

## 16.0 Transportation Management Plan

This Section 16 includes requirements for the Transportation Management Plan Work for the EJMT DPHT Project. This Work shall be completed in accordance with the Contract Documents.

The Transportation Management Plan (TMP) defines the strategies for managing the Work zone impacts of the Project and shall incorporate the Public Information coping elements detailed in Book 2, Section 4. The TMP shall include a Maintenance of Traffic (MOT) Plan, a Traffic Operations Plan (TOP), and Traffic Control Plans (TCP). The Contractor shall coordinate with CDOT and the EJMT maintenance personnel for implementation of any Maintenance of Traffic (MOT) activities necessary to meet the requirements of the Project.

### 16.1 Administrative Requirements

#### 16.1.1 Standards

The Contractor shall design and construct the Project in accordance with the requirements of the standards in the documents listed in Table 16-1 and those referenced in Book 3. The Contractor shall use the latest adopted edition at the time of the Proposal Due Date.

Table 16-1: Standards

Author or Agency	Title
American Association of State Highway and Transportation Officials (AASHTO)	Roadside Design Guide
AASHTO	Highway Safety Manual
American Traffic Safety Services Association (ATSSA)	Quality Guidelines for Work Zone Traffic Control Devices
ATSSA	Guidelines on the Use of Positive Protection in Temporary Traffic Control Zones
Colorado Department of Transportation (CDOT)	Guidelines for the Use of Positive Protection in Work Zones
CDOT	M&S Standard Plans
CDOT	Standard Specifications for Road and Bridge Construction (CDOT Standard Specifications)
CDOT	Roadway Design Guide
CDOT	Guidelines for Developing Traffic Incident Management Plans for Work Zones
CDOT	The Colorado Supplement to the Federal Manual on Uniform Traffic Control Devices

Author or Agency	Title
CDOT	Sign Design Manual
CDOT	Work Zone Safety and Mobility Program: <a href="http://www.cdot.gov/library/traffic/lane-close-work-zone-safety/work-zone-safety">http://www.cdot.gov/library/traffic/lane-close-work-zone-safety/work-zone-safety</a>
CDOT	Work Zone Safety and Mobility Rule
CDOT	Region 1 Lane Closure Strategy
Federal Highway Administration (FHWA)	Manual on Uniform Traffic Control Devices (MUTCD)
FHWA	Standard Highway Signs (with supplements)

## 16.2 Transportation Management Plan

The Contractor shall prepare a TMP that defines the strategic plan for traffic management on the Project. The TMP shall address major aspects of the Work for individual construction areas, phases, and stages. The Contractor shall use the TMP as a planning and policy guide to develop and execute the project MOT program.

The TMP shall be submitted to CDOT for Acceptance prior to NTP2. No Work that impacts traffic shall commence until the TMP is Accepted by CDOT.

These major aspects shall include, but are not limited to:

1. An overview and description of the proposed construction, subdivided as applicable, into the following components:
  - A. Area: A specific grouping of Work along the Project defined by the Contractor that creates segments of the Project for the purpose of planning and executing the Work.
  - B. Phase: A specific sequence of the construction Work in an area during which a major traffic movement is undertaken (e.g., a detour) and left in place until the Work is complete and traffic is redirected to another location. This is the level for each specific Traffic Control Plan (TCP). In some cases, multiple TCPs may be necessary.
  - C. Stage: A subdivision of Work within a phase that combines similar components of Work to maintain efficiency. Sub-division below this level is at the Contractor's convenience. This is the level for individual (or sets) of Method of Handling Traffic (MHT) plans.
2. A detailed approach to the development of TCPs and MHTs on the Project. MHT plans shall be submitted to CDOT for Acceptance 5 Days prior to the implementation of each MHT.

3. A list of known or potential roadway, ramp, and lane closures, including the following information:
  - A. Description of traffic shift
  - B. Description of detour
    - a. Specific routes used.
    - b. Identification of detour limits to be used in each construction phase.
    - c. Contractors' identification and coordination with other construction projects, within the vicinity of the proposed detour route. The impact of these construction projects shall be incorporated into the detour route planning and scheduling.
  - C. Number of shifts expected
  - D. Duration of shifts and detours
4. An approach to the use of existing and temporary Variable Message Sign (VMS) boards and traffic signals, including coordination with CDOT, EJMT maintenance personnel, and the Contractor's representative.
5. The Contractor's plan for coordinating the TMP Activities with those Activities required under Book 2, Section 4.
6. Additional Elements:
  - A. An approach to coordination and cooperation with construction being performed by other projects at EJMT and along I-70 to minimize simultaneous traffic closures or detours.
  - B. An approach to coordination and cooperation with operations and maintenance activities being performed by EJMT maintenance personnel at EJMT.

