



SECTION 2

Work Zone Assessment and Management Techniques

Section 2. Work Zone Assessment and Management Techniques

a. Requirements

From the Rule, Section 630.1006(b):

“States should develop and implement systematic procedures to assess work zone impacts in project development, and to manage safety and mobility during project implementation. The scope of these procedures shall be based on the project characteristics.”

A fundamental tool for managing and minimizing work zone impacts is the development of a Transportation Management Plan (TMP).

b. Guidance for Implementation

NHDOT has previously instituted an informal qualitative process that was committed to work zone safety and mobility. *The Rule* requires that this process include the addition of a quantitative approach that facilitates the measurement of work zone impacts anticipated during design in comparison with work zone impacts experienced during construction. The measurement and comparison of these impacts will provide practical information that will be used to adjust future work zone policies and procedures.

Instituting a quantitative approach will perpetuate many of the current NHDOT practices along with providing appropriate documentation.

i. Traffic Control Committee

The Traffic Control Committee (TCC) serves to help provide a Department wide culture committed to providing safe, consistent, work zones for all workers and road users while considering mobility, access, operations, and project construction needs. See TCC Charter in Appendix A. The TCC is an established multi-disciplinary team comprised of representatives from various Bureaus of NHDOT and is tasked with the overall guidance and implementation of *the Rule*. This committee is chaired by the Director of Project Development and includes personnel from the various stages of project development including but not limited to Planning, Design, Construction, Maintenance, Turnpikes, and Traffic. The members of the TCC should be leaders within NHDOT who are dedicated to improving work zone safety and mobility. Members should encourage growth and advancement of the NH Work Zone Safety and Mobility Policy and Implementation Guidelines. The TCC convenes quarterly to, among other tasks, review and decide items associated with the implementation of *the Rule*.

As required in the TCC charter the TCC, with feedback from various bureaus, will provide the judgment necessary for the following major items:

1. Review and/or approve conceptual Traffic Management Plans.
 - a. Determine project Traffic Impact and Level of Significance in accordance with FHWA Work Zone Safety and Mobility Rule (69 FR 54562).

- b. Review and/or approve conceptual Level I and Level II Significant Traffic Control Plans, Traffic Management Plans and Public Outreach plans.
 - c. Review and/or approve conceptual Traffic Control Plans for Non-Significant projects.
 - d. Ensure the requirements of State and Federal laws, pertaining to work zones, (e.g. Work Zone Mobility Rule, Uniformed Officer and Flagger Training, MUTCD, ADA, etc.) are being adhered to.
 - e. Develop and manage a process to track, monitor and report on work zone traffic control performance.
2. Review and approve compilation and recommendations of work zone crash reporting.
 3. Be a resource for consistent use of temporary traffic control measures.
 4. Review and update as necessary the Department's temporary traffic control standards.
 5. Seek out and/or consider new technologies or innovation to improve worker and driver safety through work zones (e.g. portable rumble strips, nighttime lighting, etc.)
 6. Conduct an annual nighttime and daytime review of NHDOT work zones.

ii. Work Zone Impacts

Work zone impacts refer to work zone-induced deviations from the normal range of safety and mobility. The extent of these impacts vary based on many factors such as, road characteristics, type of area (urban, suburban, or rural), traffic volumes and travel characteristics, type of work being performed (construction, maintenance, utility work), time of construction (day/night), and complexity of the project.

The anticipated Work Zone impacts from a proposed project need to be identified and assessed throughout the development of the design. The anticipated impacts may change as details of the design are revised and refined. Identifying anticipated impacts enables the Department to mitigate and manage them by employing a TMP. Determination of significance of anticipated work zone impacts should be developed with consideration of the magnitude, location, duration, and costs of the project.

Discussions should include topics such as the following:

- Safety and Mobility impacts of the project at both the corridor and network levels.
- The combined impacts of projects conducted concurrently in a location near each other or on potential alternate route.
- Impacts on nearby intersections and interchanges, railroad crossings, public transit, and other junctions in the network.
- Impacts on municipal services (EMS, police, schools, bus routes, etc.)

- Impacts on affected public property (parks, recreational facilities, etc.)
- Impacts on affected businesses and residences.
- Impacts on pedestrians and bicyclists.

NHDOT assessed and managed work zone impacts without a formal set of criteria. A broad, subjective approach to assessing work zone impacts had been established through the use of institutional knowledge and past experience. This approach considered such ideas as lane capacity, the effects of major local events, seasonal fluctuations of traffic, project location, and tolerance of delay by area residents and businesses, as well as thresholds determined by the project design team. This subjective approach led to varying levels of acceptable work zone impacts. Although NHDOT will continue to determine acceptable work zone impacts on a project specific basis, the TCC continues to strive to establish a consistent determination of those impacts. The depth and detail of the work zone assessment should be appropriate for the type and complexity of each project. As experience with work zone impact assessment increases, the TCC will continue to develop clear, consistent criteria and guidelines to aid in future assessment procedures.

iii. Determination of Significant Projects – the Rule, Section 630.1010

Given the variety and differing complexity of projects, some projects are likely to have much greater effects on traffic conditions than others. Recognizing that not all projects cause the same level of work zone impacts, it is reasonable to identify those that will have the greatest impacts such that the appropriate resources can be allocated. *The Rule* establishes a category of projects called “Significant Projects”. A significant project is defined as 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 based on State policy and/or engineering judgment.

a. What is the purpose of identifying Significant Projects?

Consideration of work zone impacts at or prior to the Preliminary Design level (either on a network-wide basis or corridor basis) can have several positive effects. For example, in cost estimation and budgeting for projects, an understanding of the expected level of work zone impacts of the project will help in deciding what transportation management strategies are likely and to what extent a Public Outreach (PO) campaign is required. This understanding can then serve as the basis for developing reliable cost estimates that are commensurate with the impacts of the project. Furthermore, the analysis of the cumulative traffic impacts of concurrent projects will help better manage overlapping construction activities, thereby minimizing the impacts on road users, businesses, and other affected parties.

b. Who is responsible for identifying Significant Projects?

Design / Construction Projects

The TCC will review projects to determine if they are considered significant projects in terms of work zone impacts using the criteria outlined in *Section 2.b.iii. Determination of Significant Projects*. The lead Bureau and section of the project will support the TCC in

making this determination by providing appropriate project information for review.

Division of Operations Projects

Districts or Bureaus within the Division of Operations will review maintenance related projects to determine Significant Projects Status. It should be noted that maintenance, or development projects, are not likely in themselves to be considered significant, when combined with other projects in a given area they may become significant. Non-Significant projects are not required to be reviewed by the TCC, whereas Significant Projects should be reviewed by the TCC with input from the sponsoring District or Bureau to determine required TMP strategies.

c. When should Significant Projects be identified?

