

POLICY FOR WORK ZONE SAFETY AND MOBILITY

**EFFECTIVE:
DECEMBER 2020**

**ARKANSAS DEPARTMENT OF TRANSPORTATION
ARKANSAS DIVISION OFFICE OF THE FEDERAL HIGHWAY ADMINISTRATION**

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1. INTRODUCTION

This policy was developed in compliance with the Final Rule on Work Zone Safety and Mobility as published by the Federal Highway Administration in the Federal Register (69 FR 54562) on September 9, 2004 which broadened the former regulation on "Traffic Safety in Highway and Street Work Zones" (23 CFR 630 Subpart J), and the Final Rule on Temporary Traffic Control Devices Final (23 CFR 630 Subpart K) as published by the Federal Highway Administration in the Federal Register (72 FR 68480) on December 5, 2007.

As a minimum, this policy will be reviewed in conjunction with the bi-annual process review (described herein in Section 5.E.) and updated as necessary. Guidance from FHWA, implementation information from other states, and lessons learned from implementation of this policy shall be the basis for policy updates.

This policy is referenced in the FHWA Arkansas Division and ARDOT Stewardship and Oversight Agreement on Project Assumption and Program Oversight in Attachment C: Manuals and Operating Agreements.

Titles used herein (Assistant Chief Engineer, Engineer of Roadway Design, etc.) refer to the current ARDOT officer or his/her designee.

2. POLICY APPLICABILITY

This policy applies to all highway projects financed in whole or in part with Federal-aid highway funds. This includes minor highway projects located in the ROW such as railroad signals, traffic signals, landscaping, pavement markings, etc. Proper documentation should be completed for all applicable projects. ARDOT will coordinate with local agencies to ensure the policy is implemented for locally administered projects. All Federal-aid projects that are scheduled to be let to contract on or after October 12, 2007 shall comply with this policy, unless an exception is granted in accordance with the provisions herein.

3. EXCEPTIONS

Requests for exceptions shall be made in writing to the FHWA Division Office on a project-by-project basis (described herein in Section 5.A.).

4. POLICY OBJECTIVES AND PERFORMANCE MONITORING

A. POLICY OBJECTIVES

The overall objectives of this policy in addressing work zone safety and mobility impacts on roadway improvement projects are:

- Provide a safe environment for highway workers and the traveling public.
- Provide the Contractor adequate access to the work area in order to complete the work in an efficient manner.
- Minimize congestion to the extent practicable.
- Improve public satisfaction.

B. PERFORMANCE MONITORING

In order to measure the effectiveness of this policy, the following work zone safety and mobility measures shall be monitored:

- Work zone related crashes, fatalities and injuries, including highway worker injuries caused by interaction with traffic on all projects.
- Percentage of significant project work zones meeting acceptable thresholds for work zone congestion as documented in the project Transportation Management Plans (TMPs).

Data to track these measures shall be collected as described in Section 5.C.(3). More specific work zone safety and congestion measures will be considered as work zone crash data and performance data are gathered in accordance with this policy. The measures will be reviewed in conjunction with the bi-annual policy reviews described herein in Section 5.E. and revised as deemed necessary based on historical data.

5. POLICIES AND PROCEDURES

A. IDENTIFICATION OF SIGNIFICANT PROJECTS

A Transportation Management Plan (TMP) is required for all Federal-aid highway projects. The scope, content and degree of detail in the TMP are dependent upon whether the project is identified as a *significant* or *non-significant* project. For a project to be considered a significant project, it must satisfy at least one of the following criteria:

- The project, alone or in combination with other concurrent projects nearby, is anticipated to cause sustained work zone impacts that are greater than what is considered tolerable based on engineering judgment.
- The project is located on the Interstate Highway System within the boundaries of a Transportation Management Area (TMA) and will occupy a location for more than three (3) days with either intermittent or continuous lane closures. Exceptions to this requirement may be requested in writing from the FHWA Division Office for projects or classes of projects (e.g., minor maintenance, mobile operations, pavement markings, and nighttime, off-peak or weekend work, etc.) if it is determined that those projects would not have a high level of sustained work zone impacts. These exception requests must be made early in the project development process – usually when the scope of a project is being defined.

Identification of projects as being either significant or non-significant shall be done as the projects appear in the ARDOT Staff Minutes. The Engineer of Roadway Design shall make a preliminary finding as to whether a project is significant using the following criteria:

- Roadway classification
- Traffic volumes
- Nature of work
- Expected level of safety impacts
- Expected level of operational impacts
- Expected impacts on the traveling public at the metropolitan or regional level
- Expected project duration
- Anticipated level of public interest
- Level of safety and operational effects expected to occur as a result of interaction with adjacent or nearby projects

Traffic analysis tools such as the Highway Capacity Manual, Synchro, VISSIM, WISE, and sketch tool software may be used to aid in determining whether a project is significant.

