MassDOT’s Work Zone Transportation Management Procedures

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What is the Work Zone Safety and Mobility Rule?

23 CFR 630 Subpart J, effective October 2007

- Requires Clear and Comprehensive Process for evaluating and mitigating the impacts of construction work zones
- Provide safe work zones for all workers and road users while also providing for the highest level of mobility
- Define the evaluation techniques to be used during the planning, design, and construction phases of a project
MassDOT Philosophy

- Keep what is already working in place
- Evaluate project impacts and define requirements accordingly
- Encourage consultant – MassDOT collaboration early on in design process
- MassDOT (former MassHighway) submitted letter to FHWA that documented existing procedures, directives and specifications that meet the intent of the Work Zone Safety and Mobility Rule (September 2007)
What is a TMP?

The Traffic Management Plan (TMP) may consist of many different components depending on the level of impact:

- Construction Management Outline (CMO)
- Temporary Traffic Control Plan (TTCP)
- Public Informational Plan (PIP)
- ITS Monitoring Plan (IMP)
Construction Management Outline

- The **CMO** is a text narrative developed at the 25% design stage detailing the proposed traffic management plan.

- The CMO covers all lane closures, pedestrian route impacts, detours, etc. needed to complete each component of a construction project.

- The narrative may include plan sketches and/or references to the required temporary traffic control plans as necessary to convey the design engineer’s intent.

- A CMO is required for Roadway, Bridge and Intersection projects, as well as Private Development/Permit projects.
Temporary Traffic Control Plans

- The **TTCP** is all of the temporary traffic control plans or details that describe how traffic will be maintained during construction.
- The TTCP depicts the number and width of travel lanes to be maintained and any proposed detour routes.
- TTCPs detail all the required signs, pavement markings, temporary traffic control devices and changeable message signs to be used as part of the work.
Temporary Traffic Control Plans

- Site specific TTCP designs or special details must be stamped by a Massachusetts PE
- Specific TTCPs shall be developed for areas of special concern including:
  - Areas where intersections are spaced less than 1000 feet apart
  - Areas of insufficient horizontal sight distance
  - Areas of insufficient vertical sight distance
  - Abutter access points spaced less than 50 feet apart
  - Vehicular, Pedestrian and Bicycle route closure and detour
  - Work within intersections
  - Traffic impacts to remain for 24 hours or more
  - Traffic impacts to remain through a peak traffic period
Public Informational Plan

- The PIP shall consist of a text description or plan with notations describing what mechanisms shall be employed to notify the general public of upcoming construction work and the associated impact the work is expected to have on the public way.

- The plan may incorporate the following notification methods:
  - MassDOT Roadway Work Notification Form posting
  - Changeable Message Signs (CMS) notifications (permanent or portable)
  - MassDOT Website(s) Posting
  - Press Release(s) (newspapers, radio, television)
  - Special Projects Website
  - HOC posting on existing DMS or other electronic media
ITS Monitoring Plan

- The Intelligent Transportation Systems (ITS) Monitoring Plan (IMP) may consist of the following based on the expected project duration, complexity, and traffic volume information:
  - Microwave Monitoring Systems
  - Closed Circuit Television (CCTV) Monitoring Systems
  - Highway Advisory Radio (HAR) Systems
  - Changeable Message Signs (CMS) notifications (permanent or portable)
  - Queue Detection Systems
Project Impact Categorization Criteria

Each project will be categorized into one of four impact levels using the following evaluation criteria:

- Posted speed
- Impacts to the public way based on the proposed construction staging
- Anticipated duration of construction
- Anticipated impacts to high traffic volume generators and adjacent abutting property access
Impact Level 1

Impact Designation

- Minimal or no traffic delays due to the Temporary Traffic Control Plan (TTCP) (i.e. off road work, shoulder work, no impact to public way)
- No bicycle or pedestrian impacts