### **16.2.1 Maintenance of Traffic Plan**

The following elements shall be considered part of the MOT plan and shall be addressed in the TMP.

#### **16.2.1.1 Transportation Management Plan Task Force**

The Contractor shall establish an TMP Task Force to assure proper coordination with affected agencies. The TMP Task Force shall include, at a minimum, the Contractor's Public Information Coordinator, the Contractor's TCS, Contractor's Construction Manager, and CDOT (including EJMT maintenance personnel). The Design Build Project Manager or Construction Manager shall be designated as the main point of contact for the MHT's, MOT's, and traffic control related issues. The Contractor shall submit the proposed list of Task Force members to CDOT for Acceptance within 30 days after NTP1.

The TMP task force shall be included in the weekly status meetings as required in Book 2, Section 2 and shall be an integrated element of the Public Information Plan (PIP).

The Contractor shall schedule and conduct TMP Task Force Meetings to present and discuss Contractor prepared narratives identifying processes and critical elements of all full closures and coordination activities. The TMP Task Force shall meet regularly during the active construction phase of the Project.

Within 14 days after Acceptance of the TMP Task Force members, the Contractor shall convene a Traffic Management Plan (TMP) kick-off meeting. The meeting will be used to develop agreement upon the level of detail required for the TMP as identified in this Section.

#### **16.2.1.2 Maintenance of Traffic Variance Process**

The Contractor may request an MOT variance for any closure, detour, or other restriction beyond the specified limits defined herein or the Region 1 Lane Closure Strategy Guide. Variance requests should be submitted when safety is a concern and/or other project goals and criteria can be maximized. The following information shall be included in each MOT variance request:

1. Summary of the variance request.
2. Justification for the variance request, including a list of the criteria that cannot be met and the reason(s) for not being able to meet the criteria.
3. Public notification methods and schedule.
4. List of affected emergency services and the schedule for notification.
5. List of affected agencies or private owners and the method(s) and schedule for notification.
6. Description of additional public information surveys to be performed, if required.
7. List of any potential safety hazards to which the public may be exposed.
8. Proposed revisions to the Accepted TCP or current MHT.
9. Proposed duration of closure, detour, or phasing change for which a variance is requested.
10. Estimated cost and schedule savings associated with the variance, if applicable.

The Contractor shall allow CDOT a minimum of 14 days for Review and Approval of any MOT variance requests.

#### **16.2.2 Traffic Operations Plan**

The TOP shall address the operations and management of the transportation system in the Work zone impact area. The TOP shall address the components described below.

#### **16.2.2.1 Coordination with CDOT Traffic Management Center**

Public notices shall be provided through Variable Message Sign (VMS) boards located on the affected route in advance of the construction zone to warn motorists of major traffic shifts, detours, and road closures.

Routine requests for use/modification of the CDOT Traffic Management Center (CTMC) VMS boards shall be submitted in writing to CDOT by 10:30 a.m. on Thursday of the week prior to when the VMS boards will be needed (Sunday through Saturday of the following week). Requests for routine use/modification of the VMS will be reviewed by noon Friday of the same week of the submittal. The Contractor shall coordinate with CDOT on any requests to CTMC and shall not contact CTMC directly without prior approval by CDOT.

The Contractor's written requests to CDOT for routine use/modification of the VMS boards shall include the following information:

- A. VMS message text and board location.
- B. Implementation dates, times, and duration of modifications.
- C. Reference TCP or MHT approval date.
- D. Name, title, and contact information of person requesting the modification.

The CTMC is available to the Contractor to modify VMS messages 24 hours a day, 7 days a week.

The Contractor shall coordinate with CDOT and the CTMC for emergencies in accordance with the Accepted IMP.

#### **16.2.2.2 Coordination with EJMT Maintenance Personnel**

The Contractor shall be responsible for coordination of required MOT and MHT activities with the EJMT maintenance personnel. The Contractor shall also be responsible for coordinating responses to emergency situations with the EJMT maintenance personnel.

