



# Traffic Engineering, Operations & Safety Manual

Chapter 1 General

Section 1 Traffic Engineering, Operations & Safety Manual

## 1-1-1 Purpose

June 2005

### GENERAL

This Manual contains policy, guidelines and procedures related to traffic engineering and related functions as practiced within the Wisconsin Department of Transportation, more specifically the region field and bureau office forces of the Division of Transportation Systems Development, the staff of the Bureau of Traffic Operations, and other agencies of the Department which *may* be involved in traffic engineering at some point. Traffic engineering functions include the installation and maintenance of traffic control devices, highway lighting facilities, traffic regulations, safety analyses, and support for the improvement program.

### APPLICATION

The content of the Manual is applicable only to the state trunk highway system. Good practices contained herein *may* by implication be desirable on other systems of highways. However any requirements for other systems are beyond the scope of the Manual, and are appropriately addressed in the Manual on Uniform Traffic Control Devices and the Wisconsin Supplement to the MUTCD, together called the Wisconsin Manual on Uniform Traffic Control Devices.

Conscientious usage and adherence to the manual *should* provide several benefits, chief among which would be:

- Uniformity of treatment of traffic control devices on the state trunk highway system;
- Readily available and adoptable methods and procedures;
- Source of information for interpretations of policies.

### DEFINITION OF GUIDELINES

When used in this Manual, the text headings **shall** be defined as follows:

1. A statement of policy is required, mandatory, or specifically prohibitive practice regarding a traffic control device. The verb **shall** is typically used and in bold type.
2. A statement of guidance is recommended, but not mandatory, practice in typical situations, with deviations allowed if engineering judgment or engineering study indicates the deviation to be appropriate. The verb *should* is typically used and italicized.
3. A statement of optional practice is a permissive condition and carries no requirement or recommendation. The verb *may* is typically used and italicized.

### RESPONSIBILITY FOR TEOPS

Policies, guidelines and procedures are most frequently developed by the Traffic Engineering standing committees and approved by the Director of BTO. BTO posts and distributes updates and new issuances) and maintains a distribution list.

Contributions of ideas, suggestions for changes, new concepts, and entire drafts of subjects, etc, are welcome and *should* be addressed to the BTO Program Leads or Supervisors and routed to the appropriate statewide Standing Committee.

Updates to the manual are normally issued quarterly or when there is a sufficient amount or content of policies that need to be published.



# **Traffic Engineering, Operations & Safety Manual**

**Chapter 1 General**

**Section 5 Manual Organization**

## **1-5-1 Subject Numbering System**

**June 2005**

### **DEFINITIONS**

Chapter: A main divisional unit of this manual, addressing one of the major functions of traffic engineering or supporting functions.

Section: A grouping of related subjects within a chapter.

Subject: A specific guideline, policy or procedure.

### **SUBJECT NUMBERING**

The manual is divided into topical chapters with each chapter having one or more sections that are divided into specific treatments of material, called subjects.

Chapters, sections and subjects are all numbered.

Chapter numbers are numbered consecutively, generally without gaps. Sections and subjects are numbered consecutively or sometimes with gaps--5, 10, 15, 20--to allow for future insertions of material at the most appropriate locations within the chapter or to follow the MUTCD numbering system.

Chapters 2 through 10 are allotted to subjects related to traffic control devices covered in the corresponding Parts 2 through 10 of the MUTCD.

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**April 2025**

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# **Traffic Engineering, Operations & Safety Manual**

**Chapter 1 General**

**Section 10 Documents**

## **1-10-5 MUTCD and Wisconsin Supplement Approval Dates**

**June 2011**

Wisconsin State Statutes 84.02(4)(e) require that standards for traffic control devices be prescribed by the Wisconsin Department of Transportation. The Department, in fulfilling this requirement, has for many years adopted the latest edition of the Federal Highway Administration's publication "Manual on Uniform Traffic Control Devices", and has added a Supplement to make the standards applicable to Wisconsin.

The December 2009 edition of the MUTCD and the Wisconsin supplement was made effective May 25, 2011 by the Director of the Bureau of Traffic Operations on behalf of the Department.

The latest edition of the MUTCD can be found on the website [mutcd.fhwa.dot.gov](http://mutcd.fhwa.dot.gov) and can also be obtained in hard copy from several sources noted. The Wisconsin Supplement is available on the [DOT website](#) and a limited amount of hard copies will be provided free of charge to individuals without Internet access. Periodic revisions will be made to the Supplement as changes are made in the MUTCD. For this reason, you are encouraged to obtain the Supplement from the DOT website.

## **1-10-25 Federal Aid Policy Guide**

**June 2005**

Refer to the Federal-Aid Policy Guide located at <http://www.fhwa.dot.gov/legsregs/directives/cfr23toc.htm> 23CFR 25 "Design Standards for Highways" for material related to traffic operations matters. Topics include design speed, design exceptions; vertical clearance, and accessibility standards. Also, Section 23 CFR 655 "Traffic Operations" for FHWA policy on uniformity of traffic control devices (including requirements for MUTCD).



# Traffic Engineering, Operations & Safety Manual

## Chapter 1 General

### Section 11 Authorization

#### 1-11-1 Highway Numbering

August 2012

#### INTRODUCTION

Historically the Secretary's Office has designated the State Traffic Engineer to approve assignments of highway numbers on the State Trunk Highway system with input from the Regions and locals. This does not include approval of the beginning and end and alignment of the highway, but merely the approval of the number itself. In some cases the State Traffic Engineer *may* be asked to select a number, or a rearrangement of numbers. Since the State Traffic Engineer's authority transcends region lines, all proposals for additions, deletions, or revisions to the state's route marking system **shall** be submitted to the State Traffic Engineer in the Bureau of Traffic Operations.

To allow sufficient lead time to establish or modify route numbering for new or reconstructed highways, the evaluation for the route assignment *should* begin during the highway planning stage. The State Traffic Engineer will inform and coordinate with the Division of Transportation Investment Management Bureau of Planning and other Divisions to determine appropriate highway route numbering. Any impacts to the National Highway System (NHS) if reconstructed **shall** be addressed with FHWA at the beginning of the numbering process to address NHS continuity.

NHS is a federal designation for funding eligibility, by changing the number on an NHS route the NHS designation is not changed. This would be an issue if, for example, a new bypass is built and now the NHS designation moves to the bypass. It does not move just because a bypass is given the state route number. Refer to [FDM 4-1-20](#), Federal Aid System, for more information on the National Highway System route designation.

The official information on numbering, beginnings and terminations, as well as connecting highway limits is contained in the booklet, Official State Trunk Highway System Maps, which can be found on the WisDOT website.

#### STATE NUMBERED HIGHWAY NUMBERING PROCESS

Proposal to change a state highway designation is initiated by the Region, typically the Planning Section. This could constitute adding a STH route, dropping a portion of a STH route or changing the route name. It is unnecessary to submit an application for changes of a state highway to AASHTO. The following steps *should* be considered when changing a State Trunk Highway Number (this process can also be used to determine US Highway route numbering for submittal to AASHTO):

1. Proposed changes to the State Highway numbering system *should* be discussed with local government agencies representing the communities through which the proposed route change traverses prior to implementation. Others affected *should* also have their comments considered, such as trucking and farm implement operators. The Regional Traffic Engineer *should* canvass local government jurisdictions to determine their reaction, views and comments to the proposed numbering changes. However, this is strictly a courtesy procedure and final authority for making the ultimate decision still remains with the Department (i.e., local government does not have veto power over route establishment on the State Highway System). For most significant changes to the SHS, there *should* be public involvement in the decision process. This includes any implications due to mile marker and exit number changes. Often a public informational meeting or hearing at which the proposed changes are discussed and the public is allowed to comment on them is valuable.
  - a. It is necessary, however, to have approval by the county board of each county in which part of the proposed change is situated when the change is more than 2 ½ miles of the system, according to Wisconsin State Statute 84.02 (3).
2. Any impacts to the National Highway System (NHS) if reconstructed **shall** be addressed with FHWA at this time to address NHS continuity.
3. If a new STH route is being proposed, the Region *should* propose a number to discuss with BTO Traffic. Some guidelines to consider when requesting a new number:
  - a. Number cannot be used elsewhere on the STH (includes STH and USH) system unless it is an extension of an existing route.