Potential Action/Submittal

- MassDOT Roadway Work Notification Form (RWF) for each specific activity/traffic setup
- Construction Management Outline (CMO)
- Typical Detail Figures per MassDOT TTCP Manual or TTCP from Contract Documents
- Public Informational Plan (PIP)
Impact Level 2

Impact Designation

- Possible traffic delays and impacts but impact greatly reduced or eliminated by restrictive work schedule (off peak hours)
- Posted speed 40 mph or less
- No roadway closures
- Maintain a minimum of 1 lane of traffic in each direction of travel at all times
- Changes in pedestrian or bicycle routes or widths
- Mobile/moving operations

Potential Action/Submittal

- MassDOT Roadway Work Notification Form (RWF) for each specific activity/traffic setup
- Construction Management Outline (CMO)
- Typical Detail Figure(s) per MassDOT TTCP Manual
- TTCP from Contract Documents
- Contractor Designed TTCP
- Public Informational Plan (PIP)
# Impact Level 3

## Impact Designation
- Inevitable/unavoidable traffic delays and impacts categorized as low to medium
- Posted speed greater than 40 mph
- Peak Hour Roadway Impacts
- Partial road closure (alternating traffic)
- Roadway closures with detours
- Work in areas where signalized intersections are spaced less than 1000’ apart
- Contra flow or traffic diversions to Temp Roadways
- Multiple Lane Closures
- Work on Freeways; Interstate Highways or Turnpikes
- Bridge Maintenance

## Impact Designation (continued)
- Temporary Traffic Signals
- Blasting

## Potential Action/Submittal
- MassDOT Roadway Work Notification Form (RWF) for each specific activity/traffic setup
- Construction Management Outline (CMO)
- Typical Detail Figure (s) per MassDOT TTCP Manual
- Contractor Designed TTCP
- TTCP from Contract Documents
- ITS Monitoring Plan (IMP)
- Public Informational Plan (PIP)
Impact Level 4

Impact Designation

Significant Project Classification

- Inevitable/unavoidable traffic delays and impacts categorized as medium to high
- Reduction in roadway capacity for 24 hours or more during peak traffic periods
- Projects meeting Significant Project Status Criteria

Potential Action/Submittal

- MassDOT Roadway Work Notification Form (RWF) for each specific activity/traffic setup
- Construction Management Outline (CMO)
- Contract Temporary Traffic Control Plan (TTCP) detailing travel ways, work areas, abutter access etc...for each stage of construction stamped by P.E. registered in MA and qualified in specific field of responsibility (Civil, Traffic, Structural)
- ITS Monitoring Plan (IMP)
- Public Informational Plan (PIP)
Types of Projects

- Roadway, Bridge and Intersection Construction
- Metropolitan Highway System (MHS) Roadways
- Roadway Maintenance
- Utility Repair and Construction
- Private Development/Permit Project Construction
Roadway, Bridge and Intersection Construction

- TMP development for traditional MassDOT construction projects will begin during the preliminary engineering stage (25% design)
- The CMO will be developed at that level and carry through each subsequent design stage
- When necessary, the consultant shall develop “conceptual” staging plans for review by MassDOT prior to advancing to the Construction Staging Plan at 25% design
- MassDOT project flow chart has been updated to reflect the new TMP development process
Work Zone Transportation Management Procedures For Roadway Design Process

Preliminary Engineering (25%) Stage

Develop Preliminary Construction Management Outline (CMO) and Submit with 25% Package

Massachusetts Department of Transportation (MassDOT) Review and Approval of Impact Level Designation

Final Design (75%, 100%, PSI&E) Stages

Prepare Temporary Traffic Control Plan (TTCP), Public Informational Plan (PIP), & Intelligent Transportation System (ITS) Monitoring Plan (IMP) and Submit with 75% Design

MassDOT Review and Approval

Construction Stage

Contractor Adopts Traffic Management Plan (TMP) and Develops Schedule

Initiate TMP (including PIP & IMP)

Implementation & Monitoring of TMP

Report Status to District Office Weekly (Accidents, Backups, etc.)

