager	District manager
	Roadside maintenance	Made after work location is identified	District manager	District manager
HQ Maintenance				
	Maintenance contracts	Made during contract development	Contract writer	Section manager
	Emergency maintenance contracts	Made during contract development	Contract writer	Section manager
Local Programs				
	Local program projects	Submitted with permit request	Local agency	Local agency

TENNESSEE DEPARTMENT OF TRANSPORTATION

WORKZONE SAFETY AND MOBILITY MANUAL

APPENDIX C

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING
SUITE 700, JAMES K. POLK BUILDING
505 DEADERICK STREET
NASHVILLE, TENNESSEE 37243-1402
(615) 741-0791

Clay Bright
COMMISSIONER

BILL LEE
GOVERNOR

Memorandum

DATE: April 1, 2019

TO: Regional Directors and Division Directors
Bureau of Engineering

FROM: Paul D. Degges, P.E.
Deputy Commissioner and Chief Engineer

RE: **Project Development Directive – 2**
Work Zone Traffic Control Plans for Projects on Freeways

Effective immediately, work zone traffic control plans for any freeway widening project, bridge replacement or bridge repair project on a freeway, shall be based on maintaining the same number of existing or preconstruction lanes operational throughout all construction phases. Off peak lane closures for exceptional or extenuating circumstances needed to maintain highway worker or road user safety are allowable.

Regarding the roadway typical section through freeway work zones, a minimum of eleven (11) ft. lanes and two (2) ft. shoulders shall be maintained at all times. Exceptions to this directive shall be considered a significant project that is anticipated to cause a sustained work zone impact. As such, the proposed transportation management plan with mitigating strategies shall be completed and submitted for approval in accordance with the most recent edition of the Department's **Work Zone Safety and Mobility Manual**.

Please proceed with the update or revision of any Division directives, policies, guidelines or procedures as necessary to implement this directive.

PDD/JJ/jc

Cc: Mr. Jeff Jones, Assistant Chief Engineer of Design
Mr. Will Reid, Assistant Chief Engineer of Operations