The criteria above will be reviewed in conjunction with the bi-annual policy reviews described herein in Section 5.E. These reviews shall focus on establishing thresholds for the criteria using available historical data.

The Engineer of Roadway Design shall note the project classification for all projects (i.e. “significant work zone impacts” or “non-significant work zone impacts”) as they are added to the Staff Minutes. Roadway Design will develop and maintain a list of federally funded projects that are classified as “significant” or “non-significant”. This list will be provided to the members of the Work Zone Committee (including FHWA) for review and comment as it is revised. In addition, Roadway Design, with assistance from FHWA, will use this list to monitor TMP development for significant projects.

As more information becomes available during the project development stage, the Department may determine that a project previously identified as significant may be non-significant, or vice-versa. Other ARDOT Divisions and FHWA may initiate a request for a change in project classification by contacting the Engineer of Roadway Design.

B. PROCEDURES TO ASSESS AND MITIGATE WORK ZONE IMPACTS IN PROJECT DEVELOPMENT

(1) GENERAL

The scope of procedures to assess and mitigate work zone impacts in project development shall be based on individual project characteristics. When deemed appropriate, available traffic, operational and crash data for the project location and for similar projects will be considered in both the project environmental, planning and design phases in the evaluation of project alternatives and in the development of the TMP. The TMP strategies in sections 5.B.(2)(b), 5.B.(2)(c), 5.B.(2)(d) and 5.B.(2)(e) may be used to assist in the assessment and mitigation of work zone impacts.

Traffic analysis tools may be used during project development to analyze congestion and safety impacts and to aid in the development of the project TMP. The TMP shall contain discussion that documents the project’s “acceptable level” of congestion impacts to aid in project monitoring as described in Section 5.C.(3).

Potential cumulative impacts to the traveling public shall be considered in the planning and scheduling of multiple projects on a particular route or in a particular region. When the associated TMP costs are expected to represent an inordinate portion of the overall project cost, an estimate of these costs shall be included in preliminary cost estimates for budgeting purposes.

(2) DEVELOPMENT OF TRANSPORTATION MANAGEMENT PLAN (TMP)

(a) REQUIREMENTS FOR SIGNIFICANT AND NON-SIGNIFICANT PROJECTS

Roadway Design, in coordination with Transportation Planning & Policy, Construction, District personnel, Public Information (and FHWA on Federal Oversight projects), shall be responsible for TMP development. In addition, input from other potential stakeholders may also be used, including:

- Local government officials
- Metropolitan Planning Organizations
- Local Law enforcement
- Railroad agencies/operators
- Transit providers
- Freight movers
- Utility suppliers
- Emergency responders (fire, EMS, etc.)
- School officials
- Business community

The TMP strategies in sections 5.B.(2)(b), 5.B.(2)(c), 5.B.(2)(d) and 5.B.(2)(e) shall be used as the basis for TMP development for all projects.

For significant projects, the TMP shall consist of a Temporary Traffic Control (TTC) plan, as well as Transportation Operation (TO), Public Information (PI) and Exposure Control (EC) components. Roadway Design shall initiate TMP development for significant projects at approximately 20% - 30% plan development by holding a meeting with representatives from Transportation Planning & Policy, Construction, the affected District, Highway Police, Public Information (ARDOT Bridge Division) if applicable and FHWA on Federal Oversight projects (Projects of Division Interest – PODI) to discuss the possible TMP scope and contents. If applicable, the project design consultant should be included in this review.

For non-significant projects, the TMP shall normally consist of a TTC plan and Exposure Control (EC) component. However, Transportation Operation (TO) and/or Public Information (PI) components may also be included if considered beneficial.

Coordination with the appropriate Department Divisions and Districts (and FHWA on Federal Oversight projects (Projects of Division Interest (PODI))) shall be exercised throughout the project development process to ensure that all TMP components are properly developed.

Project contracts shall include the necessary pay items and provisions for implementing all aspects of the TMP that will be the responsibility of the Contractor.

(b) TEMPORARY TRAFFIC CONTROL (TTC) PLAN

A TTC plan shall be developed specifically for each project. The scope of the TTC plan shall be determined by the specific project characteristics, and the details of the TTC plan shall be commensurate with the complexity of the project. For some projects, (i.e. Traffic Signal Projects), the use of Department Standard Drawings or commonly used details and reference to Part 6 of the MUTCD will often be sufficient.

The TTC plan shall be consistent with Department Standard Drawings and Specifications, Appendix F of the Roadway Design Plan Development Guidelines, the provisions under Part 6 of the Manual on Uniform Traffic Control Devices (MUTCD), and with the work zone hardware recommendations in Chapter 9 of the AASHTO Roadside Design Guide. TTC plans shall ensure that pre-existing roadside safety hardware either be maintained at an equivalent or better level than existed prior to project implementation, or be replaced with approved temporary or permanent devices, as appropriate.