#### **16.2.2.3 Incident Management Plan (IMP)**

The Contractor shall develop a detailed IMP as a companion to the TOP to manage traffic incidents and emergency operations on the Project Site. This document shall be a supplement to the existing CDOT EJMT IMP. Emergency service providers (including EJMT maintenance personnel) shall be contacted and provided an access plan during construction to minimize delays and response times for emergency services.

The IMP shall comply with the CDOT Guidelines for Developing Traffic Incident Management Plans for Work Zones. At a minimum, the IMP shall include the following components:

- A. Coordination with the PIP, as described in Book 2, Section 4.

- B. Incident detection and identification.
- C. Incident response.
- D. Incident Site management.
- E. Incident clearance.
- F. Dissemination of traveler information regarding incidents.
- G. Emergency services notification, including local area police departments, the Colorado State Patrol, local area fire departments, ambulance services, CDOT EJMT maintenance personnel, and any other emergency response providers.
- H. Geographic and other special constraints.
- I. Available resources.
- J. Operational procedures.

The IMP shall be submitted to CDOT for Acceptance at least 30 Days prior to NTP2. No Work that impacts traffic shall commence until the IMP is Accepted by CDOT.

#### **16.2.2.4 Contractor Response Time**

The Contractor shall have at least 1 employee(s) on call 24 hours a day, 7 days a week via cell phone, who shall respond to an incident within 2 hours, 24 hours a day, 7 days a week. Upon arrival at the incident site, that employee shall work with CDOT to assess the situation, shall be authorized to direct Work, and shall immediately notify the appropriate personnel to implement the IMP. Upon notification of the incident, the Contractor shall immediately undertake actions necessary to restore traffic operations to the maximum extent practicable.

### **16.3 Design Requirements**

The Contractor's Professional Engineer in responsible charge of the MOT design shall prepare or oversee, review, seal with a Colorado PE stamp and approve: field design changes that require a revision to a previously stamped and approved plan sheet; Released for Construction Documents, and TCP plans.

#### **16.3.1 Traffic Control Plans**

The Contractor shall prepare a TCP to control traffic on the Project. The TCP shall conform to the requirements specified herein, the Standard Specifications, and the most current version of the MUTCD. The TCP shall generally describe all lane and shoulder configurations, including widths, traffic control signing, pavement markings, traffic control devices, temporary signalization, construction access, construction parking, emergency access, work areas, and pedestrian/bicycle requirements necessary for each construction phase.

The TCPs shall be submitted to CDOT for Acceptance 14 days prior to implementation of the particular TCP.

Any major revision to the TCP, as determined by CDOT, shall require submission of a new TCP for Acceptance.

### **16.3.2 Method of Handling Traffic**

The Contractor shall prepare MHT's in accordance with the Contract Documents. The MHT's shall be approved by the Contractor, the Contractor's Traffic Control Supervisor, and Accepted by CDOT prior to implementation.

### **16.3.3 Roadway Closure Restrictions**

The Contractor shall maintain a minimum of two lanes of traffic in each direction at EJMT at all times with the following exceptions:

Permitted lane closures at EJMT shall be in accordance with the CDOT Region 1 Lane Closure Strategy.

The Contractor may request full tunnel closures to CDOT through the MOT variance process. Full tunnel closures, if Approved by CDOT, shall only occur Sunday thru Thursday between the hours of 10:00 pm and 6:00 am, only occur in one tunnel direction at a time, and require 30 days advance notice to CDOT. CDOT, in its sole discretion, shall evaluate any full tunnel closure requests by the Contractor and CDOT retains the right to Reject these requests for any reason.

Lane closure time frames are inclusive of lane closure set up and pick up time, and are subject to weather cancellation by CDOT.

No work impacting traffic or the air ducts will be allowed the week from December 17, 2022, to January 3, 2023, and from December 16, 2023, to January 2, 2024.

Air duct Work shall conform to the following restriction due to traffic conditions: Year-round a single (i.e. 1 of 4) tunnel air duct will be available to the Contractor. Year-round multiple air duct closures are available between the hours of 8:00 p.m. to 6:00 a.m. except as follows:

1. Additional Winter Scheduled Exception - Winter Schedule is Tuesday following Labor Day through Thursday prior to Memorial Day. Additional multiple air duct closures in the winter will be allowed between 2:00 p.m. and 8:00 p.m. on Monday, Tuesday, and Wednesday only.
2. Due to traffic conditions, the EJMT maintenance personnel may suspend air duct Work on certain days and or hours.

On Holidays, as defined in the CDOT Standard Specifications, lane closures or work within the air ducts will not be allowed.