- b. Typically, the route number chosen is the next consecutive highway number unless the number is already used or a sufficient "tied" number can be used.
- c. "Tied" numbers *should* be considered to relate to the main route (ex. Highway 251 connects back to Highway 51).
  - i. Tied "300" series routes *should* be used if the route connects to a state route on **one** end (spur route). Additional routes *should* use the next odd numbered series (ex. 500, 700, etc.)
  - ii. Tied "200" series *should* be used if the route connects back to the STH on **both** ends of the same route making a loop. Additional routes *should* use the next even numbered series (ex. 400, 600, etc.)
4. The State Traffic Engineer *should* seek consensus with the Region on the route number that makes the most sense, based on the reasoning above.
5. The Region prepares a formal letter explaining the reason why the route change is needed, the benefits of a route change and the timetable when it will take effect.
6. The Region submits a formal letter along with map locations to the State Traffic Engineer for approval.
7. Upon the State Traffic Engineer's approval, notification is made by Central Office Traffic to the following units:
  - a. Central Office DTIM Bureau of State Highway Programs Highway Data Management Section.
  - b. Central Office DTSD Surveying and Mapping Section. In addition to updating the State Highway Map, the Surveying and Mapping Section will also notify private sector mapping and atlas companies like MapQuest, DeLorme, etc.
  - c. Central Office DTSD Highway Development for updating the official state trunk highway list.
  - d. Regional Office(s) affected by the route numbering change.
8. The Region **shall** make the public aware of the changes and the time period for the changes. This includes:
  - a. Fire, EMS, State Patrol and Local Police.
  - b. Businesses along the route (individual mailings)
  - c. Media (TV, radio, newspapers)
  - d. Chamber of Commerce
  - e. Elected Officials and government officials
9. Once a number is established, the State Traffic Engineer will also coordinate with the Office of General Counsel in order for them to make the appropriate changes on official truck operator routing lists and maps (i.e., Trans 276).
10. Utilize PCMS as the changes take place for at least the first month.
11. Installation of independent Type II reassurance marker signs that state "Formerly" on the cardinal header. It has been WisDOT practice to keep these signs installed for two years, then removed.

If needed, the Department *may* request a legal opinion and/or interpretation from Office of General Counsel on legal matters concerning the proposed State Highway Numbering System revision.

## US NUMBERED HIGHWAY NUMBERING PROCESS

Any proposed alteration of the US Numbered System *should* be extremely meritorious and thoroughly, though concisely, explained in order that the Special Committee on US Route Numbering and the Standing Committee on Highways of the American Association of State Highway and Transportation Officials (AASHTO) *may* give prompt and proper consideration to each and every request made by a member department. The application for US Route Number, Interstate and Bicycle Routes can be found at [www.aashto.org](http://www.aashto.org). Refer to [TEOpS 1-11-5](#), U.S. Route Renumbering Process for further instructions regarding the application process and responsible parties.

Bureau of Traffic Operations, Bureau of Planning and the Regional office(s) affected **shall** be involved in the route numbering process prior to being submitted to AASHTO.

According to the AASHTO Transportation Policy Book, January 2000, Establishment and Development of United States Numbered Highways:

1. *The Standing Committee on Highways of the American Association of State Highway and Transportation Officials **shall** have full authority to review the U.S. numbered road system and the numbering and marking thereof, to make additions, changes, extensions, revisions or reductions in said road system and to revise the numbering or marking thereof.*
2. *Before approving any addition, change, extension, revision or reduction in the U.S. numbered road system or the numbering or marking of any U.S. numbered road, the Standing Committee on Highways **shall** consult the State Highway Department of the State or States through or within which such addition, change, extension, revision or reduction is located.*

## INTERSTATE HIGHWAY NUMBERING PROCESS

Any proposed route alteration or additional route of an Interstate Highway requires the Department to work closely with FHWA to determine an appropriate route number and submission of the US Route Number, Interstate and Bicycle Routes application to the AASHTO Special Committee on US Route Numbering. The State Numbered Highway Numbering Process can be followed for the preliminary steps of the Interstate Highway Numbering Process. However, the Department **shall** coordinate with FHWA at the beginning of the process. Refer to "Federal-Aid Policy Guide Subchapter E, Part 470" for information on the policy for the signing and numbering of future Interstate corridors. The State Traffic Engineer **shall** coordinate with the Division Administrator and the Secretary's Office when proposing Interstate Highway numbers.

## BUSINESS ROUTE MARKING

For information on business route markers, refer to [TEOpS 2-4-19.1](#). If a business route is proposed related to a U.S. Highway designation the route has to have the approval of AASHTO. Refer to the US Numbered Highway Numbering process stated previously.

### 1-11-5 US Route Renumbering Process

August 2012

## BACKGROUND

The purpose of the U.S. route numbering and U.S. bicycle routes system is to facilitate travel on the main interstate lines, over the shortest routes and the best roads. To serve that purpose a system of main interstate routes was designated, and a uniform system of guide and warning signs was adopted for use in all the States, on such designated routes.

Applications are submitted twice a year to AASHTO Special Committee on US Route Numbering at the AASHTO Spring Meeting and the AASHTO Annual Meeting on the day before the Subcommittee on Highways (SCOH) Business Meetings. Application request is an open solicitation but states are asked to submit their applications twice a year. BTO Traffic Engineering Section leads the effort in coordinating responses for the entire Department.

The following steps in the process of U.S. Route Numbering applications must be completed in order for new changes become official.

1. The committee reviews applications and makes recommendations to approve or disapprove the request.
2. The committee **shall** report all recommendations and decisions to the Standing Committee on Highways and will ask for its approval. This will take place at SCOH's spring and annual meetings.
3. In the case of interstate route requests, both FHWA and SCOH must approve.
4. These decisions will be presented to the AASHTO Board of Directors in the SCOH report at the Board's business meeting.

It is WisDOT's responsibility to submit all proposed changes to the Special Committee for approval and implementation on maps and the GIS network.

## PROCESS

The process for reporting route number changes to AASHTO is shown below:

1. Secretary's Office receives a letter twice a year from AASHTO to add or make changes to existing routes

2. Secretary's Office send request to DTSD Administrator Office for response
3. DTSD Administrator Office sends to BTO Director
4. BTO Director sends to State Traffic Engineer
5. State Traffic Engineer sends to BTO Traffic Operations Engineer for response
6. BTO Traffic Operations Engineer sends out request to Planning Chiefs and Operations Chiefs two months prior to AASHTO's meeting to collect changes to US Routes needed in Wisconsin. All requests are sent to BTO Traffic Operations Engineer for compilation. Note: If route numbering changes come up throughout the year, the Regions can submit applications to BTO at anytime.
7. BTO Traffic Operations Engineer sends out same request to DTIM Bike/Pedestrian Coordinator for changes needed to the US Bicycle Route numbering. All requests are sent to BTO Traffic Operations Engineer for compilation
8. BTO Traffic Operations Engineer reviews all submittals for accuracy and compliance and sends along with a letter to AASHTO from the DTSD Administrators Office to Secretary's Office, then to AASHTO. The BTO Traffic Operations Engineer is identified as the main contact person for WisDOT. The AASHTO Special Committee needs 30 days to review each application and vote.



## EXAMPLE SUBMITTAL



American Association of State Highway and Transportation Officials

Please save and send as a word file. You can attach a map in PDF or JPG with the application to

[usroutes@aaashto.org](mailto:usroutes@aaashto.org) (M.Vitale)

An Application from the State Highway or Transportation Department of Wisconsin for:

- |  |        |
|--|--------|
| <input type="checkbox"/> Elimination of a U.S. (Interstate) Route<br><input type="checkbox"/> Establishment of a U.S. (Interstate) Route<br><input type="checkbox"/> Extension of a U.S. (Interstate) Route<br><input checked="" type="checkbox"/> Relocation of a U.S. (Interstate) Route<br><input type="checkbox"/> Establishment of a U.S. Alternate Route<br><input type="checkbox"/> Establishment of a Temporary U.S. Route<br><input type="checkbox"/> **Recognition of a Business Route on U.S. (Interstate) Route<br><input type="checkbox"/> **Recognition of a By-Pass Route on U.S. Route | USH 18 |
|--|--------|

### AASHTO Use Only

Date received:

Date to Special Committee on U.S. Route Number:

Date Presented to Standing Committee on Highways (SCOH):

Action taken by SCOH:

Member Department Notified:

Between Wisconsin Street and La Pointe Street

The following states or states are involved:

City of Prairie du Chien

State of Wisconsin

- \*\*\*"Recognition of..."A local vicinity map needed on page 3. On page 6 a short statement to the effect that there are no deficiencies on proposed routing, if true, will suffice.
- If there are deficiencies, they should be indicated in accordance with page 5 instructions.
- All applications requesting Interstate establishment or changes are subject to concurrence and approval by the FHWA

DATE SUBMITTED: February 24, 2011

SUBMIT APPLICATION ELECTRONICALLY TO [usroutes@aaashto.org](mailto:usroutes@aaashto.org)

\*U.S. Bicycle Route System: this form is not applicable for US Bicycle Route System see new form.

The purpose of the **United States (U.S.) Numbered Highway System** is to facilitate travel on the main interstate highways, over the shortest routes and the best available roads. A route should form continuity of available facilities through two or more states that accommodate the most important and heaviest motor traffic flow in the area.

The routes comprising the **National System of Interstate and Defense Highways** will be marked with its own distinctive route marker shield and will have a numbering system that is separate and apart from the U.S. Numbered Highway System. For the convenience of the motorist, there must be continuity and a uniform pattern of marking and numbering these Interstate routes without regard to state lines.

The U.S. Numbered System was established in 1926 and the Interstate Numbered System was established in 1956. Both have reached the period of review, revision, and consolidation. They now need perfecting rather than expansion. Therefore, any proposed alteration in the established systems should be extremely meritorious and thoroughly, though concisely, explained in order that the Special Committee on U.S. Route Numbering and the Standing Committee on Highways of the Association may give prompt and proper consideration to each and every request made by a member department.

**Explanation and Reasons for the Request (US and Interstates Only):** (Keep concise and pertinent.) USH 18 is designated as part of the National Highway System and is also a State designated Long Truck Route. The existing and projected traffic volumes on the roadway are causing and will continue to cause traffic congestion and unsafe traveling conditions. Access points have decreased the mobility and efficiency of the roadway. Re-routing USH 18 from Main Street to La Pointe Street will improve safety and mobility in the area.