Significant projects should be identified as early as feasible. During subsequent project development stages, the significant project status should be reconfirmed. Likewise, non-significant projects should be evaluated during the development process to reaffirm their status. As more information becomes available for making project-specific decisions, certain projects that were thought to be significant may no longer be significant as a result of change in certain circumstances, and vice-versa.

d. How is a Significant Project defined?

A “Significant” project/activity is one that, alone or in conjunction with other projects/activities, is anticipated to cause excessive sustained work zone impacts to the road users, businesses, or local communities during construction or one that will substantially relieve existing congestion on the highway network upon its completion.

Excessive 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 characteristics, area type, (urban, suburban and rural), traffic volumes and travel characteristics, type of work being performed, time of day/night, and complexity of the project/activity. These impacts may extend beyond the physical location of the work zone itself, and may occur elsewhere on the roadway on which the work is being performed, as well as other highway corridors or other modes of transportation.

Per *the Rule, Section 630.1010*, all Interstate projects/activities that occupy a location for more than three days with either intermittent or continuous lane closures and are within a Transportation Management Area (TMA) shall be considered a “Significant” project/activity. A TMA is defined as an urbanized area with a population greater than 200,000 (See Appendix B for TMA map). As of 2010, Interstates meeting this description in New Hampshire are limited to I-93 from the Massachusetts border to Exit 5, I-95 from the Massachusetts border to the NH88 overpass. For the purpose of this Rule, the NHDOT has also designated the FE Everett Turnpike from the Massachusetts border to southern Bedford town line as an interstate. The limits of the TMA are subject to change every ten years with each United States Census.

In addition to the FHWA requirement, NHDOT has established two levels of criteria to identify if a project should be considered Significant. A project may be comprised of one or multiple construction contracts. The initial set of criteria is the Primary Level Criteria. A project must satisfy **all** of the criteria to be considered Significant. The Primary Level Criteria include the following:

1. An estimated construction cost greater than \$20 million, and,
2. Within or affecting communities of over 35,000 *, and,
3. On the Interstate or NHS, and,
4. Anticipated to create sustained WZ Impacts, separately or in combination with other activities.

* A cumulative town population total of over 35,000 for a contiguous project shall be used. (e.g. Derry-Londonderry Exit 4A has a cumulative total of 59,969 (Derry 33,667 and Londonderry 26,302)). For non-contiguous projects (i.e. paving, guard rail, rumble strip, etc.) the community populations shall not be cumulative.

If a project does not meet the above listed criteria, it may still be considered a Significant Project through the application of the Secondary Level Criteria. The TCC will review the project considering the following, individually or collectively, to make a determination if the project should be considered significant:

1. Time and duration,
2. Nature of work,
3. Traffic volume,
4. Regional significance,
5. Anticipated to create sustained WZ Impacts, separately or in combination with other activities, and

It is recognized that the listed items above are somewhat subjective and it will require a level of engineering judgment to determine if an item alone, or in combination with others items, may make a project significant. Below is a partial list of the aspects of each of these items which should be considered:

Time: The time of day construction activities occur, especially compared to anticipated traffic volumes during those times. The timing of special events, seasonal traffic and other local activities should be explored. Typically, Significant impacts would be when sustained (24/7) construction activities are in place during peak daily traffic times and/or peak seasonal times.

Duration: The likely duration of construction activities that would affect traffic on any given day. The duration of the overall project itself and/or the duration of activities affecting traffic should also be considered. This item would also include frequent intermittent traffic interruptions that could be a safety concern. Typically, Significant impacts would be when sustained (24/7) construction activities are in place during peak daily traffic times and/or peak seasonal times.

Nature of work: The type of construction work or activities that would likely have a direct, or indirect (e.g., curiosity factor), impact on traffic. This item also includes the required configuration of the work zone geometrics, and such things as lane widths, shy distances, etc., which impact traffic movement and safety. Typically, Significant impacts would be when sustained (24/7) construction activities are in place that close lanes, create detours and create substantial increase in travel times thru or around the work area. Also, Significant impacts could involve rerouting, closing or impacting access to businesses or residential areas for a sustained timeframe.

Regional Significance: The type of roadway and its significance to the region. Consideration should be given to the availability of alternate routes for traffic to take.

Combination with other Concurrent Projects: Combinations of non-significant, or significant and non-significant, projects in a general area can become a significant traffic issue for the region. This will require reviewing all of the significant and non-significant projects in a general area and determining if combined projects, that have work activities ongoing at the same time, will make the combined projects “significant” to the region.

The determination of whether a project is considered significant should be reviewed during each stage of the design process. A project that was initially considered to be Non-Significant may later be determined as a Significant Project due to changes in the secondary criteria or project design.

The flowchart provided on page 16, entitled *Figure 1 - Determination of a Significant Project*, illustrates the determination process.

e. What happens when a project is identified as a Significant Project?

For significant projects, a TMP shall be developed to improve the safety and mobility of workers and road users and must consist of the following strategy components:

- Traffic Control Plan (TCP) - provides detailed construction sequencing as well as illustrating measures that will be used to help guide and direct road users through a work zone.
- Transportation Operations (TO) – identification of strategies that will mitigate impacts of the work zone on the Transportation Network. Example strategies may include Intelligent Transportation Systems (using existing ITS) devices, employing Smart Work Zones (SWZ), revised traffic signal timings, and coordination with the Transportation Management Center (TMC).
- Public Outreach (PO) – communication strategies that inform affected road users, the general public, area businesses, and appropriate public entities about the project.

In addition to the strategies listed above, the TMP may also include contingency plans, incident management plans, detailed roles and responsibilities of key personnel, and implementation costs.

Non-Significant Projects are also required to have a TMP, but that TMP is not required to include TO or PO strategies; only a TCP. However, such projects may still benefit from the incorporation of certain TO and PO strategies, as determined by the applicable parties outlined in this document.

iv. Development and Implementation of Transportation Management Plans - the Rule, Section 630.1012

For all projects, attention must be given to traffic control from the early stages of project development through the completion of construction. Work Zone impacts and issues vary; therefore, it is important to develop a project specific TMP that best serves the safety and mobility needs of the traveling public, communities, and highway workers. A TMP is required for all projects (Significant or Non-Significant) and outlines a set of coordinated strategies that describe how to manage the work zone impacts of the project. The proposed TMP must comply with the current NHDOT Work Zone Policy and its scope, content, and level of detail will vary based on the anticipated work zone impacts of the project. TMP development should begin during project planning (if applicable) and evolve throughout the design process and construction phase. It should then be reviewed following the completion of the project to determine its success.