CDOT reserves the right to direct the Contractor to leave the tunnel at any time due to emergencies or unforeseen circumstance, as they may occur. CDOT shall have the full authority to make this determination and direct the Contractor accordingly. To

comply with tunnel emergency procedures, cell phones will be on-Site with the air duct work crew(s) supervisor, as well as a two-way tunnel frequency radio at all times.

Prior to opening a lane to traffic, the Contractor shall ensure equipment, devices, and anchorages are secure and meet tunnel clearance requirements.

### 16.3.4 Design Speed and Posted Speed

Minimum design and posted speeds for Work zones shall conform to Table 16-2.

Design speeds shall in all cases be equal to or greater than the posted speed. The Contractor shall provide existing design and posted speed whenever it can be reasonable maintained. In the event speed reductions are required, the Contractor shall submit Form 568 to CDOT for allowable speed reductions as shown in Table 16-2.

Table 16-2: Design and Posted Speeds for Work Zones

Location	Design Speed (mph)	Posted Speed (mph)
I-70 Mainline (Match Existing posted speed)	55	Per EJMT Maintenance Standards

### 16.3.5 Minimum Lane Requirements

#### 16.3.5.1 Lane Restrictions

Before any travel lanes or shoulders are closed, the Contractor shall submit an appropriate MHT or TCP to CDOT for Acceptance. The MHT/TCP shall be developed in accordance with the EJMT Maintenance Standards.

The Contractor shall submit lane restrictions to CDOT by Thursday 10:30 a.m. of the week prior to the Work (for work Sunday through Saturday), unless required by construction emergencies or other reasonably unforeseen events.

### 16.3.6 Detour Routes

Unless otherwise specified, only State Highways shall be used for detour routes. Local Agency streets shall not be used as detour routes, staging areas, or for parking of contractor personal or work vehicles.

### 16.3.7 Trail and Pedestrian Impacts

Existing sidewalks (including emergency access walkways) and pedestrian routes must be maintained at all times. The Contractor shall maintain public access to the Straight Creek Trail adjacent to EJMT at all times.



### **16.3.8 EJMT Loop Roads and Parking Lots**

The Contractor shall maintain full CDOT access to the loop roads and parking lots adjacent to EJMT at all times, unless otherwise Approved by CDOT.

## **16.4 Construction Requirements**

### **16.4.1 Weekly Lane Closure Notification**

The Contractor shall submit, for Acceptance, lane closures to CDOT by Thursday 10:30 a.m. of the week in advance of implementation (for work Sunday through Saturday), unless required by construction emergencies or other reasonably unforeseen events. The Lane Closure Report, as provided in Exhibit 16-B to this Section, shall be used for the weekly submittal. The Lane Closure Report shall be updated and resubmitted to CDOT daily if any changes, other than unforeseen cancellations, are made to the original submittal. In the event that a cancellation of a previously submitted lane closure becomes necessary, due to an unforeseen circumstance, such as weather or equipment breakdown, the Contractor shall notify CDOT of the specific lane closure that is no longer needed as soon as possible and at a minimum within 24 hours of the scheduled start of the specific lane closure. For unforeseen closure cancellations, the Contractor shall still make reasonable efforts to update the closure information for all applicable Public Information submittals prior to the cancellation of the scheduled start of the specific lane closure.

### **16.4.2 Temporary Traffic Control Devices**

The Contractor shall install, maintain, and remove all temporary traffic control devices.

#### **16.4.2.1 Construction Signing**

Construction signing within the Project limits and all detours shall comply with CDOT Standard Specifications, the MUTCD, and all other applicable standards. The Contractor shall maintain existing guide signs, warning signs, and regulatory signs during construction. Construction signing and construction signing maintenance shall be the responsibility of the Contractor. All signs in place for more than 3 Days shall be post-mounted.

### **16.4.3 Maintenance of Temporary Traffic Control Devices**

The Contractor shall be responsible for the maintenance of all temporary traffic control devices within the Project limits. All traffic control devices shall meet MUTCD requirements, including retroreflectivity standards, and shall meet the acceptable standard as defined by the ATSSA Quality Guidelines for Work Zone Traffic Control Devices. All devices shall be cleaned a minimum of every 2 weeks. If any traffic device's reflectivity is not in accordance with the most recent MUTCD, the Contractor shall replace the traffic control device within one (1) day of notification from CDOT.