The following traffic control strategies shall be considered in the development of the TTC plan:

- Use of stage construction to provide for passage of traffic through the work area.
- Lane shifts/closures
 - Lane shifts to maintain pre-existing number of lanes
 - Reduced lane widths to maintain pre-existing number of lanes
 - Lane closures
 - Reduced shoulder widths
 - Shoulder closures
- Construction of temporary detours (diversions) to divert traffic around the work area
- Full road closures with no designated detour route
- Full road closures with diversion of traffic to an approved detour route
- Alternating one-way operation with appropriate traffic control
- Closure of one side of a divided roadway with two-way traffic on the opposite lanes
- Temporary interchange ramps
- Ramp closures
- Construction of adequate temporary acceleration lanes for freeway on-ramps to provide for a yield condition in lieu of a stop condition
- Brief, intermittent traffic stoppages for specific operations such as erecting bridge beams, blasting, and moving equipment

(c) TRANSPORTATION OPERATION (TO) COMPONENT

The TO component shall include 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 scope of the TO component shall be determined by the project characteristics and the transportation operation and safety strategies that are considered appropriate. Examples of strategies to be considered are:

- Limiting lane closures and/or work to off-peak or nighttime hours on roadways with heavy peak-hour traffic volumes
- Allowing short-term (e.g., night or weekend) road closures to allow for increased productivity and to reduce overall construction time
- Requiring the project Contractor to alter work schedules or suspend work during special events and/or holiday periods
- Use of incentive-based contracts (e.g., Fixed Completion Date, A+B, A+C, A+B+C Bidding) to expedite completion of the work
- Promoting construction innovation through the inclusion of Value Engineering contract provisions in projects with estimated cost exceeding \$2 million
- Use of temporary traffic signals where warranted to control traffic movements due to changing traffic patterns created by construction activities
- Use of mobile speed notification units to encourage compliance with work zone speed limits
- Use of Intelligent Transportation System (ITS) technology (queue detection, 511, etc.)
- Routing permitted oversize vehicles around work zones, when possible
- Use of dedicated law enforcement

- Use of dedicated wreckers and/or motorist assistance patrols to minimize disruption caused by disabled vehicles

Appropriate provisions shall be included in the project contract plans and specifications as necessary to implement the selected strategies.

(d) PUBLIC INFORMATION (PI) COMPONENT

The PI component shall include communication strategies that seek to inform affected road users, the general public, area residents and business operators, and appropriate public entities about the project and expected work zone impacts. The scope of the PI component shall be determined by the project characteristics and the information and outreach strategies that are considered appropriate. When possible, this communication should begin in conjunction with the project public involvement process.

Public information should be provided through methods best suited for the project. Appropriate measures shall be utilized to reach Limited English Proficiency (LEP) individuals and/or communities. Special consideration shall be given underserved communities. The following are examples:

- Brochures and mailers
- Project public meetings and public hearings
- Press releases/media alerts
- Web-based project information
- Coordination with media, schools, businesses, law enforcement, emergency services, etc.
- Work zone education and safety campaigns
- Providing information for trucking company safety meetings

The following contract measures shall be considered to provide information to road users regarding changing project conditions:

- Portable Changeable Message Signs
- Highway Advisory Radio
- Automated Work Zone Information System
- IDriveArkansas.com Website

(e) EXPOSURE CONTROL (EC) COMPONENT

The EC component shall include factors and characteristics to be considered to avoid or minimize exposure for workers and the road users. The scope of the EC component shall be determined by the project characteristics and the transportation and safety strategies that are considered appropriate. Examples of strategies to be considered are:

- Roadway classification
- Scope and duration of the project
- Phasing of the project
- Anticipated traffic speeds through the work zone
- Anticipated traffic volumes and Vehicle Mix through the work zone
- Type of work
- Distance between traffic and workers, and extent of worker exposure
- Escape paths available for workers to avoid a vehicle intrusion into the work space

- Time of day (e.g., night work)
- Work area restrictions
- Potential hazard to workers and road users presented by device itself and during device placement and removal
- Geometrics that may increase crash risks
- Impacts on project cost and duration
- Safe entry /exit of work vehicles onto/from the travel lanes
- Consequences from/to road users resulting from roadway departure

(f) DOCUMENTATION

Roadway Design, in coordination with Transportation Planning & Policy, Construction, District personnel, Highway Police, Public Information and FHWA for Federal Oversight projects (Projects of Division Interest (PODI)), shall prepare a TMP Document for all Federal-aid highway projects. If applicable, the project design consultant should be included in the TMP development activities. All components and strategies of the TMP shall be described, and all coordination activities that occurred during the project development process shall be documented including any work zone impact analysis efforts.

The guidelines in Appendix B will guide the development of the TMP Documents for both Federal and State Oversight projects. The complexity and level of impacts for each project will determine the extent of supporting documentation required for the TMP Document. This Policy will apply to Locally Administered Projects (LAP). ARDOT will assist the local agencies in complying with this Policy and properly documenting TMP development efforts.