Although the final TMP is not completed until Final Design, conducting certain TMP analyses during early design phases will help ensure that the TMP development and implementation costs are included in the project budget. At an early stage in project development, more alternatives for addressing work zone impacts are available, so a broader range of strategies can be chosen. Work zone impacts must be considered during the evaluation and selection of design alternatives. For some projects, it may be possible to choose a design alternative that alleviates many work zone impacts. This is why identification of significant projects at an early stage is important. Early TMP development efforts will also help with scheduling and coordinating projects to minimize the cumulative work zone impacts of multiple projects along a corridor or in a region.

TMP Documentation / Reporting

Below is a comprehensive list of the components that could be included in a TMP. The order, terminology and inclusion of components may vary from project to project. The level of detail of the TMP will reflect the level of potential work zone impacts of the project.

TMP Components

1. Introductory Material

- a. Cover Page
- b. Table of Contents
- c. List of Figures
- d. List of Tables
- e. List of Abbreviations and Symbols
- f. Terminology

2. Executive Summary

3. TMP Roles and Responsibilities

- a. TMP Coordinator
- b. TMP Team
- c. TMP Implementation Task Leader
- d. Approval Contact(s)
- e. Emergency Contacts

4. Project Description

- a. Project Background
- b. Project type
- c. Project Area/Corridor
- d. Project Goals and Constraints
- e. Proposed Constriction Phasing/Staging
- f. General Schedule and Timeline
- g. Need for Detours
- h. Related Projects/Activities

5. Existing and Future Conditions

- a. Data Collection and Modeling Approach
- b. Existing Roadway Characteristics (roadway classification, no. lanes, geometry, etc..)
- c. Existing and Historical Traffic Data (volume, speed, capacity, v/c ratio, truck percentages, congestion, peak traffic hours)
- d. Existing Traffic Operations (signal timing, traffic controls)
- e. Crash Data
- f. Stakeholder concerns/issues
- g. Traffic predictions during construction (volume, delay, queues)

6. Work Zone Impacts Assessment Report

- a. Qualitative summary of anticipated work zone impacts
- b. Impacts assessment of alternative project design and management strategies

- i. Construction approach/phasing/staging strategies
 - ii. Work zone impacts management strategies
 - c. Traffic analysis results
 - i. Traffic analysis strategies
 - ii. Measure of effectiveness
 - iii. Analysis tool selection methodology and justification
 - iv. Analysis results
 - d. Selected Alternative
 - i. Construction approach/phasing/staging strategy selected
 - ii. Work zone impacts management strategies selected
- 7. TMP Monitoring**
 - a. Monitoring requirements
 - b. Evaluation report
- 8. Public Information and Outreach Plan**
- 9. Incident Management**
 - a. Trigger points
 - b. Decision and phone tree
 - c. Contractor's contingency plan
 - d. Standby equipment personnel
- 10. TMP Implementation Costs**
 - a. Itemized costs
 - b. Cost responsibilities/share opportunities
 - c. Funding Sources(s)
- 11. Special Considerations (as needed)**
- 12. Attachments (as needed)**

TMP Development Process

The TCC should utilize information and support provided by different Bureaus to guide the overall TMP development and implementation process. The following steps outline the TMP development process. Note that these steps are part of a cyclical process. As the project progresses through various developmental stages and as more project-specific information becomes available, the type of traffic control selected, work zone impacts, and impact management strategies should be reviewed and revised, as necessary.

Step 1. Compile Preliminary Project Material – (Preliminary Design Phase)

The lead bureau conducting the preliminary design phase of the project will compile available information for the project. Much of this information should be readily available from the early project development phase. This information is to be provided to the TCC in Step 4.

Information should include:

- Project scope of work and limits of construction,
- Existing roadway and traffic characteristics,
- Local issues,
- Existing data such as mapping, traffic data, accident data, right-of-way information, environmental maps, and,
- Any preliminary TMP Strategies.

Also as part of compiling the necessary information for Step 4, the Supplemental Information needed to fill out the table on page 3 of the TCC Determination Memo will include:

- Any Planned Detours or Diversions
 - Provide a detour map
 - Will the detour be used during winter, any winter operations issues
 - Will the diversion be used during winter, any winter operations issues
 - How will residential and business use be impacted
 - How will detour route operate with additional traffic.
- Any Intersections that are Impacted
 - Will construction work impact existing intersection operations within the work zone, leading up to the work zone, as well as at any detour routes
- Any Lane Closures planned during construction
 - Time of Day dependent closures
 - Check roadway capacity issues with lane closure
- Any Lane Width Restrictions planned during construction (see additional information below)
 - Will this impact truck routes, oversize vehicle routes,
 - Winter operations if width restrictions go thru winter.
- Any work zone Speed Reduction planned
 - Coordination with the Bureau of Traffic is required for any Speed Reduction
 - Review for both 24/7 reduction as well as only when workers are present reductions.
- Is Night Work planned
- Will construction fall within any holiday periods and will the construction impact holiday travel.
- Do any local, regional, or statewide events go through the work zone
 - These could include annual parades, bike races, running races, NASCAR, etc..
- Are any Schools or Hospitals impacted
 - Emergency vehicle response impacted,
 - School bus routes impacted
- Are other States impacted
 - Do you have Interstate Agreements
- Are you planning to use “Special Traffic Control” measures
 - Measures not routinely used in NH
 - Experimental, research, or first in NH measures

- Are any Emergency/Evacuation Routes impacted
 - Either directly by the work zone or if a detour route is used
- Are pedestrian facilities impacted (see ADA accommodation requirements below)
 - Need to ensure ADA compliance through the work zone
 - Do you need pedestrian detours if existing sidewalks/curb ramps are impacted
 - Are you closing sidewalks in the work zone
- Are permanent ITS installations required
 - Need to coordinate with TSMO
- Is Work Zone ITS measures needed
 - Need to coordinate with TSMO

Lane Width Restrictions:

Below is some basic information that should be useful in evaluating traffic control measures on our projects concerning lane width restrictions and oversize/overweight permitting.

GENERAL UNDERSTANDING:

RSA -266 : NH Statute – Chapter 266 –Equipment of Vehicles outlines the state laws with respect to this topic.

NHDOT Administrative Rules: Part Tra 304 – Oversize and Overweight Vehicle Permits outlines the Administrative rules for management of the Oversize/Overweight (OSOW)Permit program.