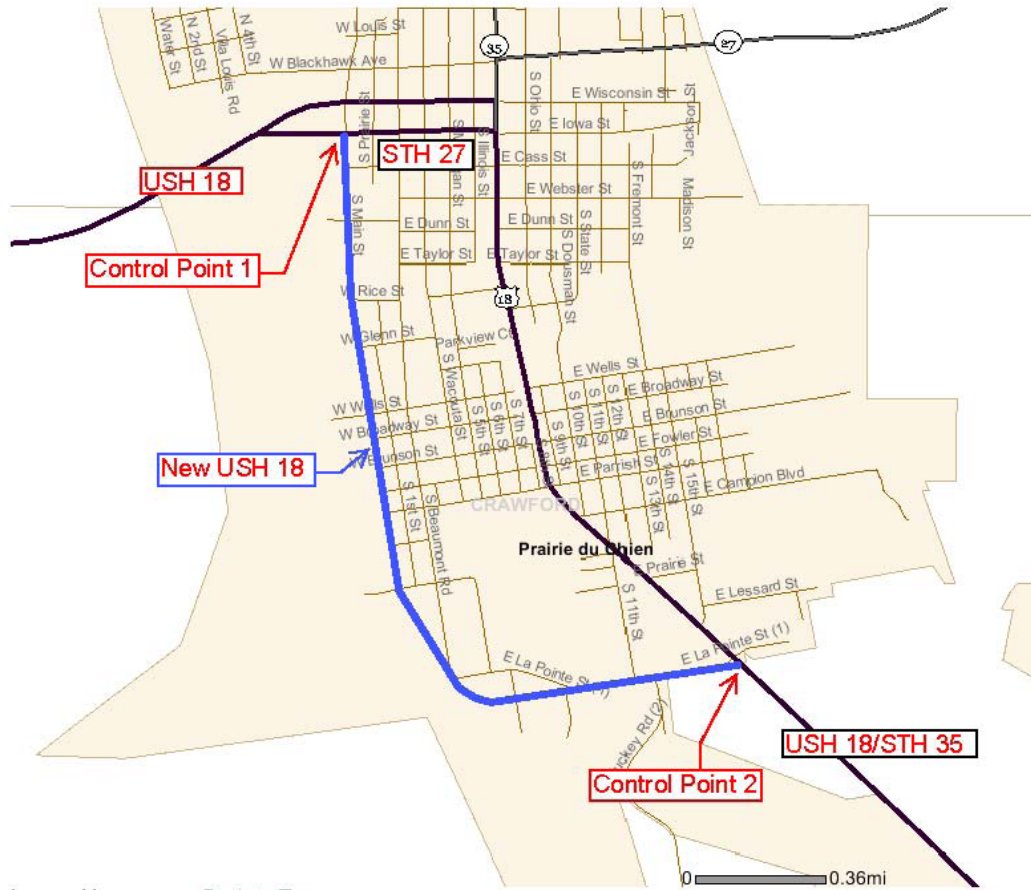
Date facility available to traffic: 08/2011

Does the petition propose a new routing over a portion of an existing U.S. Route? No  
If so, where?

Does the petition propose a new routing over a portion of an existing Interstate Route? No  
If so, where?

**Map of state, or portion thereof, indicating proposed addition or change in the (This includes US and Interstates)  
U.S. Numbered or Interstate Numbered System:**

There are two ways to do this follow the instructions below or convert your map in PDF format and submit as a separate document along with this application to [usroutes@aashto.org](mailto:usroutes@aashto.org). It is your preference, however all files are converted to PDF once received by AASHTO.



Control Point 1: Intersection with State Highway 27  
Control Point 2: Intersection with State Highway 35

The State agrees and pledges its good faith that it will not erect, remove, or change any U.S. or Interstate Route Markers on any road without the authorization, consent, or approval of the Standing Committee on Highways of the American Association of State Highway and Transportation Officials, notwithstanding the fact that the changes proposed are entirely within this State.

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The weighted average daily traffic volume along the proposed route, as shown on the map on page 3, is 7,300 as compared to 9000 for the year 2009 for all other U.S. Numbered Routes in the State.

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*The Purpose and Policy in the Establishment and Development of the United States Numbered Highways, as Retained from October 3, 1991 or the Purpose and Policy in the Establishment of a Marking System of the Routes Comprising the National System of Interstate and Defense Highways as Retained from August 10, 1973 has been read and is accepted.*

In our opinion, this petition complies with the above applicable policy.

(Signature Required – see note below)

**Chief Executive Officer**

(Member Department)

This petition is authorized by official action of

under date of        as follows: (Copy excerpt from minutes.)

**(This includes US, Interstates)**

A **letter** from your Chief Executive Officer with the **CEO's signature** is sufficient when submitting your application, if you choose not to include the signature on this form.

**(US and Interstates Only)****Instructions for Preparation of Page 6**

**Column 1: Control Points and Mileage.** Top of column is one terminus of road. Indicate control points by identical number as shown on map on page 3. Show mileage between control points in miles and tenths.

<b>Column 2: Pavement Type.</b>	<b>Code</b>
High type, heavy duty	H
Intermediate type	I
Low type, dustless	L (show in red)
Not paved	N (show in red)

<b>Column 3: Pavement Condition</b>	<b>Code</b>
Excellent	E
Good	G
Fair	F (show in red)
Poor	P (show in red)

NOTE: In columns 2 and 3, where pavements types and conditions change, the location of the change shall be indicated by a short horizontal line at the proper place opposite the mileage log and the proper code letter (shown above) shall be entered in the respective column between the locations so indicated.

**Column 4: Traffic.** Indicate average daily traffic volumes in this column. Points of changes in these data to be indicated by short horizontal lines opposite the appropriate mileage point on the mileage log. Any existing main line rail crossing that is not separated shall be indicated at the appropriate mileage point by RXR - black if signalized - red if not protected by signals.

**Columns 5 & 6 Pavement Width and Shoulder Width.** These columns to be completed by comparing standards of highway involved with applicable AASHTO standards. Entries that fall to the right of the tolerance lines (dashed) should be shaded in red. If there are no deficiencies indicate by use of the word NONE.

**Columns 7 & 8 Major Structures.** Show in these columns those structures that do not meet AASHTO standards. Show by horizontal line sufficiently long to indicate percentage of deficiency. Portion on right of tolerance line shall be shown in red. Indicate length of structure in feet immediately under the line. Any sub-standard highway underpass structure shall be shown opposite the appropriate mileage point by the designation LP with the vertical clearance in feet following and shown in red. If there are no deficiencies indicate by the use of the word NONE.

**Column 9: Vertical Sight Distance.** Items to be shown in this column as a horizontal line, the length of which will indicate the deficiency as determined in accordance with comparisons with comparable AASHTO standards. Portions of the line past the tolerance line shall be shown in red.

**Column 10: Horizontal Curvature.** Curves in excess of AASHTO applicable standards to be shown in this column by a short horizontal line with degree of curve shown immediately above the line. To be shown in red.

**Column 11 Percent Grades.** Show by horizontal lines opposite proper mileage point on mileage log. Show percent of grade above the line and length of grade in feet immediately below. To be shown in red.

*What follows is an Excel worksheet that you can open by right clicking your mouse and select "Worksheet Object" – you can then Edit, Open or Convert but you must first unlock the form as show when inserting maps.*

Double click inside frame to release excel worksheet. Click outside frame to re-lock. (US and Interstates Only)

1		2		3		4		5		6		7		8		9		10				
Mileage	Control Points and Mileage	Pavement Type	Pavement Condition	Traffic ADT	Comparison to Applicable AASHTO Design Standards																	
					Pavement Width Deficiency	Shoulder Width Deficiency	Major Structures								Vertical Sight Distance Deficiency	Show Where Excess of Standards						
							Roadway Width Deficiency	H - Loading Deficiency	Horizontal Curvature	Percentage												
											Percent	Percent	Percent	Percent		Percent						
					10	20	30	40	20	40	60	80	10	20	30	40	20	40	60	80	Degree	Length
0	1	H	E	7,300	NONE																	
	2																					
10																						
20																						
30																						
40																						
50																						
60																						

**(Contact person regarding this application:**

Name: Joseph Langeberg PE

Address: 3550 Mormon Coulee Road, La Crosse, WI 54601

Telephone Number: 608-785-9961

Fax Number: 608-246-3819

Email Address: joseph.langeberg@dot.state.wi

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**Description** to be provided to the AASHTO Highways Special Committee on US Route Number (USRN) when they review this application:

- Where does the route begin? (Intersection or Mile Marker) Wisconsin Street
- Describe where it is going? To the west of the existing US 18
- What type of facility is it traveling over? (New alignment or over an existing pathway) Existing pathway and new alignment
- Give the direction of travel(north, east, south, and west) South and east
- Name the focal point city or cities Prairie du Chien
- Length of route in miles. 2.62
- Where does it end? (Terminal intersection or mile marker) Marquette Street