For significant projects, Roadway Design shall initiate TMP development for significant projects at approximately 20%-30% plan development by holding a meeting with representatives from Transportation Planning & Policy, Construction, the affected District, Highway Police, Public Information, ARDOT Bridge Division if applicable, identified stakeholders, and FHWA on Federal Oversight projects (Projects of Division Interest (PODI)) to discuss the possible TMP scope and contents. If applicable, the project design consultant should be included in this review. A draft TMP Document, which shall include comments and disposition of comments from the 20%-30% TMP plan development meeting, shall be provided to Construction and the affected District and FHWA for Federal Oversight projects (Projects of Division Interest (PODI)) for review and comment at the initial plan review meeting (approximate 50% plan stage). The draft TMP Document shall also be provided to Transportation Planning & Policy, Highway Police, and Public Information for review and comment. Roadway Design will document the disposition of TMP comments/issues raised from the 50% plan review. These comments shall be included as part of the final TMP documentation.

For Federal Oversight projects (Projects of Division Interest (PODI)), the final TMP Document shall be compiled by the Engineer of Roadway Design, submitted to FHWA as part of the PS&E submittal and a copy placed in the permanent project files.

For State Oversight projects, the final TMP Document shall be compiled by the Engineer of Roadway Design and a copy placed in the permanent project files.

For significant projects, a copy of the final TMP Document shall be provided by Roadway Design to Construction, the affected District, Highway Police, Transportation Planning & Policy and Public Information.

C. PROCEDURES TO MANAGE SAFETY AND MOBILITY DURING PROJECT IMPLEMENTATION

(1) GENERAL

During the construction phase, the project Resident Engineer will be responsible for implementing all Department aspects of the TMP and for coordination with the Contractor, FHWA and other Department Divisions as necessary to fulfill all requirements of the TMP. The Contractor and his designated Traffic Control Supervisor will be responsible for fulfilling the contract requirements of the TMP.

(2) TMP IMPLEMENTATION

Some aspects of the TMP may be implemented prior to the initiation of construction activities. Typically, these will be Department PI activities such as providing information via the web and the news media about impending construction activities and the associated traffic impacts, and notifying residents and business operators within the project when construction is expected to commence.

After construction activities commence, Department PI activities, such as direct contact with residents and business operators within the project and presentation of project information via news releases and the web, may be utilized when considered appropriate to provide information concerning activities such as lane and/or road closures, detours and construction phase changes that will have a significant effect on traffic patterns.

(3) TMP MONITORING

For all projects (both significant and non-significant), work zone crashes shall be documented by the project Resident Engineer in accordance with Sections 107.02(a) and 107.09(d) of the Resident Engineer's Manual. In addition, FHWA will be notified of all fatal crashes that are related to all Federal-Aid projects. Any mitigation efforts or changes in traffic control will be coordinated with FHWA.

In addition, work zone operations shall be monitored for all projects by the project Resident Engineer and documented in accordance with Section 107.02(a) of the Resident Engineer's Manual. At the project preconstruction conference for significant projects, the Resident Engineer will discuss with the Contractor what the project TMP documents as "acceptable" congestion levels and how congestion will be monitored and documented in accordance with the Resident Engineer's Manual.

The Resident Engineer will rely on field observations, available work zone crash data, and operational information to manage work zone impacts. Changes in the TMP should be considered when the Resident Engineer determines work zone impacts have exceeded acceptable levels. Traffic analysis tools may be used to evaluate proposed changes in the TMP. Changes shall be documented in accordance with Section 603.01(a) of the Resident Engineer's Manual.

D. WORK ZONE FIELD REVIEW

A Work Zone Field Review shall be conducted every two years by the joint ARDOT/FHWA Work Zone Traffic Control Committee. The Committee shall select projects throughout the State to be reviewed. Additional Department personnel shall participate as needed. The emphasis of this review is safety and operations, including:

- General conformity with the project TMP
- Condition and placement of signing, pavement markings and traffic control devices
- Overall traffic operations
- Analysis of safety and operational performance

A report will be prepared for the Director, Deputy Director and Chief Operating Officer, Deputy Director and Chief Engineer, and Assistant Chief Engineers summarizing the findings of the review.

Information gathered in the Work Zone Field Reviews shall be used to improve the planning, development, and management of TMPs for future projects.

E. PROCESS REVIEW

A Process Review shall be conducted every two years, alternating with the Work Zone Field Review. The scope of this review will be determined by the Chairman, Co-Chairman and FHWA representative, but should include the evaluation of available crash data and performance data for specific projects. In addition, the scope of the review may address focus areas and issues identified through on-going work zone efforts. Field reviews will be performed when the focus areas of the review necessitate the collection of field data. The joint ARDOT/FHWA Work Zone Traffic Control Committee shall conduct this review and additional ARDOT personnel shall participate as needed. Traffic analysis tools may be used in performing this review. Areas of emphasis shall include:

- Safety of motorists and workers
- Mobility
- Construction efficiency
- Public perception and satisfaction

In addition, available crash data and performance data for completed and ongoing Federal-aid highway projects shall be compiled and reviewed. One goal of the review is to further refine the criteria shown in Section 5.A. for making significant versus non-significant project determinations.