#### **16.4.4 Queue Delays During Construction**

The Contractor shall monitor queue lengths and durations on all Roads within the Project limits whenever a lane closure is in effect. If the queue times exceed 20 minutes, the Contractor shall notify CDOT and adjust the detours, lane closures, and traffic control devices, including advanced warning signage, to minimize delay. If queue lengths extend beyond the location of the advance warning signs, the Contractor shall adjust the detours, lane closures, traffic control devices, including advanced warning signage; and shall provide advance warning to motorists of stopped traffic.

#### **16.4.5 Working Time Violation Incidents**

If there is a violation of the working time limitations for traffic control as allowed for in this Section, a written notice to stop Work will be imposed on the Contractor at the start of the next Working Day. Work shall not resume until the Contractor assures CDOT, in writing, there will not be a reoccurrence of the working time violation. If more violations take place, CDOT will notify the Contractor in writing there will be a price reduction charge for each Working Time Violation Incident (WTVI). This WTVI price reduction charge shall be reflected on the Contractor's monthly invoice. This price reduction will not be considered a penalty, but will be a price reduction for failure to perform Work in compliance with the Contract.

A WTVI is any violation up to 30 minutes in duration. Each 30 minutes or increment thereof will be considered a WTVI. A price reduction will be assessed for each successive or cumulative 30-minute period in violation of the working time limitations, as determined by CDOT. A 15-minute grace period will be allowed at the beginning of the second WTVI on the Project before the price reduction is applied. This 15-minute grace period applies only to the second WTVI.

WTVIs shall be in accordance with Standard Special Provision, Subsection 105.03.

#### **16.4.6 Uniformed Traffic Control**

If the Contractor chooses to utilize uniformed traffic control for the project, the Contractor shall contract with either the Colorado State Patrol or a uniformed police agency, for uniformed traffic control services and vehicles needed or desired in the execution of the Work. The Contractor shall provide a copy of the Contract with either the Colorado State Patrol or a uniformed police agency to CDOT for Review.

The officer shall have completed "The Safe and Effective Use of Law Enforcement Personnel in Work Zones" Training Course. The Contractor shall provide copies of documentation to CDOT certifying the officer's successful completion of this course.

If a uniformed police agency is used, the traffic control vehicles shall be white sedans furnished with Class 1 SAE certified light bar and control panel for exclusive use by uniformed police agency officers while performing Uniformed Traffic Control. The light bar shall have the following configuration:

- A. A minimum of 44 inches in length, and shall be either permanently or temporarily attached to the top of the vehicle.
- B. A flash red on the driver side and blue on the passenger side.
- C. Equipped with an amber-colored directional device in the rear of the bar.
- D. Have alley and takedown lights.
- E. The control panel shall be capable of controlling the front of the bar and the rear of the bar separately.
- F. The traffic advisor shall be controlled separately.

The light bars shall be mounted on traffic control vehicles, and shall be maintained in good operating condition at all times. The Contractor shall obtain a permit from the police or sheriff department, as appropriate, for the use of the light bars. The Contractor shall keep the light bars covered at all times when the traffic control vehicle is being used by someone other than the authorized uniform police agency officer.

## 16.5 Deliverables

The Contractor shall submit the following to CDOT for Review, Approval, and/or Acceptance:

**Table 16-3: Deliverables by the Contractor**

Deliverable	Review, Acceptance, or Approval	Schedule
Transportation Management Plan (TMP)	Acceptance	Prior to NTP2
TMP Task Force members	Acceptance	Within 30 days after NTP1
Requests to CDOT for modifications to VMS messages	Review	10:30 a.m. on Thursday of the week prior to when the VMS boards will be needed
Incident Management Plan (IMP)	Acceptance	Within 30 Days prior to NTP2
CDOT Form 568 for temporary speed reduction	Approval	7 Days prior to the date when speed reduction is to be implemented
Maintenance of Traffic (MOT) Variance request	Approval	Minimum 14 days prior to the requested date for the change
Traffic Control Plan (TCP)	Acceptance	At least 14 days prior to implementation of the TCP
Method of Handling Traffic (MHT)	Acceptance	At least 5 Days prior to implementation of each MHT

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Deliverable	Review, Acceptance, or Approval	Schedule
Lane Closure requests	Acceptance	10:30 a.m. on Thursday of the week prior to when the lane closure will be needed

All deliverables shall also conform to the requirements of Book 2, Section 3.

## 16.6 Exhibits

Exhibit 16-A: CDOT Form 568 Temporary Speed Limit Reduction

Exhibit 16-B: Lane Closure Report