**Table 1.** Example of Log Data File for submittal

Log Data for USH 18

<b>US Route Number</b>	<b>State</b>	<b>Type</b>	<b>Intersection</b>	<b>Point to Point</b>	<b>Accumulated</b>	<b>Remarks</b>
18	Wisconsin	Regular	Milwaukee	0	0	Route begins
18	Wisconsin	Regular	Milwaukee	1	1	Crosses I-43
18	Wisconsin	Regular	Milwaukee	3	4	Crosses U.S. 41
18	Wisconsin	Regular	Milwaukee	3	7	Crosses U.S. 45
18	Wisconsin	Regular	Jct. E. Waukesha	7	14	Crosses I-94
18	Wisconsin	Regular	Jefferson	35	49	NONE
18	Wisconsin	Regular	Cambridge	11	60	Joins U.S. 12
18	Wisconsin	Regular	Jct. E. Madison	14	74	Crosses I-90
18	Wisconsin	Regular	Madison	2	76	Crosses U.S. 51
18	Wisconsin	Regular	Madison	5	81	Joins U.S. 14, U.S. 151
18	Wisconsin	Regular	Jct. S. W. Madison	3	84	Leaves U.S. 12, U.S. 14
18	Wisconsin	Regular	Mt. Horeb	15	99	NONE
18	Wisconsin	Regular	Dodgeville	23	122	Leaves U.S. 151
18	Wisconsin	Regular	Fennimore	28	150	Crosses U.S. 61
18	Wisconsin	Regular	Prairie du Chien	28	178	NONE
18	Wisconsin	Regular	State Line	2	180	NONE





### INTRODUCTION

The development of guidelines, standards, policies and procedures related to traffic engineering functions in the Division has been undertaken in several ways:

- Memos and letters answering inquiries, the answers then becoming guidelines;
- Recorded decisions from discussions at meetings such as traffic conferences, coordinators meetings, traffic standing committee meetings, and special conferences;
- Assignments and activities by BTO staff;
- Formalization of the above by publication in traffic operations manual.

Standing Committees are a means of addressing needs for policy development and revisions. These groups are established so adequate time and attention *may* be given to setting policy and guidelines that meet the needs of practitioners. This attention in turn streamlines operations in the future, thereby increasing efficiency and improving the quality of products and services.

BTO relies on the active involvement of regional staff and other resources with special insights into policy issues. BTO takes the policy lead and coordinates the work of others, as outlined in the Structure and Procedures section below.

### PURPOSE

The basic purpose for Traffic Engineering Standing Committees is to provide a means of concentrating additional time, experience, knowledge, and expertise on specific issues in order to offer better guidelines, policies and standards.

This results in:

- Enhancing cooperation and developing consensus,
- Providing leadership, incentive and professional growth opportunity.
- Promoting uniformity in regulations, devices, and field practices,
- Enhancing communication, information service, and technology transfer,
- Gathering advice and best practices from other agencies,
- Enhancing the decision-making process, and
- Improving the professional image of the Traffic Engineering community.

### STRUCTURE AND PROCEDURES

There are seven Standing Committees for the following technical areas:

- Lighting
- Electrical Standards
- Signing & Marking
- Traffic Signals
- Work Zones
- Traffic Safety Engineering
- Traffic Incident Management (TIME)

Additional work groups *may* be established for emerging technical and program areas.

Responsibilities of the Standing Committees are to:

- Identify issues and draft a potential policy document for appropriate manual;
- Follow policy development practices of the Bureau including actively involving the Operations Managers through the BTO State Traffic Engineer in these efforts to assure buy in and alignment with Bureau direction;
- Clarify any questions and concerns on issues approved for action;
- Prepare a work plan and make assignments,
- Follow deadlines established by the Standing Committee;
- Bring the study to a conclusion and recommend final action in a policy document;

- Develop implementation plans for proposed actions when appropriate, including documentation, education or training needs, performance measures, and budget impacts.
- Make progress reports at Traffic Conferences.
- Respond to requests for information on the status of issues, especially to complete quarterly and annual reports.
- Give due consideration to traffic safety in all issues.

Each Standing Committee **shall** consist of one BTO Traffic Engineering Section member, at least two and preferably more Region members, and a management sponsor from a Region. Each Standing Committee will appoint its own membership and keep the Traffic Engineering Section informed of activities by keeping meeting minutes and providing updates at Section meetings. Each Standing Committee meeting *should* be scheduled as a Microsoft Outlook appointment including the BTO Unit Supervisor and the State Traffic Engineer as optional attendees.

Each Standing Committee *may* elect its own Chairperson. Alternatively, the State Traffic Engineer *may* at their discretion designate the Chairperson. The BTO representative *may* serve as Chairperson, although it is suggested that he/she be more in the role of facilitator and resource person. The chairperson *should* maintain close contact with the committee management representative to discuss policy proposals.

Each Standing Committee will have one regional management representative assigned to the committee. The roles of the management representative are as follows:

- Provide the regional management viewpoint and guidance to the Standing Committee.
- Serve as communication link between Highway Operations Managers, Operations Supervisors and the Standing Committee.
- Inform other regional managers and supervisors of major policy initiatives being discussed or proposed that *may* have resource impacts.
- Attend Standing Committee meetings when major policy changes are being proposed. If not able to attend meetings regularly, the management representative *should* provide regional management perspective to the Standing Committee Chairperson prior to the Standing Committee meeting.
- Coordinate with Standing Committee Chairperson to brief BTO Director when a policy has other impacts on other bureaus, and as necessary, assist BTO Director in relaying information to other bureaus and DTSD management.

Each Standing Committee *may* establish ad hoc and/or sub-committees for efficiently and effectively conducting certain tasks.

The Director of the Bureau of Traffic Operations has the authority to:

- Establish Standing Committees
- Generally oversee and guide activities as necessary
- Assign issues for action
- Suggest methods of study, alternatives, modifications, resources, etc.
- Assign priorities and deadlines
- Review recommendations from the Standing Committees,
- Give final approval to each recommendation although he *may* elect to defer approval to an administrative level on specific issues.

The Standing Committee Chairperson will provide a briefing on any proposed policy being presented to the Executive Group. The executive group will provide a consensus recommendation to the BTO Director. Any policy action needed between quarterly meetings will be considered interim policy.

## **POLICY COMMUNICATIONS PROTOCOL**

Any Regional policy inquiries requiring BTO involvement, as well as legislative and sensitive media contacts, **shall** involve the relevant Regional and BTO Traffic Engineering Supervisors. It *should* be noted that legislative and sensitive media contacts also require the completion of a Public Communications Record (PCR).

## **POLICY AND GUIDELINE DEVELOPMENT PROCESS**

The Policy and Guideline Development Process *should* be followed whenever a policy for this manual is being developed.

1. Department staff identifies need for policy
2. BTO develops proposed concepts of the policy or guideline. \
3. Preliminary policy concepts are shared with regional staff via Standing Committee.
4. BTO collects comments and drafts policy for review by Traffic Supervisors.

5. Preliminary review and comment period of 2-4 weeks by Regional Traffic staff via email along with a copy to Operations Chiefs and FHWA.
6. If creating a new policy or making major changes to a policy, it may be necessary for the Standing committee to review the policy for the second time and make necessary changes to document upon receipt of comments.
  - a. If making minor changes to a policy, BTO can make the necessary changes after reviewed by the Regions.
  - b. An overview of the final draft should be reviewed by the Operations Managers, especially when policies have political or resource impacts.
7. Once issues have been resolved BTO makes final changes to the document presented to the Director of the Bureau of Traffic Operations for final review and approval. When policies have political or resource impacts, it *may* be necessary to present the issues to the DTSD management or other Bureaus that *may* be impacted for input.
8. Post and distribute new document in next transmittal unless prompt distribution is necessary. The document is then effective statewide.

### INTERIM GUIDANCE PROCESS

In special or urgent circumstances when a policy needs to be implemented quickly, interim guidance *may* be appropriate.

1. Initial drafting of the interim policy or guideline by BTO with assistance from Standing Committee or Traffic Supervisors and possibly OGC.
2. Operations Chiefs review interim guidance and present the issues to their Regional staff. Subject to the urgency of the topic, this task can be completed by email (informational copy to FHWA) or presented at Operations Managers meetings.
3. Operations Chiefs report back to the BTO once the Region has concurred.
4. Bureau Director reviews and approves the interim guidance.
5. BTO posts and/or distributes the interim guidance to the key stakeholders for implementation.
6. Post and distribute new document in next transmittal unless prompt distribution is necessary. The document is then effective statewide.

### INFORMATION MANAGEMENT RESPONSIBILITIES

BTO **shall** perform support services for the Standing Committees including:

- Suggest, define and transmit candidate issues as needed.
- Set priorities and deadlines if requested.
- Perform background or resource work for the Standing Committees as necessary.
- Prepare and distribute quarterly and annual reports.
- Provide updates at traffic conferences.
- Receive Standing Committee recommendations and provide the initial screening.
- Circulate Standing Committee recommendations to any other Office for review if desirable.
- Submit final recommendation to Bureau director and act on results.
- Follow up on any further business involving issues.
- Monitor implementation of approved/adopted actions, when appropriate.
- Edit, publish and distribute all issues that become part of the TGM.
- Keep full and updated records of all transactions, available upon request.

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## 1-16-2 FHWA Approvals

September 2008

### INTRODUCTION

According to [FDM 5-2-1.1](#) Federal-Aid Oversight Agreement ([Appendix A](#)), the Wisconsin Division of FHWA requires certain policies and procedures to be submitted for review and/or approval before publication.