A report will be prepared for the Director, Deputy Director and Chief Operating Officer, Deputy Director and Chief Engineer, Assistant Chief Engineers, and FHWA summarizing the findings of the review and any best practices identified.

Information gathered in the process reviews shall be used to evaluate the effectiveness of this policy and to aid in the planning, development, and management of TMPs for future projects.

F. TRAINING

Personnel involved in the development, design, implementation, operation, inspection, and enforcement of work zone related transportation management and traffic control shall receive periodic training in their respective areas of responsibility. Training updates are required for Department personnel as necessary to reflect changing industry practices and standards. Documentation of training for Department personnel shall be maintained in the Division or District office, as applicable.

Consultants employed by the Department for development, design, implementation, operation or inspection of work zone related transportation management and traffic control will be required to certify that their personnel have received proper training in their respective areas of responsibility, and these individuals may be required to participate in Department training sessions.

Contractor and ARDOT personnel responsible for fulfilling the responsibilities of Traffic Control Supervisor shall be certified as a worksite traffic control supervisor by either the American Traffic Safety Services Association (ATSSA) or the Arkansas Associated General Contractors in accordance with Subsection 603.02(b) of the Standard Specifications.

The Department will maintain a list of appropriate/required training courses for ARDOT personnel and other partners (including consultants, contractors, enforcement, utility providers, local jurisdictions, etc.). The ARDOT Training and Safety Section of the Human Resource Division will assist in the implementation and tracking of work zone training. The Local Technology Assistance Program (LTAP) will assist with work zone training, particularly with local agencies.

G. WORKER VISIBILITY: USE OF HIGH-VISIBILITY SAFETY APPAREL

Use of high-visibility safety apparel is needed in order to comply with 23 CFR 634 (see Appendix E) and to decrease the likelihood of worker fatalities or injuries caused by motor vehicles and construction vehicles and equipment while working within a Federal-aid highway's right-of-way in Arkansas. All workers within the right-of-way who are exposed either to traffic (vehicles using the roadway for travel purposes) or to construction equipment within the work area shall wear high-visibility safety apparel meeting the Performance Class 2 or 3 requirements of the ANSI/ISEA 107-2004 publication entitled "American National Standard for High – Visibility Safety Apparel and Headwear."

APPENDIX A

DEFINITIONS

Highway workers include, but are not limited to, personnel of the contractor, subcontractor(s), Department, utilities, and law enforcement performing work within the right-of-way of a transportation facility.

Mobility is the ability to move from place to place and is significantly dependent on the availability of transportation facilities and on system operating conditions. With specific reference to work zones, mobility pertains to moving road users efficiently through or around a work zone area with a minimum delay compared to baseline travel when no work zone is present, while not compromising the safety of highway workers or road users. The commonly used performance measures for the assessment of mobility include delay, speed, travel time and queue lengths.

Safety is a representation of the level of exposure to potential hazards for users of transportation facilities and highway workers. With specific reference to work zones, safety refers to minimizing potential hazards to road users in the vicinity of a work zone and highway workers at the work zone interface with traffic. The commonly used measures for highway safety are the number of crashes or the consequences of crashes (fatalities and injuries) at a given location or along a section of highway during a period of time. Highway worker safety in work zones refers to the safety of workers at the work zone interface with traffic and the impacts of the work zone design on worker safety. The number of worker fatalities and injuries at a given location or along a section of highway, during a period of time are commonly used measures for highway worker safety.

Transportation Management Area (TMA) is an urbanized area with a population more than 200,000 as determined by the latest census, or other area when the TMA designation is requested by the Governor and the MPO, and officially designated by the Administrators of the FHWA and FTA. (Refer to Appendix C.)

Work zone is an area of a highway with construction, maintenance, or utility work activities. 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 (TTC) device.

Work zone crash is 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, exiting from or adjacent to work zones that are related to the work zone.

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.

APPENDIX B

TRANSPORTATION MANAGEMENT PLAN DOCUMENT GUIDELINES FOR FEDERAL OVERSIGHT PROJECTS – PROJECTS OF DIVISION INTEREST (PODI)

(Date)

Ms. Vivien Hoang
Arkansas Division Administrator
Federal Highway Administration
700 West Capitol, Room 3130
Little Rock, Arkansas 72201

Job Number:
F.A.P.:
Job Name:
County:

Dear Ms. Hoang:

A Transportation Management Plan (TMP) has been developed for this project in accordance with the provisions of the Department's Policy for Work Zone Safety and Mobility for a **significant [non-significant]** project. The TMP to Master File for this project includes the following components:

- _____ Temporary Traffic Control Plan Component
- _____ Traffic Operation Component
- _____ Public Information Component
- _____ Exposure Control Component

NOTE: A Temporary Traffic Control Plan and Exposure Control Component shall be provided for all projects. Significant projects will contain all four components.

