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Please contact Cathy Cooper at (360) 705-7411 with comments, questions, or suggestions for improvement to the *Traffic Manual*.

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Page numbers and corresponding sheet counts are given in the table below to indicate portions of the *Traffic Manual* that are to be removed and inserted to accomplish this revision.

Chapter	Remove		Insert	
	Pages	Sheets	Pages	Sheets
Title Page	i – ii	1	i – ii	1
Chapter 1	1-1 – 1-8	4	1-1 – 1-8	4

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**Washington State  
Department of Transportation**

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TECHNICAL MANUAL

# **Traffic Manual**

M 51-02.04

April 2010

**Engineering and Regional Operations**

Traffic Operations

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## 1.1 Overview

The Washington State Department of Transportation (WSDOT) publishes the *Traffic Manual* to provide guidance on applicable policies, establish uniform methods and procedures, and communicate vital information about traffic operations on state highways. The intended audience is the department's employees and others who develop traffic projects or conduct traffic engineering studies on state highways. The information, guidelines, and references herein are intended to support and complement sound engineering judgment.

The *Traffic Manual* is available on the Internet and in print. It can be accessed electronically at [www.wsdot.wa.gov/publications/manuals/m51-02.htm](http://www.wsdot.wa.gov/publications/manuals/m51-02.htm).

The online version allows you to do a word search of the entire manual.

## 1.2 Subject Matter

The *Traffic Manual* is composed of eight additional chapters:

Chapter 2, Signs

Chapter 3, Delineation

Chapter 4, Signals and Illumination

Chapter 5, Work Zone Traffic Control

Chapter 6, Traffic Regulations

Chapter 7, Specialized Highway Uses

Chapter 8, Highway Advertising Control

Chapter 9, Safety Management System

Each chapter provides information, guidelines, and references relating to a specialized area of traffic operations. Because traffic control device systems and their application are dynamic, the *Traffic Manual* is updated periodically to reflect state-of-the-art traffic engineering practices.

The *Traffic Manual* does not attempt to address all the possible traffic operations situations or questions. Contact the Headquarters Traffic Office for discussion and guidance on unique traffic operations matters.

### 1.3 WSDOT Traffic Functions

Most traffic activities within WSDOT are administered by the Headquarters Traffic Operations Division and the Regional Traffic Offices. The Transportation Data Office (TDO), the Highways and Local Programs Division, and the Urban Planning Office (UCO) provide specialized support.

The following subsections briefly describe how each of these work groups contributes to the goals of the department's traffic program.

A. **Headquarters Traffic Operations Division (Headquarters).** Under the Director of Traffic Operations, the Headquarters Traffic Operations Division is responsible for traffic engineering and related safety functions in three fundamental areas:

- **Statewide Traffic Expertise.** Headquarters provides expertise to the regions and other agencies, focusing on traffic design, traffic operations, ITS operations, work zone traffic control, traffic engineering training, and highway advertising control. The Traffic Operations Division also coordinates statewide traffic activities including consultation with Attorney General's Office on matters of traffic law, offering advice or guidance when requested by the regions or other WSDOT offices, and facilitating statewide meetings with regional traffic personnel.
- **Statewide Policy Development.** Headquarters develops policy and responds to issues and questions on traffic engineering to ensure statewide consistency and uniformity. These tasks often require efforts to research, coordinate, and summarize issues for executive level decision-making. Policies include traffic design, and traffic operations standards and procedures.
- **Statewide Resource Development and Deployment.** Headquarters identifies the resources required to fund traffic operations for the state highway system, and for statewide traffic and "spot" safety investments. Decision packages are developed and submitted to the legislature for approval each biennium and once approved, the funds are allocated. Traffic operations activities are accomplished primarily under Program Q.

B. **Regional Traffic Offices.** The six Regional Traffic Engineers report to one of the regional senior managers, typically the regional Maintenance and Operations Engineer. Regionally administered traffic engineering and safety services include:

- Traffic engineering investigations and studies.
- Collision analyses.
- Operational analyses.

- Compliance with Rules and regulations.
- Regional traffic expertise.
- Freeway and arterial management.
- Traffic control device inventories.
- Public and media relations.
- Administering Program Q allocations.