See also the NHDOT Permit Office website for additional information (www.nhdotpermits.org)

More specifically,

1. RSA 266:12 allows up to an 8’-6” width. Beyond this width, a permit is required (under Tra 304).
2. An annual permit can be obtained for vehicles up to 10’-6” wide and 75 ft. long for combination vehicles and 45 ft. long for single unit vehicles.
3. A Special one-time Permit can be obtained for wider loads. Note that most wide loads are 16 ft. and under (mobile homes and modular homes are typically 14 to 16 ft.).

PROCESS:

The TMC is the conduit by which dimensional or weight restrictions are processed into the NHDOT Permits system (i.e., the OSOW Permitting software):

1. The TMC is notified of a restriction/issue by telephone (Emails are not acceptable).

2. The TMC uploads the information to the New England 511 system <https://newengland511.org> (The 511 system can be accessed through the NHDOT Internet site by hitting on “TMC”, which will bring up several options, one of which is “511”). See attached snip highlighting the typical restriction information provided.
3. The 511 system feeds into the NHDOT Permit Office system (database).
4. An Oversize/Overweight permit request comes through NHDOT Permits, which has a “routing and restriction manager” which details the permit route (with associated restrictions). The Permit Office will coordinate further details if necessary, and approvals.
5. Permits are good for 5 days (one way), and 10 days (roundtrip).

OF INTEREST:

1. For NHDOT construction projects, typically, the Contract Administrator will notify the TMC of any restrictions, closures, or any temporary measures restricting existing roadways.
2. Should a temporary restriction be imposed by a construction project for a given day, all permit holders that are permitted for a route during that period that are impacted by the restriction will get an EMAIL notification of the restriction and associated timeframe. (This is performed by a “restriction violator” function in the permitting system that is run once per day at midnight.) The permittee will then have the option of waiting until the restriction is lifted (within his allotted permit period) before moving, or contact the Permit Office for an alternate route.

NOTES/POINTS FROM PERMITS OFFICE:

1. Every attempt should be made to provide for a 10’-6” wide 75 ft. long combination vehicle or 45 ft. long single unit vehicles to negotiate through our construction work zones. These annual permit holders do not spend time looking for route restrictions when traveling for their day to day business.

American’s with Disabilities Act accommodations:

An additional TCC review component of the project TMP shall be the project’s compliance in meeting the American’s with Disabilities Act (ADA). As part of the TMP project significance determination review the designers shall review and mitigate impacts to pedestrian facilities impacted by work activities during construction. See MUTCD guidance in “Chapter 6D.01 Pedestrian Considerations” (also found in Appendix C). Also see “[Applying the Americans with Disabilities Act in Work Zones: A Practitioners Guide](#)” published by The American Traffic Safety Services Association – Fall 2012

As a minimum the following guidance should be followed:

- 1) Sidewalk or Curb Ramp closure:
 - a) Develop an alternate route (note any alternate route must be equally ADA complaint as the existing facility).

- b) If a new pedestrian facility is constructed to manage pedestrian traffic it must be built to current ADA complaint standards.
 - c) Alternate routes need to be signed in advance of the closure with appropriate trail blazing signs.
- 2) Alternative ADA compliant route is not feasible or reasonable:
- a) Review with community to determine existing pedestrian use
 - b) Review pedestrian compliance options with the Front Office
 - c) Seek approval of any alternative that doesn't meet 6D.01 requirements.

Step 2. Identify Major Issues – (Preliminary Design Phase)

It is important to identify any existing issues that may affect safety and mobility during construction or that may complicate the construction process. After these issues are identified, additional study; coordination; creative management; design or construction approaches; increased right-of-way or environmental impacts; and/or construction costs may be considered necessary. Major issues should be brought to the attention of the TCC in Step 4. Identifying any major construction issues at this stage is important to avoid costly and time-consuming complications during later steps. Uncovering problem areas prior to developing engineering alternates may also help reduce project costs and potential project delays.

Step 3. Preliminary Determination of Significant Projects – (Preliminary Design Phase)

An initial determination of whether a project is significant is a useful tool in the selection of TMP strategies, as well as the anticipated level of detail and cost of the TMP. Guidance used to determine Significant Project status is provided in *Section 2.b.iii Determination of Significant Projects*. The Preliminary Determination of Significant Project status for each project will be completed by the lead bureau conducting the preliminary design phase of the project and presented to the TCC in Step 4. The anticipated work zone impacts of a project should be assessed at a *conceptual level* during this step.

Step 4. TCC Review – (Preliminary Design Phase)

Information from Steps 1-3 will be provided by the lead bureau conducting the preliminary design phase of the project to the TCC for review and comment. All projects, except short term and mobile maintenance operations, require a TCC Determination of Significance prior to advertising, the earlier a Determination of Significance is made the more time is available for TMP document development.

It will be the responsibility of the lead bureau conducting the preliminary design phase of the project to coordinate the need for a project review with the TCC by requesting time on the TCC meeting agenda. This is accomplished by submitting a completed "TCC TMP Determination Request Memo" to the TCC chairperson and request the project be placed on an upcoming TCC agenda.

As part of the Determination of Significance the project shall be presented at TCC meeting, where an explanation of the traffic control plans and anticipated traffic impacts are explained.

Some project types will have minimal impacts to traffic and will not require a presentation to the TCC (a Determination of Significance memo submission is still required), see the “Exempt from Presentation” criteria below.

TCC Presentation Guidance:

Staff, or consultants, presenting to the TCC should be prepared to address the following in their presentation to the TCC.

- A *brief* overview of the project intent, highlighting the work efforts that will impact traffic,
- Give an overview of the existing traffic information,
- Explain the contents of the “Supplemental Information” table found on page 3 of the Determination Memo,
- Focus should be placed on the construction activities that will impact traffic and how they will be mitigated,
- The presenter should make a recommendation as to whether the project should be considered a Non-Significant, Level I Significant, or Level II Significant project.

The TCC will confirm the determination of Significant Project status based on this information, or may request additional information and/or analysis.

For approval of a project submitted as “Exempt from Presentation” the following process will be followed:

- a. The Chair, or designee, will review the projects that are requested for presentation exempt classification, and shall either approve or deny the exempt classification.
- b. If denied, the project will require presentation to the TCC.
- c. At each TCC meeting, the Chair shall provide a list of all approved presentation exempt projects for final level of significance determination by the Committee members.

The following guidance describes the criteria used to determine whether a presentation must be made to the TCC.