TEMPORARY TRAFFIC CONTROL PLAN

The Temporary Traffic Control Plan has been developed using the following strategies. Additional documents for strategies/countermeasures discussed or used are attached:

- _____ Use of stage construction to provide for passage of traffic through the work area
- _____ Lane shifts to maintain pre-existing number of lanes
- _____ Reduced lane widths to maintain pre-existing number of lanes
- _____ Lane closures
- _____ Reduced shoulder widths
- _____ Shoulder closures
- _____ Construction of temporary detours (diversions) to divert around the work area
- _____ Full road closures with no designated detour route
- _____ Full road closures with diversion of traffic to an approved detour route
- _____ Alternating one-way operation with appropriate traffic control
- _____ Closure of one side of a divided roadway with two-way traffic on the opposite lanes
- _____ Temporary interchange ramps
- _____ Ramp closures
- _____ Construction of adequate temporary acceleration lanes for freeway on-ramps to provide for a yield condition in lieu of a stop condition
- _____ Brief, intermittent traffic stoppages for specific operations such as erecting bridge beams, blasting, and moving equipment

COMMENTS:

TRAFFIC OPERATION COMPONENT

The Traffic Operation Component has been developed using the following strategies. Additional documents for strategies/countermeasures discussed or used are attached:

- _____ Limiting lane closures and/or work to off-peak or nighttime hours on roadways with heavy peak-hour traffic volumes
- _____ Allowing short-term (e.g., night or weekend) road closures to allow for increased productivity and to reduce overall construction time
- _____ Requiring the project Contractor to alter work schedules or suspend work during special events or holiday periods
- _____ Use of incentive-based contracts (e.g., Fixed Completion Date, A+B, A+C, or A+B+C Bidding) to expedite completion of the work
- _____ Promoting construction innovation through the inclusion of Value Engineering contract provisions in projects with estimated cost exceeding \$2 million
- _____ Use of temporary traffic signals where warranted to control traffic movements at intersections due to changing traffic patterns created by construction activities
- _____ Use of mobile speed notification units to encourage compliance with work zone speed limits
- _____ Use of Intelligent Transportation System (ITS) technology (queue detection, 511, etc.)
- _____ Routing permitted oversize vehicles around work zones, when possible
- _____ Use of dedicated wreckers and/or motorist assistance patrols to minimize disruption caused by disabled vehicles

COMMENTS:

PUBLIC INFORMATION COMPONENT

The following Public Information measures have been utilized on this project. Additional documentation for strategies/countermeasures discussed or used is attached:

- Brochures and mailers
- Public meetings (list): _____
- Press releases/media alerts
- Web-based project information
- Coordination with media, schools, businesses, emergency services, etc. (list): _____
- Work zone education and safety campaigns
- Providing information for trucking company safety meetings

COMMENTS:

The following contract measures will be utilized on this project to provide information to road users regarding changing project conditions. Additional documentation for strategies/countermeasures discussed or used is attached:

- Portable Changeable Message Signs
- Highway Advisory Radio
- Automated Work Zone Information System
- IDriveArkansas.com Website

COMMENTS:

The work zone will be shown on the IDriveArkansas.com Website.

EXPOSURE CONTROL COMPONENT

The following factors and characteristics are to be considered during the development of the Exposure Control Component:

- Roadway classification
- Scope and duration of the project
- Phasing of the project
- Anticipated traffic speeds through the work zone
- Anticipated traffic volumes and Vehicle Mix through the work zone
- Type of work
- Distance between traffic and workers, and extent of worker exposure
- Escape paths available for workers to avoid a vehicle intrusion into the work space
- Time of day (e.g., night work)
- Work area restrictions
- Potential hazard to workers and road users presented by device itself and during device placement and removal
- Geometrics that may increase crash risks
- Impacts on project cost and duration
- Safe entry /exit of work vehicles onto/from the travel lanes
- Consequences from/to road users resulting from roadway departure
- Other (list): _____

The Exposure Control Component has been developed using the following strategies. Additional documentation for strategies/countermeasures discussed or used is attached:

_____ Use of positive protection devices that contain and/or redirect vehicles to prevent intrusions into the work zone (i.e. temporary precast concrete barrier wall):

Considerations for positive protection:

- _____ Work zone provides workers no means of escape from motorized traffic
- _____ Substantial worker exposure to traffic for long duration
- _____ Projects high anticipated operation speeds
- _____ Work operations placed workers close to travel lanes open to traffic
- _____ Roadside hazard will remain in place overnight or longer
- _____ Other (list): _____