C. **Transportation Data Office.** The Transportation Data Office (TDO) is part of Headquarters Strategic Planning and Programming. The TDO collects, analyzes, reports, and stores much of the data the department uses to identify and address operational deficiencies on our state highways. Data includes information about the type of roadway surface, width of the travel lanes and shoulders, number and types of vehicles using the highway each day, and the location and severity of collisions. The TDO also provides technical support for planning functions, maintains video and digital imaging of state highways, and maintains the milepost system.

D. **Highways and Local Programs Division.** The Local Agency Traffic Services program provides traffic engineering assistance to cities, counties, tribal governments, transit and other agencies, as well as other organizations. They assist with traffic safety, operations, and design issues, help advance projects, and promote information sharing. Traffic Services also operates as a contact point between local agencies, tribal governments, WSDOT, Federal Highway Administration, and other state agencies. Traffic Services answers general questions about state highways, but directs questions about specific locations to the appropriate WSDOT region.

Examples of the services offered are available at [www.wsdot.wa.gov/localprograms/traffic/default.htm](http://www.wsdot.wa.gov/localprograms/traffic/default.htm).

Traffic Services also chairs the Urban Traffic Engineers Council (UTEC), a group of Washington State city and county traffic, transportation, and public works engineers and technicians, public works directors, managers, planners, and related professionals. UTEC provides a forum for local agencies to share ideas and information about traffic issues affecting local agencies, through e-mail, listserv, and regular meetings. Meeting dates and topics are listed at [www.wsdot.wa.gov/localprograms/traffic/utec.htm](http://www.wsdot.wa.gov/localprograms/traffic/utec.htm).

For more information about these services, contact the Traffic Services Branch Manager at [www.wsdot.wa.gov/localprograms/staff.htm#traffic-services-manager](http://www.wsdot.wa.gov/localprograms/staff.htm#traffic-services-manager).

- E. **Urban Planning Office.** The Urban Planning Office provides leadership and advocacy towards implementing an efficient regional transportation network. They represent the state, as the owner and operator of major portions of the Puget Sound regional transportation system.

The Urban Planning Office:

- Plans transportation improvements for a variety of travel modes including transit, carpools, freight, general-purpose highway use and non-motorized travel.
- Coordinates with local agencies, sub-area transportation management forums, the Puget Sound Regional Council (PSRC), and other transportation providers to determine cost-effective investments for the state transportation system that meet the mobility needs of people and goods while systematically working to meet greenhouse gas reduction goals set in state law.
- Improves the performance of the existing highway system by implementing new technology, and developing congestion pricing and tolling strategies.
- Coordinates state transportation facility planning between WSDOT's Olympic and Northwest Regions, Tolling Organization, Washington State Ferries, and with local jurisdictions and the Puget Sound Regional Council.

## 1.4 Key Reference Material

The following reference materials are essential to personnel involved with traffic operations and traffic design duties.

- ***Manual on Uniform Traffic Control Devices for Streets and Highways (MUTCD) and Washington State Modifications to the MUTCD (M 24-01).*** RCW 47.36.030 directs WSDOT to adopt a uniform standard for the application and location of traffic control devices installed along public roadways in the state of Washington. The MUTCD, published by FHWA, has been adopted into Chapter 468-95 of the Washington Administrative Code (WAC). To comply with state law, modifications to specific MUTCD sections have also been adopted into WAC 468-95.

Amendments to the MUTCD are developed by the FHWA through the Federal Register process. The amendments become effective in our state after the department receives notification of the approved changes from the FHWA and adopts them into WAC 468-95.