TCC Presentation Guidance

a) TCC Presentation Criteria *

All projects that meet any of the following criteria shall be presented to the TCC;

- i) 2-lane facilities > 10,000 VPD, or
- ii) 4-lane facilities > 20,000 VPD, or
- iii) Projects where the “*Nature of Work*”, for the subject project by itself or in “*Combination with other Concurrent Projects*”, will have the potential to create a significant traffic impact.

b) TCC Presentation Not Required **

- i) Projects involving rest areas, park and rides, and “employee only” access roads to NHDOT facilities that do not impact the roadway, or
- ii) Short term and mobile maintenance operations (as defined in the MUTCD) for all roadway tiers.

* Projects that do not meet the criteria in *a.* above may be submitted as “Exempt from Presentation”

** These projects also do not need to submit a “TCC TMP Determination of Significance” memo for review to the TCC.

Step 5. Evaluation of Alternatives / Determine TMP needs – (Preliminary Design Phase)

Developing and evaluating the best alternative combination of construction phasing/staging, project design options, temporary traffic control, transportation operations strategies, and public outreach strategies will yield a more comprehensive TMP. This evaluation of alternatives should compare work zone options for each design alternate and document maintenance of traffic constraints for each option. This evaluation should address the benefits and problems for each option, and should include recommendations for each design alternative. Before the final alternative is selected, the TCC along with appropriate representatives from other Bureaus should review and comment on it.

During this step, anticipated work zone impacts of a project should be assessed at a *project specific level* and the confirmation of Significant Project status should be completed. Work Zone Impacts are assessed using the following process:

- *Maintenance of Traffic Alternative Analysis (MOTAA)* – This qualitative analysis should compare work zone options, including phasing scenarios, lane / road closure, and alternate traffic routes. This analysis should be conducted at the earliest phase to select feasible project alternatives, estimate associated costs, and highlight environmental, right-of-way, and construction issues.
- *Guidelines for Lane Closures* – This guideline would detail a quantitative assessment of work zone impacts by providing a determination process of allowable lane closures beyond the standard 1500 vehicles/hour/lane. These guidelines could establish values for the following:
 - Maximum allowable delays measured in distance or time for different road types with the use of queue length analysis,
 - Minimum Level of Service for work zone intersections and traffic signals,
 - Determination of night work based on traffic, and,
 - Consideration of construction activity (e.g., paving).

The use of analytical tools may be necessary depending on the degree of impact analysis required. Some tools, such as QuickZone, were specifically designed for work zone related analysis. Other traffic analysis tools, such as Corsim or Synchro, were not designed specifically for work zones but may be useful for analyzing work zone situations.

As NHDOT progresses through the implementation of the Rule, these evaluation processes will require additional guidance as a result of lessons learned and should be formalized into guidelines.

After determining the significant project status, design alternatives, and anticipated work zone impacts, specific TMP strategies for TCP, TO, and PO should be selected. Note that projects designated as Significant require the use of strategies addressing each of these components. Non-Significant Projects only require a TCP component but may benefit from TO and PO strategies.

A detailed listing and description of potential TMP strategies is provided by FHWA and is included in Appendix D (*Appendix B of the 2007 Policy*).

Step 6. Identify Stakeholders for Input on TMP – (Preliminary Design Phase)

Based on the project size, scope and local impacts, the TCC may decide that input from external stakeholders would be beneficial. The identification of external stakeholders should be done with consideration of the major issues identified in Step 2. Potential stakeholders could include, but are not limited to:

- Planner of Major Events (e.g., New Hampshire International Speedway),
- Local Planning Agencies, and,
- Special Interest Groups.

Step 7. Draft TMP – (Preliminary Design Phase)

During this stage of the preliminary design phase, three (3) important factors affect the TMP:

- The project is getting better defined,
- Environmental mitigation elements (which usually include traffic) are being explored, and,
- There is increased interaction with the local jurisdictions and stakeholders as part of the environmental process.

This is an ideal time to refine the TMP elements that were initially identified in Step 4. This can be particularly important for elements requiring long lead times and/or needing to be established prior to the start of construction, such as a public outreach campaign. If there has been a substantial change in design since Step 4, additional work zone impact assessments and analysis should be performed to address these changes.

The lead bureau conducting the preliminary design phase of the project will coordinate with construction, traffic, and public information officers to jointly identify / confirm the work zone impacts and the proposed work zone impact management strategies.

When developing construction phasing and staging plans, the lead bureau conducting the preliminary design phase of the project should consult with NHDOT Construction staff, as construction phasing and staging can greatly affect the safety and mobility of the work zone.

Construction equipment and material access to the site, storage, and staging areas should be addressed at this time, as well as potential infrastructure improvements to accommodate temporarily modified traffic patterns or future projects.

At a minimum, the Draft TMP submittal should include:

- Project summary,
- Anticipated work zone impacts,
- Stakeholders and others impacted by the project,
- Goals and objectives of the TMP,
- Identification of long lead time strategies such as a PO campaign, and,
- Concurrent projects in the vicinity that will require coordination.

Step 8. TCC Review – (Preliminary Design Phase)

The lead bureau conducting the preliminary design phase of the project will provide the TCC with a copy of the Draft TMP for review and approval.

Step 9. Final TMP - (Final Design Phase)

During the final design phase, the TMP is finalized and the Plans, Specifications and Estimates (PS&E) for implementation are developed. It is the responsibility of Final Design to implement the recommendations set forth in the Draft TMP developed by Preliminary Design. Final Design may be required to collect additional data and conduct additional analysis, as necessary, to reflect any changes in the project design. The TCC should be consulted when design and TCP decisions dictate a revision to the Draft TMP strategies.

During the Preliminary PS&E (PPS&E) phase of design, a detailed estimate for implementing elements of the TMP should be developed to determine how it may affect the overall cost of the project. Individual projects may have varying bid items for implementing TMP strategies through method based specifications depending on size, complexity and location of the work. Work zone impact management strategies should be shown on the plans where applicable. Special provisions for non-standard items should also be developed at this time.

Step 10. TCC Review - (Final Design Phase)

Final Design will provide the TCC with a copy of the Final TMP for review and approval.

Step 11. Implement TMP / Monitor TMP / Revise TMP - (Construction / Maintenance Phase)

The TMP will be implemented during construction (some elements may need to be implemented prior to construction, such as Public Outreach efforts or improvements to detour routes to accept additional traffic volumes). Both NHDOT and the contractor must designate a “Responsible Person”, as defined in *the Rule, Section 630.1012(e)*, at the project level to implement the TMP and other safety and mobility aspects of the project. For NHDOT this person will most likely be the Contract Administrator (CA). For the contractor the title of this person is expected to vary. The designated “Responsible Persons” are responsible for reviewing traffic operations throughout the project limits, including the condition of all traffic

control devices, on a regular basis.