### APPROVAL PROCEDURE

For all items listed below, WisDOT will timely submit changes to FHWA for approval, and will not proceed with execution or publication until FHWA has provided formal approval of changes. For those items that are sent for review purposes only, WisDOT *should* submit changes at least two weeks prior to execution; if comments are not

received within two weeks, WisDOT *may* proceed with execution or publication. Requests to FHWA **shall** be directed through the BTO Traffic Supervisor and State Traffic Engineer.

**Table 1. FHWA Oversight Agreement List**

Item	FHWA Requirement
Traffic Operations Manual	Submit to FHWA for review only
FDM Standard Detail Drawings	Submit to FHWA all changes
Standard/Additional Special Provisions	Submit to FHWA all changes
Standard Specifications	Submit to FHWA all changes
Public Interest Findings	Submit to FHWA all requests
Federal Workplans	Submit to FHWA all requests
Experimental Traffic Controls	Submit to FHWA all requests

## FORMAT FOR SUBMITTAL

All requests **shall** be in a professional electronic format (no hand drawings) and submitted via email to FHWA describing the changes or request.

### 1-16-3 Traffic Engineering Materials & Technology Standards

December 2008

## INTRODUCTION

When requests are received from the Regions, vendors and contractors for use of new traffic engineering materials and technologies, it is necessary to follow the steps shown in the flowchart to consider the technology for possible use. If the technology is evaluated and found successful, results of the evaluation *may* lead to development of standards and specifications for use of such products and technologies in Wisconsin.

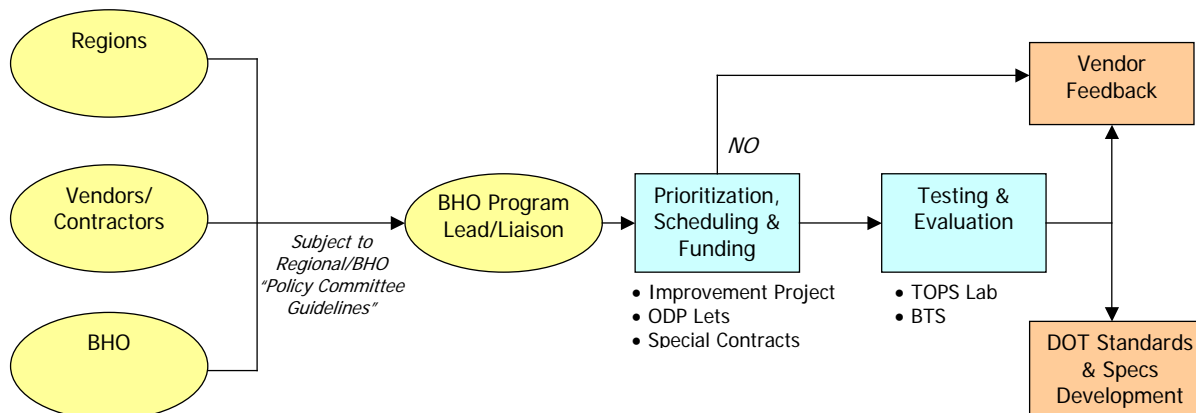
## PROCEDURE

Typically, Regional staff, vendors or contractors suggest the use of a new material or technology for use in the WisDOT projects. Before a product can be used in the field, its expected benefits must be considered and an evaluation plan developed.

The appropriate standing committee or BTO Program lead must first consider the feasibility of the product (i.e., cost, benefits, disadvantages, life expectancy, etc.) in order to make a decision in pursuing the use of this product. If it is a proprietary product or is not in compliance with the MUTCD an experimental work plan must be submitted to FHWA for their review and approval before any further progress is made with the product. Refer to [TEOpS 1-16-2](#), FHWA approvals for a list of items that require Federal approval.

The BTO Program lead prioritizes the use of the product depending on scheduling of pilot projects and funding for the use of the product. This product *may* be piloted in an improvement project, ODP project or set up in a special contract. If the BTO Program lead cannot effectively find a project or funding for use of the material or technology, he/she will provide feedback to the vendor for the reason not choosing the product. If the product is approved for a pilot test, the UW TOPS Lab or the Bureau of Technical Services Quality Assurance Unit *may* provide or assist with the testing and evaluation of the product.

If the product is successful in the testing and evaluation process and WisDOT chooses to standardize its use, standards and specifications must be developed in order to implement statewide. BTO staff will work with BPD and/or BTS staff to develop and publish language allowing the use of the material or technology in statewide projects. If the product is not successful or WisDOT chooses not to use the product, the BTO program lead *should* provide feedback to the vendor.





# **Traffic Engineering, Operations & Safety Manual**

**Chapter 1 General**

**Section 20 Special Topics**

## **1-20-1 Liabilities of Tort**

**November 1992**

The following was specially prepared by Risk Management for inclusion in this manual

### **GENERAL**

Because traffic engineering functions are one of the most visible elements of the Wisconsin transportation system, the department's traffic engineers are convenient targets for litigation and are often named as defendants in tort liability actions arising from traffic accidents on/along the State Trunk Highway System. Experience has proven the following to be generally valid across a broad range of circumstances:

1. If it becomes apparent that a problem exists on/along the State Trunk Highway System, due to an accident having occurred or for other reason, do whatever is necessary to rectify the situation as soon as possible/practical. Correcting a problem situation that has been brought to your attention (by whatever means) does not establish a condition of guilt. Moreover, responding in a timely manner can prevent accidents from occurring or recurring and is in concert with the department's overall mission of providing a safe and efficient transportation system. Implement remedial actions, as soon as possible and document actions accordingly.
2. If you are named as a defendant in a civil action, it is recommended that you immediately inform your supervisor, the Risk and Safety Management Section of the Bureau of Management Services. *Should* you decide to consult with your own attorney, it is highly recommended that he/she discuss your case with representatives of the Risk Management and Safety Section before advising you in the matter. Consultations with your own attorney are at your expense.
3. As a representative of the department and as a named defendant, you're entitled to be represented in your defense by the Attorney General's office. As an employee of the State of Wisconsin, this representation is provided at not cost to you. Even if judgment is rendered against you, as long as you were acting of s. 895.45, Wis. Stats. And the State of Wisconsin will pay all judgments rendered against you. If you refuse representation by the Attorney General's office (which is your right) and hire your own attorney, you waive the right to be represented by the Attorney General's office if further actions are brought in the matter, and you will be responsible for your attorney's fees in any and all such actions. Your protection as a state employee under s. 895.45, Wis. Stats. Remain, however, as long as you were acting within the scope of your employment.

The prospect of being named in a tort action is unpleasant at best, and one which unfortunately confronts the department's traffic engineering professionals all too frequently. One can deal with this situation most effectively by:

1. Applying the traffic engineering principles and standards of practice in a consistent and uniform manner, to create wherever possible the sense of expectation in the driver, that will in turn ensure that his/her driving actions/responses are as close to "second nature" as possible (eliminate the choices or reduce them to a minimum at any decision point along the highway).
2. Develop a methodology for identifying areas of (or practices related to) high accident occurrence in order to determine what, if any, mitigative measures can be taken of any engineering nature.
3. Document your actions. Keep diary. Record complaints and investigations. Your records are your best means of defending your actions, decisions and professional conduct.
4. Remember that being named in a tort action, and even having a judgment rendered against you, does not impugn you as a conscientious, capable professional. Because the State of Wisconsin is a "deep pocket," you are a tempting target for litigation.

### **BASIS FOR LEGAL ACTION**

Several considerations enter into the filing of a valid action against a state officer, employee, or agent.

1. Notice has to be served within 120 days of the date of the accident. (Certain exceptions apply.)
2. The named defendant/s must have owed the plaintiff a specific duty and have breached that duty causing the injury complained of.

The legal duties that accrue to department staff are divided into two categories:

1. **Ministerial Duties.** These are duties, which by their very nature are absolute, imperative and certain as to the time, mode, occasion, and performance that nothing is left for judgment and discretion. Typically, they are duties required by rules, regulations, standards, practice or law. For example, the duty to maintain certain signs or to properly install them.
2. **Discretionary Duties.** These are duties that require the exercise of judgment. Typically, these duties are exercised by upper levels of management. However, it is possible to establish discretion at any level. The true test involves the exercise of judgment, by a qualified and trained professional, over valid alternatives and based upon acceptable standards of the profession. For example, the decision to place a supplemental sign is generally considered to be a discretionary act.
3. **Negligence.** Negligence is the failure to exercise that degree of care expected of any reasonably prudent person in the same or similar circumstances. However, the comparison is based upon what other reasonably prudent traffic engineers would do under the same circumstances. In other words, your actions must be appropriate in terms of the practice of the industry or your profession at the time and not what *may* have been the practice in the past.
4. **Comparative Negligence.** This is a doctrine that assigns negligence to all the parties of a lawsuit in terms of percentages the total of which does not exceed 100%. Then any judgment is reduced by the percent assigned to the plaintiff and if any of the remaining defendants are assigned a percentage greater than that of the plaintiff, those defendants will pay the remaining judgment.
5. **Joint and Several Liability.** This doctrine requires the payment of the entire judgment by any one of the defendants in an action whose negligence is greater than the plaintiff's. That means that if a state employee defendant is assigned 1% more negligence than the plaintiff and some other defendant who *may* be grossly more negligent than the state employee, the state could still be required to pay. This generally happens when the other defendants are not solvent. This doctrine is often referred to as the "deep pocket theory."