COMMENTS:

_____ Use of exposure control measures to avoid or minimize exposure:

Exposure control measures:

- _____ Road closures
- _____ Ramp closures
- _____ Median crossovers
- _____ Detours
- _____ Work during off peak hours
- _____ Accelerated construction techniques
- _____ Other (list): _____

COMMENTS:

_____ Use of traffic control measures to minimize exposure and/or crashes:

Traffic control measures:

- _____ Static Signing
- _____ Changeable message signs
- _____ Arrow panels
- _____ Longitudinal and lateral buffer space
- _____ Trained flaggers and spotters
- _____ Pace or pilot vehicle
- _____ Construction pavement markings
- _____ Channelizing devices
- _____ Reduced speed through the work zone
- _____ Temporary signal
- _____ Shadow vehicle with attenuator
- _____ Other (list): _____

COMMENTS:

ENTRY/EXIT OF WORK VEHICLES ONTO/FROM TRAVEL LANES

_____ Safe entry /exit of work vehicles onto/from the travel lanes

Measures to address entry/exit of work vehicles:

- _____ Static Signing
- _____ Changeable message signs
- _____ Trained flaggers and spotters
- _____ Breaks in temporary precast concrete barrier wall
- _____ Pace or pilot vehicle
- _____ Acceleration and deceleration lanes
- _____
- _____
- _____ Reduced speed through the work zone
- _____ Other (list): _____

COMMENTS:

USE OF UNIFORMED LAW ENFORCEMENT

- _____ Use of uniformed law enforcement (normal hours)
- _____ or
- _____ Use of uniformed law enforcement (paid overtime hours)

Considerations for use of uniformed law enforcement:

- _____ Frequent worker presence adjacent to high-speed traffic without positive protection devices
- _____ Traffic control setup or removal that presents significant risks to workers and road users
- _____ Complex or very short term changes in traffic patterns
- _____ Night work operations
- _____ Crash histories that indicate a potential for substantial safety and congestion
- _____ Work zone operations that require brief stoppage of all traffic in one or both directions
- _____ High-speed roadways where unexpected or sudden traffic queuing is anticipated
- _____ Other (list): _____

COMMENTS:

ATTACHMENTS

The following information is incorporated as attachments:

- _____ Traffic capacity analysis
- _____ Crash data analysis
- _____ Road user cost and/or calculations
- _____ Project specific plan sheets
- _____ List _____
- _____ Project special provisions _____
 - _____ Maintenance of Traffic
 - _____ Sequence of Construction
 - _____ Site Use (A+B)
 - _____ Site Use (A+C)
 - _____ Special Safety Requirements for Bridges
 - _____ Special Safety Requirements for Overhead Sign Structures
 - _____ Other (list): _____

STAKEHOLDERS

The following stakeholders were consulted during the development of the TMP:

- _____ Local government officials (list): _____
- _____ Metropolitan Planning Organizations (list): _____
- _____ Law enforcement (list): _____
- _____ Railroad agencies/operators (list): _____
- _____ Transit providers (list): _____
- _____ Freight movers (list): _____
- _____ Utility suppliers (list): _____
- _____ Emergency responders (fire, EMS, etc.) (list): _____
- _____ School officials (list): _____
- _____ Business community (list): _____

COMMENTS:

This document helped guide the development of the project TMP. The complexity and level of impacts expected determined the extent of supporting documentation required in the TMP. All components and strategies of the TMP were described, and all coordination activities that occurred during the project development process have been documented.

TMP implementation will be accomplished in accordance with the provisions of the Department's Policy for Work Zone Safety and Mobility.

Sincerely,

Trinity D. Smith
Engineer of Roadway Design

Significant Project

c: Construction
District Engineer
Highway Police
Transportation Planning and Policy
System Information and Research
Public Information
Master File "B"
Job File

Non-Significant Project

c: Master File "B"
District Engineer
Public Information
Job File

APPENDIX B

STATE OVERSIGHT TMP

Month dd, yyyy

TO: Master File "B"

SUBJECT: Transportation Management Plan
Job Number:
F.A.P.:
Job Name:
County:

A Transportation Management Plan (TMP) has been developed for this project in accordance with the provisions of the Department's Policy for Work Zone Safety and Mobility for a **significant [non-significant]** project. The TMP for this project includes the following components:

- _____ Temporary Traffic Control Plan Component
- _____ Traffic Operation Component
- _____ Public Information Component
- _____ Exposure Control Component

NOTE: A Temporary Traffic Control Plan and Exposure Control Component shall be provided for all projects. Significant projects will contain all four components.