NHDOT will review and revise applicable standard specifications to address the requirements of the contractor for implementing a TMP including the designation of a “Responsible Person”.

Monitoring the performance of the work zone and of the TMP during construction is important to determine whether the predicted impacts closely resemble the actual conditions in the field and if the strategies in the TMP are effectively managing the impacts.

As discussed in *Section 3. Compilation of Work Zone Data*, the CA is responsible for maintaining ongoing documentation regarding the work zone. Issues such as deficiencies in the implementation of the TMP and how and when they were corrected should be documented with the use of the *Traffic Control Checklist* provided in Appendix D. Traffic crashes occurring within the work zone are to be documented using *The Work Zone Traffic Crash Report* provided in Appendix E. Any major changes or notable items should be identified and brought to the attention of the District Construction Engineer (DCE) for discussion at Bureau of Construction meetings. This information shall also be provided to the TCC upon completion of construction in the post-construction evaluation described in Step 12 for the purpose of relaying how well the TMP worked as designed or what needed to be modified during construction.

The Traffic Control Checklist may need to be revised to better address the documentation and reporting needs for implementation of the Rule.

Step 12. Evaluate TMP (Post Construction / Maintenance Phase)

TMP evaluation should focus on the performance of both individual TMP strategies and overall performance of the TMP. Upon completion of construction, an evaluation report should be developed by the Bureau personnel responsible for implementation of the TMP. The report should document lessons learned and provide recommendations on how to improve the TMP process and/or modify guidelines. Elements to consider in the post-project evaluation are:

- Overall statement reflecting the usefulness of the TMP,
- Areas of the TMP that were successfully implemented,
- Changes made to the original TMP and results of those changes,
- Successes and failures,
- Public reaction to the TMP,
- Actual cost versus estimated cost, and,
- Suggested improvements or changes for similar future projects.

The Evaluation Report should be collected and compiled by the District Construction Engineer or the District Maintenance Engineer as outlined in *Section 3. Compilation of Work Zone Data* and the results provided to the TCC for review.

Appendix A

H Department of Transportation Traffic Control Committee Charter

PURPOSE

The Traffic Control Committee (TCC) serves to help provide a Department wide culture committed to providing safe, consistent, work zones for all workers and road users while considering mobility, access, operations, and project construction needs.

RESPONSIBILITIES

1. Review and/or approve conceptual Traffic Management Plans.
 - a. Determine project Traffic Impact and Level of Significance in accordance with FHWA Work Zone Safety and Mobility Rule (69 FR 54562).
 - b. Review and/or approve conceptual Level I and Level II Significant Traffic Control Plans, Traffic Management Plans and Public Outreach plans.
 - c. Review and/or approve conceptual Traffic Control Plans for Non-Significant projects.
 - d. Ensure the requirements of State and Federal laws, pertaining to work zones, (e.g. Work Zone Mobility Rule, Uniformed Officer and Flagger Training, MUTCD, ADA, etc.) are being adhered to.
 - e. Develop and manage a process to track, monitor and report on work zone traffic control performance.
2. Review and approve compilation and recommendations of work zone crash reporting.
3. Be a resource for consistent use of temporary traffic control measures.
4. Review and update as necessary the Department's temporary traffic control standards.
5. Seek out and/or consider new technologies or innovation to improve worker and driver safety through work zones (e.g. portable rumble strips, nighttime lighting, etc.)
6. Conduct an annual nighttime and daytime review of NHDOT work zones.

DELIVERABLES

Develop and maintain procedures and guidelines for the review of work zone traffic control plans, traffic management plans and work zone public outreach.

1. "Guidelines for Implementation of the Work Zone Safety and Mobility Policy" and staff notification of changes.
2. Approval of Non-Significant, Level I Significant and Level II Significant project determinations.
3. Report on performance measures.
4. Report on construction work zone crashes.
5. Biennial Self-Assessment of processes and procedures in compliance with FHWA requirements.
6. Report and distribute findings of annual nighttime and daytime work zone traffic control review.

AUTHORITY

The committee derives authority from the Policy and Records Workgroup.

MEETINGS

The committee will meet monthly or at the discretion of the Chairperson. In the event that the Chairperson is not available, meetings will be scheduled at the discretion of the Vice Chairperson. Notes from every meeting will be maintained and posted

COMMITTEE CHAIRPERSON

Chairperson responsibilities include, but are not limited to:

1. Call for meetings,
2. Develop and set agenda,
3. Distribute meeting materials,
4. Facilitate meeting discussion, material reviews, and votes,
5. Be Department contact for consultant community interaction,
6. Manage and monitor consultant procurement, administration and management procedures.

STANDING MEMBERS

The Committee will consist of 16 regular members. A quorum is 8 or more members.

Standing Members:

- a. Assistant Director of Project Development (Chair),
- b. Chief Project Manager (Vice-Chair),
- c. Bureau of Highway Design Roadway, Pavement, and Safety Section Chiefs
- d. Bureau of Bridge Design – Senior Project Engineer
- e. Bureau of Planning and Community Assistance – LPA Project Manager
- f. Bureau of Construction – District Construction Engineers (2), Traffic Control Specialist
- g. Bureau of Bridge Maintenance – Administrator
- h. Bureau of Highway Maintenance – Assistant Maintenance Engineer
- i. Bureau of Traffic – Administrator
- j. Bureau of Turnpikes – Project Manager
- k. Bureau of TSMO – Assistant Administrator
- l. Office of Federal Compliance – ADA Coordinator
- m. FHWA –Safety & Area Engineer (non-voting)

MEMBER EXPECTATIONS

Committee members are expected to attend meetings and to come prepared to those meetings. Members will have assignments that require independent or collaborative work between meetings. In the event a Standing Member cannot attend, they may designate a replacement from their Bureau senior staff and shall notify the chair prior to the meeting.



DECISION MAKING

Committee decision making will be by majority rule vote with a required quorum of members.