## **LIABILITY REDUCTION**

Adverse exposure can and *should* be reduced in the following ways:

### **Pre-accident Actions**

While the efforts of traffic engineers are usually focused upon improving efficiency of operation, reducing accidents is usually a prime consideration. Because the best method of limiting liability is to reduce the potential for accidents, an accident reduction program is an integral part of the overall traffic effort. The following aspects are typically involved:

- A system of regular inspection *should* be established and maintained on a continuing basis.
- Design and operational reviews *should* be conducted before and after installation of traffic control elements.
- A procedure for handling citizen complaints *should* be established and records made and kept.
- Claims and judgments can be a major financial drain, and *should* be a consideration in expanding funds to improve highway systems.
- Engineering countermeasures to accident problems *should* be sought.
- Careful prioritization of needed improvements (as in the Traffic Operations Improvement Program) is an appropriate means of documenting why a specific improvement was not implemented earlier.
- Project and program evaluations should be undertaken regularly. A project is site specific, lending itself to a before-and-after engineering analysis. Program evaluation is a managerial function, and is particularly relevant to accident reduction and tort liability mitigation.
- Utilize positive guidance principles in the operation and the development of improvements to the highway system.
- Evaluate all feasible alternatives.
- Keep the highway system as simple, consistent and forgiving as possible.
- Maintain a system of documentation.

### **Post-accident Actions**

Adequate instructing and training of personnel in on-site actions, accident investigations and use of accident data can go a long way toward preventing further unwarranted accidents close behind the initial incident, thereby reducing liability exposure. While the traffic engineer is not typically involved in site control, he/she is typically involved in analysis of "problem" locations. These investigations enable the cause of accidents to be identified,

and where feasible engineering countermeasures to be implemented.

#### 1-20-4 Indemnification

April 1995

Standard indemnification provisions occur mostly in two areas in the Division of Highway's policies. One is in Standard Spec 107 covering construction activities. The basic premise there is that the contractor insures us while the construction activity is occurring. It also covers actions resulting from faulty materials or construction. The second indemnification in use is the standard provision for utility-type facilities administered by the Maintenance Office. This provision is part of every utility permit and is referenced therein to policy 96.03 of the Utility Accommodation Policy. This indemnification is tailored to cover the liability occurring while an object, most commonly a utility pole, is being installed, and also to cover liability during the time the object remains on the ROW.

The Office of Traffic has found on several occasions that Regional offices have attached the above indemnification to various traffic related permits issued by the Regions. These permits include closure of highway, banners, snowmobile crossings, and highway lighting. The Office of Traffic does not endorse the use of indemnification provisions. The perceived need for and use of provisions is left up to the Region. The following advisory comments about the usage *may* be helpful, however.

The Maintenance indemnification is tailored to cover utility-type situations. The provision first covers the period of installation, with the implication that the applicant *may* damage someone else's utility, and secondly, the period while the object is in place, which of course would be many years. The primary concern during that time could be inferred to be mainly crashes with the poles. The Maintenance indemnification applies to situations very similar to that covered by lighting permits, permits for flashing beacons and banners over highways, where new poles or supports are set. From that standpoint the Regions *may*, if they so choose, make use of or make reference to the Maintenance indemnification, using the full name.

On the other hand the Maintenance policy does not appear to fit the situations involved in highway closures, snowmobile crossings or routes, or painting crosswalks, etc. In these cases the anticipated major problem would likely be vehicle crashes resulting from alleged inadequate signing, marking or barricading; in other words, something which can be described as a traffic control device misuse or inadequacy. While this guideline makes no recommendation as to the need for indemnification statements in permits issued by the Regions related to traffic operations activities, caution is urged that unless the indemnification is tailored to the nature of the activity or situation the indemnification *may* have little or no substance.

In the case of small communities especially, the inclusion of an indemnification requirement *may* cause their insurance carrier to re-assess their coverage situation.

Indemnification related to work performed for us by others which is not being done under contract administered by the Construction Office *may* be referenced to Standard Spec 107. Again, this is not a recommendation that the activity be covered, but simply an appropriate and approved indemnification clause that can be used if the Region so chooses.

#### 1-20-5 Avoiding Utility Damage

June 2005

##### LOCATING PRIOR TO DIGGING

It is the policy of the Department that all WisDOT employees comply with the provisions of s. 182.0175 (1m)(a), prior to any digging or excavating of earth either on or off the highway right-of-way whether manually or with powered equipment except in those cases where such digging or excavating is necessary for the immediate protection of highway users.

In all cases except emergencies as discussed below, WisDOT employees whose work requires digging or excavating **shall** investigate what utility companies and others *may* have underground transmission lines in the area where the digging or excavating is required. Diggers Hotline (1800-242-8511) **shall** be contacted prior to digging or excavating. No digging or excavating *may* be done until after the locate by Diggers Hotline.

Emergencies in which the practice of contacting the owners *may* be omitted include, in the traffic area, replacement of knocked down, missing, and severely damaged Stop signs, traffic control signals, Stop Ahead signs, Large Arrow signs, and Curve and Turn signs. The installation of new signs (including detour signs) and the routine maintenance of posts are not of an emergency nature.

##### DIGGERS HOTLINE MEMBERSHIP

Wisconsin law, s. 182.0175 (1m) (b) requires WisDOT to be a participating member of the one call service known as Diggers Hotline system. As a member, WisDOT needs to provide the one call service with information regarding the location of state-owned electrical facilities and WisDOT will receive tickets that require WisDOT to locate and mark its facilities when work is to be performed in the vicinity of those facilities.

In order to incorporate WisDOT electrical facilities into the Diggers Hotline database, the Regional offices submit location maps to Diggers. Typical electrical installations to include on the Diggers Hotline service are: signal systems, lighting systems, flashing beacons, ramp meters, changeable message signs, rest areas, and weigh scales.

Following receipt of a Diggers Hotline ticket, WisDOT electrical installations are field-located by Electrical personnel or a designated contractor. To ensure valid tickets are received, electrical installation location maps *should* be verified and updated routinely.

## 1-20-10 Response to Damage

June 2005

### BACKGROUND

The Department has a 24/7 obligation to respond to failures or damage that *may* jeopardize traffic safety or mobility. Given the extent of the system and the role of the Department, it is most often the case that law enforcement or local government employees will become aware of these situations first. A protocol for dealing with those situations will benefit the entity that first becomes involved, as well as serving the public needs for safety and mobility.

### NOTIFICATION TO OTHERS

In conjunction with and addition to the "Highway Facilities Damage Claim Program" coordinated by Risk Management, each region **shall** develop an on-going program of establishing and maintaining contacts with appropriate enforcement agencies, for the purpose of distributing information on whom to contact for emergency sign repair.

This notification *should* include the types of signs which are critical in nature and the telephone number and agency of whom the enforcement people are to contact at any given hour of the week -- day, night, weekday, weekends.

The notification *should* also include the appropriate contact regarding traffic signals, highway lighting and other appurtenances. Instructions *should* go on to cover reporting of routine damage or malfunction of a non-emergency nature.

The same notifications *should* be distributed to state maintenance people and others who *may* be in a position to see and report problems.

A suggested letter to be used for this purpose is included as part of this guideline.

### CRITICAL SIGNS

Critical signs are stop signs and yield signs, and *may* include large arrows in critical locations, keep right signs on important transition sections, and similar applications.

Date

Addressee

Subject: Reporting Damage to Signs and Signals On State Trunk Highways

We are contacting you to reconfirm and/or update information on whom to contact regarding the repair of damaged highway signs and traffic signals which are owned and operated by the State Department of Transportation.

We have assumed that you have enforcement officers and/or maintenance workers who will come upon damage and will be obliged to initiate action to have repairs made. The list on the next page will serve to expedite obtaining the proper phone number and the circumstances necessitating a call. You *should* make copies of this list available to each person.

We suggest that the officer or employee keep a record of the time and circumstances when contact was made with the person on the list.



We thank you for your cooperation and welcome your comments or questions regarding notification of damage to traffic control devices.

Regional Chief Traffic Engineer or Supervisor

**Contact Persons Below to Report Damage to Signals and Signs on State Highways**

	Agency-Person/Telephone Number		
<u>Emergency Damage</u>	<u>Working Hours</u>	<u>Week Nights</u>	<u>Weekend</u>
Electrical			
Examples:			
Traffic signal down			
Signals on flash			
(call top name first			
then next, etc.)			
Signing:			
Critical sign down or			
missing, such as stop,			
yield, large arrow, keep			
right sign, etc.			

In most cases a sign can be re-erected temporarily until the next working day.

<u>Non-Emergency Damage</u>	<u>Work Hours Only</u>
Electrical	
Example: lamp burned out	
Signs	
Example: Less important sign damaged or missing	



# **Traffic Engineering, Operations & Safety Manual**

**Chapter 1 General**

**Section 25 Business Management**

## **1-25-6 Charging for Signs**

**March 2023**

For signing, the cost of which is to be billed to another party, a professional and technical project *should* be set up to receive charges.

Refer to [Program Management Manual 06-10-90](#) for more information on Professional & Technical Project setup, authorization and billing.