TEMPORARY TRAFFIC CONTROL PLAN

The Temporary Traffic Control Plan has been developed using the following strategies. Additional documentation for strategies/countermeasures discussed or used is attached:

- _____ Use of stage construction to provide for passage of traffic through the work area
- _____ Lane shifts to maintain pre-existing number of lanes
- _____ Reduced lane widths to maintain pre-existing number of lanes
- _____ Lane closures
- _____ Reduced shoulder widths
- _____ Shoulder closures
- _____ Construction of temporary detours (diversions) to divert around the work area
- _____ Full road closures with no designated detour route
- _____ Full road closures with diversion of traffic to an approved detour route
- _____ Alternating one-way operation with appropriate traffic control
- _____ Closure of one side of a divided roadway with two-way traffic on the opposite lanes
- _____ Temporary interchange ramps
- _____ Ramp closures
- _____ Construction of adequate temporary acceleration lanes for freeway on-ramps to provide for a yield condition in lieu of a stop condition
- _____ Brief, intermittent traffic stoppages for specific operations such as erecting bridge beams, blasting, and moving equipment

COMMENTS:

TRAFFIC OPERATION COMPONENT

The Traffic Operation Component has been developed using the following strategies. Additional documentation for strategies/countermeasures discussed or used is attached:

- _____ Limiting lane closures and/or work to off-peak or nighttime hours on roadways with heavy peak-hour traffic volumes
- _____ Allowing short-term (e.g., night or weekend) road closures to allow for increased productivity and to reduce overall construction time
- _____ Requiring the project Contractor to alter work schedules or suspend work during special events or holiday periods
- _____ Use of incentive-based contracts (e.g., Fixed Completion Date, A+B, A+C, or A+B+C Bidding) to expedite completion of the work
- _____ Promoting construction innovation through the inclusion of Value Engineering contract provisions in projects with estimated cost exceeding \$2 million
- _____ Use of temporary traffic signals where warranted to control traffic movements at intersections due to changing traffic patterns created by construction activities
- _____ Use of mobile speed notification units to encourage compliance with work zone speed limits
- _____ Use of Intelligent Transportation System (ITS) technology (queue detection, 511, etc.)
- _____ Routing permitted oversize vehicles around work zones, when possible
- _____ Use of dedicated wreckers and/or motorist assistance patrols to minimize disruption caused by disabled vehicles

COMMENTS:

PUBLIC INFORMATION COMPONENT

The following Public Information measures have been utilized on this project. Additional documentation for strategies/countermeasures discussed or used is attached:

- Brochures and mailers
- Public meetings (list): _____
- Press releases/media alerts
- Web-based project information
- Coordination with media, schools, businesses, emergency services, etc. (list): _____
- _____
- Work zone education and safety campaigns
- Providing information for trucking company safety meetings

COMMENTS:

The following contract measures will be utilized on this project to provide information to road users regarding changing project conditions. Additional documentation for strategies/countermeasures discussed or used is attached:

- Portable Changeable Message Signs
- Highway Advisory Radio
- Automated Work Zone Information System
- IDriveArkansas.com Website

COMMENTS:

The work zone will be shown on the IDriveArkansas.com Website.

EXPOSURE CONTROL COMPONENT

The following factors and characteristics are to be considered during the development of the Exposure Control Component:

- Roadway classification
- Scope and duration of the project
- Phasing of the project
- Anticipated traffic speeds through the work zone
- Anticipated traffic volumes and Vehicle Mix through the work zone
- Type of work
- Distance between traffic and workers, and extent of worker exposure
- Escape paths available for workers to avoid a vehicle intrusion into the work space
- Time of day (e.g., night work)
- Work area restrictions
- Potential hazard to workers and road users presented by device itself and during device placement and removal
- Geometrics that may increase crash risks
- Impacts on project cost and duration
- Safe entry /exit of work vehicles onto/from the travel lanes
- Consequences from/to road users resulting from roadway departure
- Other (list): _____

The Exposure Control Component has been developed using the following strategies. Additional documentation for strategies/countermeasures discussed or used is attached:

_____ Use of positive protection devices that contain and/or redirect vehicles to prevent intrusions into the work zone (i.e. temporary precast concrete barrier wall):

Considerations for positive protection:

_____ Work zone provides workers no means of escape from motorized traffic
_____ Substantial worker exposure to traffic for long duration
_____ Projects high anticipated operation speeds
_____ Work operations placed workers close to travel lanes open to traffic
_____ Roadside hazard will remain in place overnight or longer
_____ Other (list): _____

COMMENTS:

_____ Use of exposure control measures to avoid or minimize exposure:

Exposure control measures:

- Road closures
- Ramp closures
- Median crossovers
- Detours
- Work during off peak hours
- Accelerated construction techniques
- Other (list): _____

COMMENTS:

Use of traffic control measures to minimize exposure and/or crashes:

Traffic control measures:

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_____ Reduced speed through the work zone

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Trinity D. Smith
Engineer of Roadway Design

Date

Significant Project

c: Construction Division
District Engineer
Highway Police
Transportation Planning and Policy
System Information and Research
Public Information
Job File

Non-Significant Project

c: District Engineer
Public Information
Job File