Approved:



Workgroup Chairperson

Date

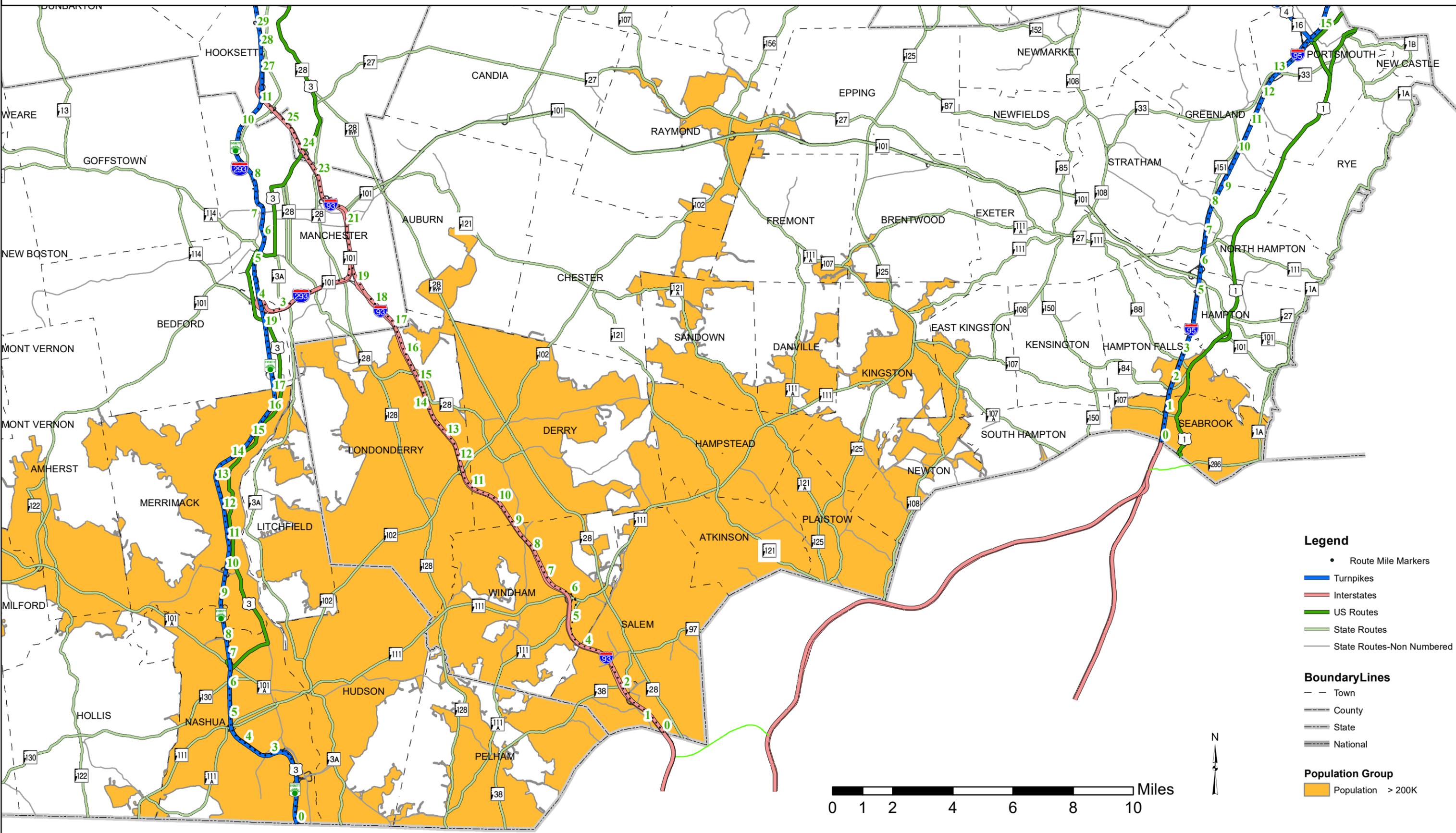
Appendix A

List of Current Committee Members by Name:

1. Bill Oldenburg - Assistant Director of Project Development (Chair)
2. Keith Cota - Chief Project Manager (Vice-Chair)
3. Tobey Reynolds - Bureau of Highway Design - Roadway Section Chief
4. Ron Grandmaison - Bureau of Highway Design - Pavement Section Chief
5. Mike Dugas - Bureau of Highway Design - Safety Section Chief
6. Bill Saffian - Bureau of Bridge Design – Senior Project Engineer
7. Kevin Russell - Bureau of Planning and Community Assistance – LPA Project Manager
8. Nickie Hunter - Bureau of Construction – District Construction Engineer
9. Paul Metcalf - Bureau of Construction – District Construction Engineer
10. Lee Simpson - Bureau of Construction – Traffic Control Specialist
11. Steve Johnson - Bureau of Bridge Maintenance – Administrator
12. Mark Kirouac – Bureau of Highway Maintenance - Assistant Maintenance Engineer
13. Bill Lambert - Bureau of Traffic – Administrator
14. Nancy Spaulding - Bureau of Turnpikes – Project Manager
15. Charlie Blackman – Bureau of TSMO – Assistant Administrator
16. Sandt Michener – Office of Federal Compliance – ADA Coordinator
17. Michelle Marshall - FHWA –Safety & Area Engineer (non-voting)

Appendix B

Transportation Management Area (TMA)



Legend

- Route Mile Markers
- Turnpikes
- Interstates
- US Routes
- State Routes
- State Routes-Non Numbered

Boundary Lines

- Town
- County
- State
- National

Population Group

- Population > 200K

Appendix C

Appendix C

Manual on Uniformed Traffic Control Devices (MUTCD) 2009 Edition Chapter 6D. Pedestrian and Worker Safety

Section 6D.01 Pedestrian Considerations

Support:

01 A wide range of pedestrians might be affected by TTC zones, including the young, elderly, and people with disabilities such as hearing, visual, or mobility. These pedestrians need a clearly delineated and usable travel path. Considerations for pedestrians with disabilities are addressed in [Section 6D.02](#).

Standard:

02 **The various TTC provisions for pedestrian and worker safety set forth in [Part 6](#) shall be applied by knowledgeable (for example, trained and/or certified) persons after appropriate evaluation and engineering judgment.**

03 **Advance notification of sidewalk closures shall be provided by the maintaining agency.**

04 **If the TTC zone affects the movement of pedestrians, adequate pedestrian access and walkways shall be provided. If the TTC zone affects an accessible and detectable pedestrian facility, the accessibility and detectability shall be maintained along the alternate pedestrian route.**

Option:

05 If establishing or maintaining an alternate pedestrian route is not feasible during the project, an alternate means of providing for pedestrians may be used, such as adding free bus service around the project or assigning someone the responsibility to assist pedestrians with disabilities through the project limits.

Support:

06 It must be recognized that pedestrians are reluctant to retrace their steps to a prior intersection for a crossing or to add distance or out-of-the-way travel to a destination.