# Traffic Engineering, Operations & Safety Manual

## Chapter 1 General

### Section 30 Project Delivery Process

#### 1-30-1 Traffic Role in Improvement Program

November 2022

#### INTRODUCTION

The following tables summarize the standard role for Traffic Operations in developing and delivering improvement projects in order to promote increased consistency of how traffic-related items are incorporated into projects, and to increase the consistency of work assignments played by Traffic Operations staff in the regional offices.

#### DEFINITIONS

'Acceptance Review' is defined as a field review of the completed project/item with the PDS Project Engineer for purposes of developing a punch-list of activities to be accomplished within a specific Traffic Engineering function before the contractor moves off the project and/or payment to the contractor is made for the items in each work category. As a general rule, this is accepted as the minimal role regional Traffic Operations would provide for all Traffic Engineering functions on projects.

'Needs identification' includes the project definition and project delivery stages.

#### ROLES & RESPONSIBILITIES

##### Signing

Refer to Table 1 for Traffic Operations and PDS roles in the signing function. Traffic Operations is directly responsible for producing signing plans for all improvement projects. Traffic Operations *may* accomplish this in a variety of ways, including in-house design by Operations staff, consultant design under a traffic master contract; or consultant staff under a (PDS managed) design contract. If the latter method is utilized, it is critical that the Traffic Operations staff person in responsible charge of the signing plan remain in the communication chain with PDS staff and the consultant so effective work reviews (preliminary plan, DSR plan, Pre-PS&E) can occur. During construction inspection by PDS, Traffic Operation's role is to provide technical guidance to PDS inspectors and be involved in acceptance review with the project engineer. The acceptance review *should* be completed shortly after signs are installed so the contractor can fix any signing that needs to be addressed before the contractors finish construction operations.

Table 1. Signing Roles

NEEDS IDENTIFICATION		DESIGN		CONSTRUCTION			
Identify need for replacement or new installation	Present need in project scoping or project initiation	Directly manage consultant in design & drafting (Consultant Mgmt for Delivery)	Complete design (In-House Delivery)	Provide technical guidance to PDS staff or PDS consultant in construction inspection	Complete construction inspection	Acceptance Review	Field Review for Compliance WZTC
Operations	Operations	Operations	Operations	Operations	PDS	Operations	PDS

##### Pavement Marking

Refer to Table 2 for Traffic Operations and PDS roles in the pavement marking function. Pavement marking plan production remains the responsibility of the PDS section. Traffic Operation's role is to provide technical guidance and design review when requested by PDS during design. Traffic Operation's role is to provide technical guidance to PDS inspectors and be involved in acceptance review with the project engineer during construction inspection conducted by PDS. The acceptance review *should* be completed shortly after the pavement marking is placed so the contractor can fix any marking that needs to be addressed before the contractors finish construction operations.

Table 2. Pavement Marking Roles

NEEDS IDENTIFICATION		DESIGN			CONSTRUCTION			
Identify need for replacement or new installation	Present need in project scoping or project initiation	Provide technical guidance to PDS staff or PDS consultant in design	Directly manage consultant in design & drafting (Consultant Mgmt for Delivery)	Complete design (In-House Delivery)	Provide technical guidance to PDS staff or PDS consultant in construction inspection	Complete construction inspection	Acceptance Review	Field Review for Compliance WZTC
Operations	Operations	Operations	PDS	PDS	Operations	PDS	Operations	PDS

##### Intersection Control

Traffic Operation's role is to identify the need for replacement, upgrade, or new installation of intersection control and present the need within the Project Initiation or Project Definition phases. Regional traffic operations complete the Intersection Control Evaluation (ICE) process to evaluate traffic control change alternatives for

reasonableness. [FDM 11-25-3](#) provides additional details on the ICE process. Refer to Table 3 for Traffic Operations and PDS roles in the various intersection control functions.

### Intersection Geometrics

Traffic Operation's role is to provide technical guidance on geometric and operational issues as necessary.

### Traffic Signal/Electrical Plans

Traffic Operations staff is directly responsible for producing signal/electrical plans (separate from geometrics). Traffic Operations *may* do this in a variety of ways including via in-house staff; via a traffic master contract; or via the design contract used for the project. If the latter method is used, it is critical that the Traffic Operations staff person in responsible charge of the signal/electrical signing plan remain in the communication chain with PDS staff and the consultant so effective work reviews (preliminary plan, DSR plan, Pre-PS&E) can occur.

Traffic Operations electrical staff are to serve as first-line inspectors on signal installations and are involved in acceptance review with the project engineer during construction inspection. The PDS project engineer is the lead on contract administrative duties. Operations staff and the PDS project staff agree prior to construction on proper level of inspection for electrical installations.

### Operations Analysis

Regional Traffic Operations staff *should* provide technical guidance to PDS staff or PDS consultant staff by completing needs analyses for alternative intersection control during the Project Initiation phase, by analyzing intersection crash data, and comparing and evaluating the alternatives relative to intersection control guidelines and warrants. [TEOpS 16-15](#) and [TEOpS 16-20](#) provide details on how to conduct traffic operations analyses following the Highway Capacity Manual (HCM) methodologies and microscopic simulation traffic analysis methodologies, respectively.

**Table 3. Intersection Control Roles**

	DESIGN			CONSTRUCTION		
	Provide technical guidance to PDS staff or PDS consultant in design	Directly manage consultant in design & drafting (Consultant Mgmt for Delivery)	Complete design (In-House Delivery)	Complete construction inspection	Acceptance Review	Field Review for Compliance WZTC
Intersection Geometrics	Operations	PDS	PDS	PDS	PDS	PDS
Traffic Signal/Electrical Plans		Operations	Operations	Operations	Operations	PDS
Operations Analysis	Operations	PDS	PDS			

### **Intelligent Transportation Systems**

Intelligent Transportation Systems (ITS) includes items such as closed-circuit television (CCTV), cameras, ramp meters, detector stations, count stations, permanent message boards, etc.

Refer to Table 4 for Operations and PDS roles in the ITS functional area. Traffic Operations staff is directly responsible for producing ITS component plans. Traffic Operations *may* do this in a variety of ways including via in-house staff; via a traffic master contract; or via the design contract used for the project. If the latter method is used, it is critical that the Traffic Operations staff person in responsible charge of the ITS component plan remain in the communication chain with PDS staff and the consultant so effective work reviews (preliminary plan, DSR plan, Pre-PS&E) can occur.

Traffic Operations/electrical staff are first-line inspectors on ITS construction installations, plus they are involved in acceptance review with project engineer.

**Table 4. ITS Roles**

NEEDS IDENTIFICATION		DESIGN		CONSTRUCTION		
Identify need for replacement or new installation	Present need in project scoping or project initiation	Directly manage consultant in design & drafting (Consultant Mgmt for Delivery)	Complete design (In-House Delivery)	Complete construction inspection	Acceptance Review	Field Review for Compliance WZTC
Operations/PDS	Operations/PDS	Operations	Operations	Operations	Operations	PDS

### **State-owned Highway Lighting**

Refer to Table 5 for Operations and PDS roles in the state-owned highway lighting function. Traffic Operations staff is directly responsible for producing state-owned highway lighting plans. Traffic Operations *may* do this in a variety of ways including via in-house staff; via a traffic master contract; or via the design contract used for the project. If the latter method is used, it is critical that the Traffic Operations staff person in responsible charge of

the lighting plan remain in the communication chain with PDS staff and the consultant so effective work reviews (preliminary plan, DSR plan, Pre-PS&E) can occur.

Traffic Operations/Electrical staff are first-line inspectors on state owned lighting installations and involved in acceptance review with the project engineer.

**Table 5. Highway Lighting Roles**

NEEDS IDENTIFICATION		DESIGN		CONSTRUCTION		
Identify need for replacement or new installation	Present need in project scoping or project initiation	Directly manage consultant in design & drafting (Consultant Mgmt for Delivery)	Complete design (In-House Delivery)	Complete construction inspection	Acceptance Review	Field Review for Compliance WZTC
Operations	Operations	Operations	Operations	Operations	Operations	PDS

### Work Zone Transportation Management Plan

Refer to Table 6 for Operations and PDS roles in the work zone transportation management plan (TMP) task. Traffic Operations role during the work zone TMP process is to provide technical guidance to PDS on:

- assessing work zone impacts
- determining mitigation strategies
- developing TMP documents, and
- reviewing work zone traffic operations during construction

Additional details on roles and responsibilities of Traffic Operations and PDS in the TMP process are discussed in [TEOpS 6-1-1](#).

**Table 6. Work Zone TMP Roles**

NEEDS IDENTIFICATION		DESIGN			CONSTRUCTION			
Identify work zone management needs & issues	Present need in project scoping or project initiation	Provide technical guidance to PDS staff or PDS consultant in design	Directly manage consultant in design & drafting (Consultant Mgmt for Delivery)	Complete design (In-House Delivery)	Provide technical guidance to PDS staff or PDS consultant in construction inspection	Complete construction inspection	Acceptance Review	Field Review for Compliance WZTC
Operations/PDS	Operations	Operations	PDS	PDS	Operations	PDS	PDS	PDS

### Safety and Operational Review

The Safety Certification Process (SCP) is defined in [FDM 11-38](#) and is required for state highway projects meeting the improvement concept codes in [FDM 11-1-10 Attachment 10.1](#). Traffic Operations or preliminary design engineers are responsible for completing and documenting this process. The SCP uses network screening tools to identify safety sites of promise which are locations that experience more crashes than similar sites; therefore, having a higher potential for safety improvement. These locations are investigated for reasonable alternatives which help define the purpose and need of a project. Regions are responsible for completion of the SCP, while the Bureau of Traffic Operations (BTO) approves documents in which an economic appraisal is completed.