Re-evaluate TMP Measures

Corrective Action

Contractor Develops and Requests Staging Modification Based on Construction Needs through Resident Engineer (RE)

RE and District Traffic Engineer Review and Approve Plan
Metropolitan Highway System

The MHS consists of the following roadways:

- Boston Metropolitan Tunnels, Ramps and Frontage Roads, including the Tobin Bridge
- I-93 Northern Section - from the Tip O’Neill Tunnel to Exit 30 in Somerville
- I-93 Southern Section - Southeast Expressway from the Tip O’Neill Tunnel to I-95 in Canton

Specific MHS Requirements:

- TMPs for any work on the MHS must be reviewed and approved by the MassDOT District 6 Office
- Access Work Requests (AWR), permits to access the MHS, must be obtained through the MassDOT District 6 Permits Office for any work on the MHS
- Work will be scheduled at weekly Work Access Meetings at Dist. 6
Roadway Maintenance

Requirements:

- Completed MassDOT Roadway Work Notification (RWF) Form
- Copies of the appropriate Temporary Traffic Control figure(s) or contract documents in accordance with MassDOT RWF procedures
- Work hours will be as approved by the MassDOT District Office
Utility Repair / Construction

Requirements:

- Utility work on State Highway requires an Access Permit through the District Office
- TTC Plans approved through permit process
- TMP for utility construction or repair projects will be reviewed by the MassDOT District Office and MassDOT Boston dependent on roadway classification and impact level designation
- Utility/Contractor will need to provide a RWF for approval by District Office
- NOTE: Utility work that is required as part of MassDOT construction project will be exempt from the access permit approval process
Private Development/Permit Project Construction

Requirements:

- The Proponent’s Representative (construction manager, engineer of record, etc.) shall be responsible for submitting the completed MassDOT Roadway Work Notification Form to the District Permit Engineer in accordance with MassDOT RWF procedures.

- The Proponent’s Representative shall verify that the setup has been erected in accordance with the approved plans.

- MassDOT District Personnel shall conduct field inspections to ensure compliance with approved TTC plans.
Available Lane Capacity Analysis

- Roadway capacity, delay and potential length of queue shall be evaluated based on the speed, character of the roadway and number of impacted lanes.

- The Measured Average Work Zone Capacities table from the MassDOT TTCP Manual shall be used to evaluate the potential impact due to proposed construction conditions on the MHS, a limited access roadway or high speed roadways with multiple lanes.

- Using ATR data the designer must demonstrate that there is sufficient capacity available on the roadway to support the volumes during planned working hours based on the # of lanes to be maintained.

- Should a case arise where planned construction and work hours will impact traffic and backups are expected, the designer shall quantify the backups using the MassDOT Queue Analysis Spreadsheet.

- SYNCHRO shall be used to evaluate operations for any project where the proposed work would impact operations at an intersection.
Process Review

- FHWA recommends periodic evaluation of work zone policies, processes, and procedures to continually address and manage the safety and mobility impacts of work zones.

- There are four key measures of work zone performance that MassDOT will focus on:
  - Safety
  - Mobility
  - Construction efficiency and effectiveness
  - Public perception and satisfaction
Temporary Traffic Control Devices

- To further emphasize the focus of 23 CFR 630 Subpart “J”, FHWA released the Final Rule on Temporary Traffic Control Devices in December 2007.
- This Rule supplements FHWA's regulation that governs work zone safety and mobility in highway and street work zones to include conditions for the following:
  - Appropriate use of, and expenditure of funds for, uniformed law enforcement officers
  - Positive protective measures between workers and motorized traffic
  - Installation and maintenance of temporary traffic control devices during construction, utility, and maintenance operations
MassDOT Compliance with Subpart “K”

- MassDOT is developing guidelines for the use of barrier/channelization devices within the work zone.
- Separate pay items are provided for major categories of traffic control devices, safety features, and work zone safety activities.
It's QUESTION TIME!!
Thank You!

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