Guidance:

07 *The following three items should be considered when planning for pedestrians in TTC zones:*

- A. *Pedestrians should not be led into conflicts with vehicles, equipment, and operations.*
- B. *Pedestrians should not be led into conflicts with vehicles moving through or around the worksite.*
- C. *Pedestrians should be provided with a convenient and accessible path that replicates as nearly as practical the most desirable characteristics of the existing sidewalk(s) or footpath(s).*

08 *A pedestrian route should not be severed and/or moved for non-construction activities such as parking for vehicles and equipment.*

09 *Consideration should be made to separate pedestrian movements from both worksite activity and vehicular traffic. Unless an acceptable route that does not involve crossing the roadway can be provided, pedestrians should be appropriately directed with advance signing that encourages*

them to cross to the opposite side of the roadway. In urban and suburban areas with high vehicular traffic volumes, these signs should be placed at intersections (rather than midblock locations) so that pedestrians are not confronted with midblock worksites that will induce them to attempt skirting the worksite or making a midblock crossing.

Support:

10 [Figures 6H-28](#) and [6H-29](#) show typical TTC device usage and techniques for pedestrian movement through work zones.

Guidance:

11 To accommodate the needs of pedestrians, including those with disabilities, the following considerations should be addressed when temporary pedestrian pathways in TTC zones are designed or modified:

- A. Provisions for continuity of accessible paths for pedestrians should be incorporated into the TTC plan.
- B. Access to transit stops should be maintained.
- C. A smooth, continuous hard surface should be provided throughout the entire length of the temporary pedestrian facility. There should be no curbs or abrupt changes in grade or terrain that could cause tripping or be a barrier to wheelchair use. The geometry and alignment of the facility should meet the applicable requirements of the "Americans with Disabilities Act Accessibility Guidelines for Buildings and Facilities (ADAAG)" (see [Section 1A.11](#)).
- D. The width of the existing pedestrian facility should be provided for the temporary facility if practical. Traffic control devices and other construction materials and features should not intrude into the usable width of the sidewalk, temporary pathway, or other pedestrian facility. When it is not possible to maintain a minimum width of 60 inches throughout the entire length of the pedestrian pathway, a 60 x 60-inch passing space should be provided at least every 200 feet to allow individuals in wheelchairs to pass.
- E. Blocked routes, alternate crossings, and sign and signal information should be communicated to pedestrians with visual disabilities by providing devices such as audible information devices, accessible pedestrian signals, or barriers and channelizing devices that are detectable to the pedestrians traveling with the aid of a long cane or who have low vision. Where pedestrian traffic is detoured to a TTC signal, engineering judgment should be used to determine if pedestrian signals or accessible pedestrian signals should be considered for crossings along an alternate route.
- F. When channelization is used to delineate a pedestrian pathway, a continuous detectable edging should be provided throughout the length of the facility such that pedestrians using a long cane can follow it. These detectable edgings should comply with the provisions of [Section 6F.74](#).
- G. Signs and other devices mounted lower than 7 feet above the temporary pedestrian pathway should not project more than 4 inches into accessible pedestrian facilities.

Option:

12 Whenever it is feasible, closing off the worksite from pedestrian intrusion may be preferable to channelizing pedestrian traffic along the site with TTC devices.

Guidance:

13 Fencing should not create sight distance restrictions for road users. Fences should not be constructed of materials that would be hazardous if impacted by vehicles. Wooden railing, fencing, and similar systems placed immediately adjacent to motor vehicle traffic should not be used as substitutes for crashworthy temporary traffic barriers.

14 *Ballast for TTC devices should be kept to the minimum amount needed and should be mounted low to prevent penetration of the vehicle windshield.*

15 *Movement by work vehicles and equipment across designated pedestrian paths should be minimized and, when necessary, should be controlled by flaggers or TTC. Staging or stopping of work vehicles or equipment along the side of pedestrian paths should be avoided, since it encourages movement of workers, equipment, and materials across the pedestrian path.*

16 *Access to the work space by workers and equipment across pedestrian walkways should be minimized because the access often creates unacceptable changes in grade, and rough or muddy terrain, and pedestrians will tend to avoid these areas by attempting non-intersection crossings where no curb ramps are available.*

Option:

17 A canopied walkway may be used to protect pedestrians from falling debris, and to provide a covered passage for pedestrians.

Guidance:

18 *Covered walkways should be sturdily constructed and adequately lighted for nighttime use.*

19 *When pedestrian and vehicle paths are rerouted to a closer proximity to each other, consideration should be given to separating them by a temporary traffic barrier.*

20 *If a temporary traffic barrier is used to shield pedestrians, it should be designed to accommodate site conditions.*

Support:

21 Depending on the possible vehicular speed and angle of impact, temporary traffic barriers might deflect upon impact by an errant vehicle. Guidance for locating and designing temporary traffic barriers can be found in Chapter 9 of AASHTO's "Roadside Design Guide" (see [Section 1A.11](#)).

Standard:

22 Short intermittent segments of temporary traffic barrier shall not be used because they nullify the containment and redirective capabilities of the temporary traffic barrier, increase the potential for serious injury both to vehicle occupants and pedestrians, and encourage the presence of blunt, leading ends. All upstream leading ends that are present shall be appropriately flared or protected with properly installed and maintained crashworthy cushions. Adjacent temporary traffic barrier segments shall be properly connected in order to provide the overall strength required for the temporary traffic barrier to perform properly.

23 Normal vertical curbing shall not be used as a substitute for temporary traffic barriers when temporary traffic barriers are needed.

Option:

24 Temporary traffic barriers or longitudinal channelizing devices may be used to discourage pedestrians from unauthorized movements into the work space. They may also be used to inhibit conflicts with vehicular traffic by minimizing the possibility of midblock crossings.

Support:

25 A major concern for pedestrians is urban and suburban building construction encroaching onto

the contiguous sidewalks, which forces pedestrians off the curb into direct conflict with moving vehicles.

Guidance:

26 *If a significant potential exists for vehicle incursions into the pedestrian path, pedestrians should be rerouted or temporary traffic barriers should be installed.*

Support:

27 *TTC devices, jersey barriers, and wood or chain link fencing with a continuous detectable edging can satisfactorily delineate a pedestrian path.*

Guidance:

28 *Tape, rope, or plastic chain strung between devices are not detectable, do not comply with the design standards in the "Americans with Disabilities Act Accessibility Guidelines for Buildings and Facilities (ADAAG)" (see [Section 1A.11](#)), and should not be used as a control for pedestrian movements.*

29 *In general, pedestrian routes should be preserved in urban and commercial suburban areas. Alternative routing should be discouraged.*

30 *The highway agency in charge of the TTC zone should regularly inspect the activity area so that effective pedestrian TTC is maintained.*