The Highway Safety Improvement Program (HSIP) process is a separate, independent process from the SCP. This program aims to reduce serious and fatal crashes on all streets and highways. Information on the HSIP process can be found on the [WisDOT webpage](#). A HSIP project *may* occur within an existing state highway improvement project, or as a standalone safety project.

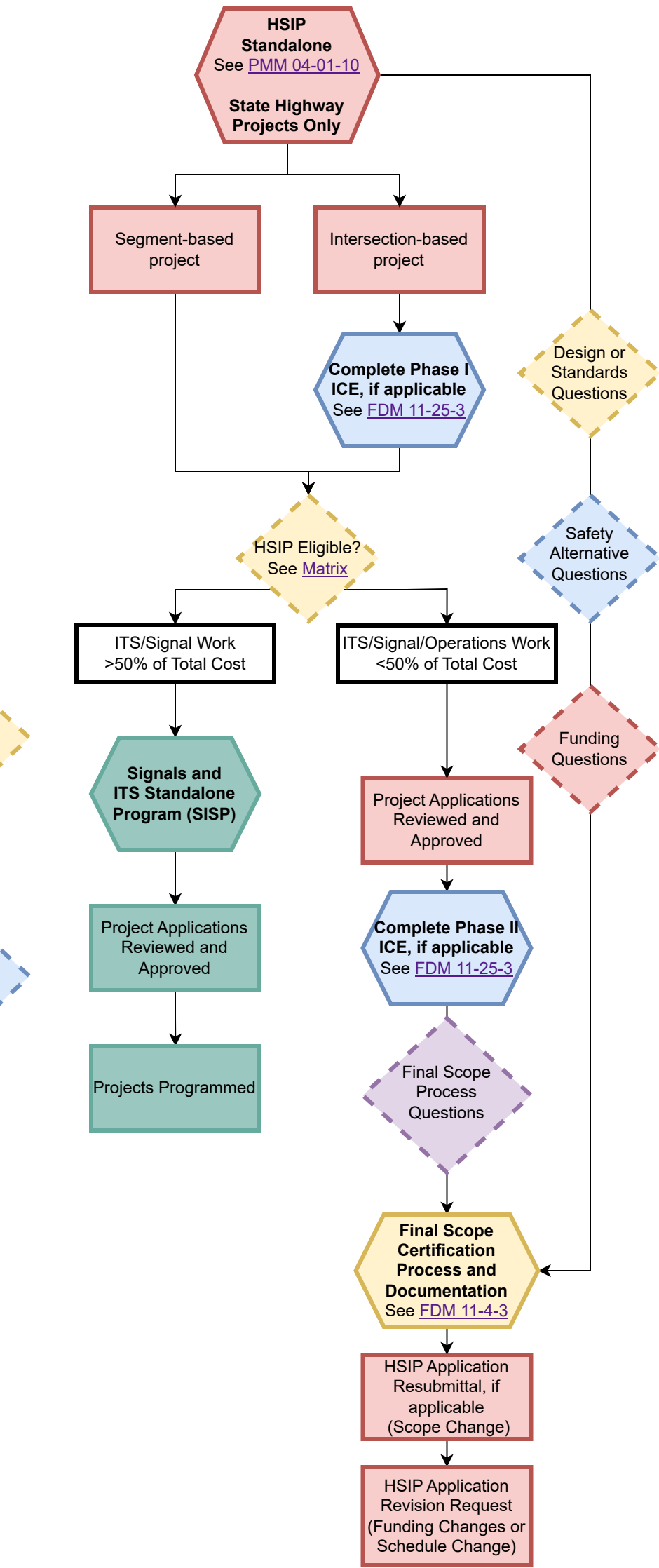
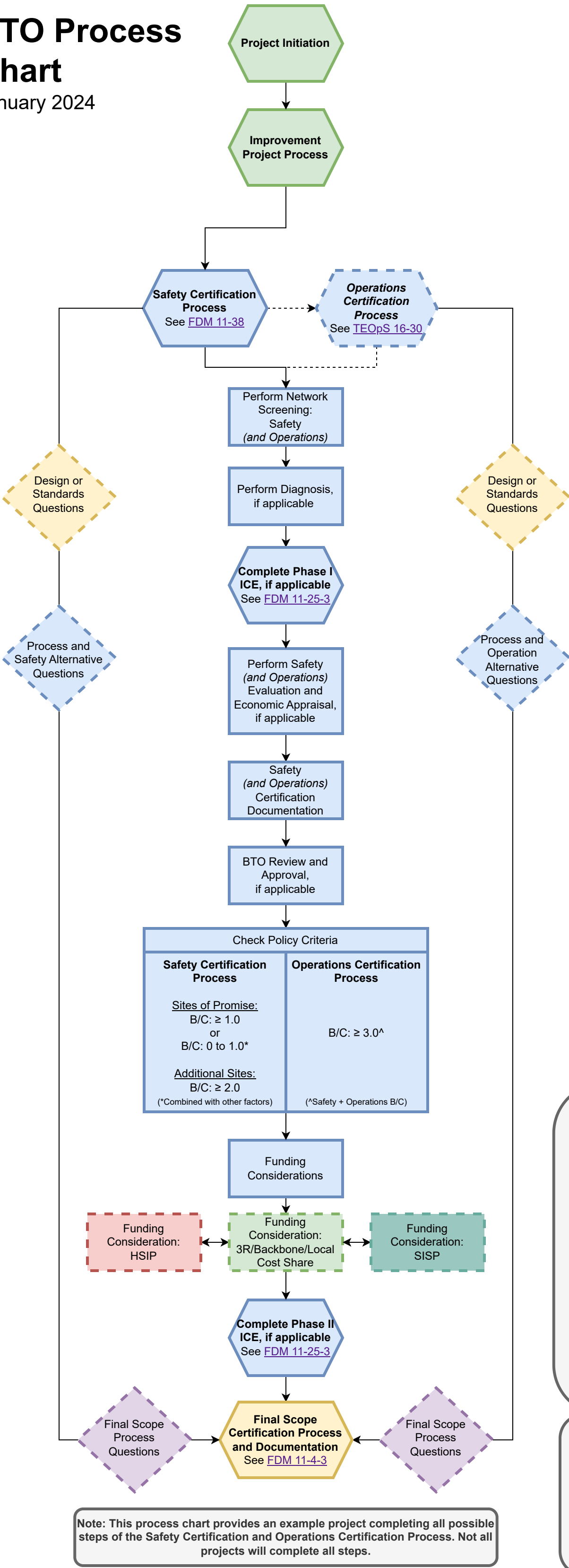
The Operations Certification Process (OCP) for intersections is currently defined in [FDM 11-52-15](#) and [TEOpS 16-30](#). The OCP is an optional process that Traffic Operations or preliminary design engineers *may* consider for operational improvements. The OCP identifies and investigates operational sites of promise to identify reasonable operational improvements which help meet the purpose and need of a project. Regions are responsible for completion of the OCP, while the BTO approves the documentation.

The Intersection Control Evaluation (ICE) process is defined in [FDM 11-25-3](#) and is required for all intersections on the State Trunk Network (STN), including those along connecting highways, regardless of the funding mechanism, where consideration is being given to an alternative form of traffic control or type of intersection/interchange. Regions are responsible for completion of the ICE, while BTO approves the documentation.

Figure 1 helps illustrate how these processes interact and how they could be completed within the life of an improvement project. For the improvement project process, beginning with Project Initiation phase, this flowchart illustrates an example in which all processes were completed. This example illustrates a linear outline, however, many of these steps can be completed concurrently. Not all projects will complete all the steps. For a full-page flowchart with accessible links, click the image.

# BTO Process Chart

January 2024



### Legend and Contact Information

Process Contacts		Flowchart Legend
<b>Bureau of Project Development:</b> Design Standards and Oversight Section	<b>Bureau of Traffic Operations:</b> Traffic Analysis and Safety Unit	Required Process or Step
<b>Bureau of Project Development:</b> Asset Management Unit	<b>Bureau of Traffic Operations:</b> Traffic Systems Unit	Optional Process or Step <i>Italics = Optional Step</i>
<b>DTIM Office of Asset and Performance Management</b>	<b>DTIM Program Development and Analysis:</b> Highway Safety Improvement Program Manager	Questions

### BTO Information:

**Review Timelines:**  
Intersection Control Evaluation (ICE) Process - 15 business days  
Safety (and Operations) Certification Process - 15 business days

**Process Contacts:**  
Operations Certification - [DOTTrafficAnalysisModeling@dot.wi.gov](mailto:DOTTrafficAnalysisModeling@dot.wi.gov)  
Safety Certification - [DOTBTOSafetyEngineering@dot.wi.gov](mailto:DOTBTOSafetyEngineering@dot.wi.gov)  
Highway Safety Improvement Program (HSIP) - [HSIP webpage](#)  
Signals and ITS Standalone Program (SISP) - [SISP webpage](#)

Note: This process chart provides an example project completing all possible steps of the Safety Certification and Operations Certification Process. Not all projects will complete all steps.