- **WSDOT *Design Manual* (M 22-01).** The *Design Manual* provides guidance for developing traffic components included in design reports and contract plans. Many of the components may also apply to traffic operations. Where possible, the *Traffic Manual* avoids duplication of *Design Manual* materials but provides appropriate cross-references.
- **WSDOT *Sign Fabrication Manual* (M 55 05).** The *Sign Fabrication Manual* provides sign fabricators and designers with detailed layout information for official traffic signs used in Washington State.
- **WSDOT *Standard Plans for Road, Bridge, and Municipal Construction* (M 21-01).** The “Standard Plans” provides plans for the following traffic items:
  - Sign Bridges
  - Sign Installation
  - Cantilever Sign Structures
  - Roadway Striping (typical layouts)
  - Guide Posts
  - Pavement Markers
  - Illumination
  - Signals
  - Concrete Barrier
  - Guardrail
  - Earthberms
- **WSDOT *Standard Specifications for Road, Bridge, and Municipal Construction* (M 41-10).** The *Standard Specifications* provide detailed requirements and techniques for construction and installation of the following traffic-related items:
  - Guide Posts
  - Plastic Traffic Buttons
  - Lane Markers
  - Signing (materials and fabrication)
  - Illumination
  - Signals (electrical)
  - Pavement Markings (temporary and permanent)
  - Work zone traffic control items (flagging, signs, delineation devices, etc.)

## Other Documents

The following reference documents may also be helpful in conducting traffic related designs and analyses:

**WSDOT Manuals**     [www.wsdot.wa.gov/publications/manuals/](http://www.wsdot.wa.gov/publications/manuals/)

- *Plans Preparation Manual* (M 22-31)
- *Construction Manual* (M 41-01)
- *Maintenance Manual* (M 51-01)
- *Highway Advertising Control Act* (M 22-95)

**FHWA (Federal Highway Administration)**     [www.fhwa.dot.gov/](http://www.fhwa.dot.gov/)

- *Traffic Control Systems Handbook*
- *Traffic Monitoring Guide*

**AASHTO (American Association of State Highway and Transportation Officials)**     [www.transportation.org](http://www.transportation.org)

- *A Policy on Geometric Design of Highways and Streets*
- *Guidelines for Traffic Data Programs*

**TRB (Transportation Research Board)**     [www.trb.org/main/public/home.aspx](http://www.trb.org/main/public/home.aspx)

- *Highway Capacity Manual*

**ITE (Institute of Transportation Engineers)**     [www.ite.org/](http://www.ite.org/)

- *Traffic Control Devices Handbook*
- *Traffic Engineering Handbook*
- *Manual of Transportation Engineering Studies*
- *Traffic Detector Handbook*

## Other Reference Sources

The following internal reference sources may also be helpful in conducting traffic engineering investigations and analyses:

- SR View
- Interchange Viewer
- Washington State Highway Log
- TRIPS — WSDOT corporate mainframe database for transportation data
- Internet Information — [www.wsdot.wa.gov](http://www.wsdot.wa.gov)

## 1.5 Abbreviations

Common abbreviations used in the *Traffic Manual* and other traffic engineering related publications are:

AADT	Annual Average Daily Traffic
AASHTO	American Association of State Highway and Transportation Officials
ARM	Accumulated Route Mileage
CMS	Changeable Message Sign
CVISN	Commercial Vehicle Information Systems Network
DMI/LRS	Distance Measuring Instrument/Linear Referencing System
FHWA	Federal Highway Administration
GPS/LRS	Global Positioning System/Linear Referencing System
HAR	Highway Advisory Radio
HAC	High Accident Corridor
HAL	High Accident Location
HOV	High Occupancy Vehicle
HPMS	Highway Performance Monitoring System
HSIS	Highway Safety Information System
ITE	Institute of Traffic Engineers
ITS	Intelligent Transportation Systems
MPO	Metropolitan Planning Organization
MUTCD	Manual on Uniform Traffic Control Devices for Streets and Highways
NHS	National Highway System
PAL	Pedestrian Accident Location
PSRC	Puget Sound Regional Council
PTR	Permanent Traffic Recorder
RCW	Revised Code of Washington
SMS	Safety Management System
SP&P	Strategic Planning and Programming
SRMP	State Route Milepost
TEA-21	Transportation Equity Act for the 21st Century
TDO	Transportation Data Office
TRAC	Transportation Research Center (University of Washington)
WAC	Washington Administrative Code
WSDOT	Washington State Department of Transportation
WSP	Washington State Patrol
WTSC	Washington Traffic Safety Commission

