

TEMPORARY TRAFFIC CONTROL PLAN SELECTION SOFTWARE



DISCLAIMER

- Opinions, findings, and conclusions expressed in this presentation are those of contractor(s) and not necessarily those of USDOT or FHWA
- Materials prepared under contract with FHWA
- Content is 'living' and subject to change



GAPS IN TYPICAL APPLICATIONS

- ⚠ Only 46 'Typical Applications'
 - ▶ DO NOT cover all of the frequently encountered scenarios
- ⚠ Can be incorrectly implemented “As Is”
 - ▶ Must be tailored to the specific scenario encountered
 - ▶ Rarely verbatim the same as generalized scenario



“EXAMPLE” PLANS

WSU-TRG developed over 100 “Example” Plans

- ▶ Supplement the existing 46 TAs
- ▶ Cover many additional work zone scenarios that are frequently encountered
- ▶ Based on state of the art and practice in highway work zones
 - ▶ Best practices in individual states
 - ▶ Up to date research literature
- ▶ Reviewed by the FHWA, national focus group, and experienced professional work zone consultant



TEMPORARY TRAFFIC CONTROL SELECTION SOFTWARE

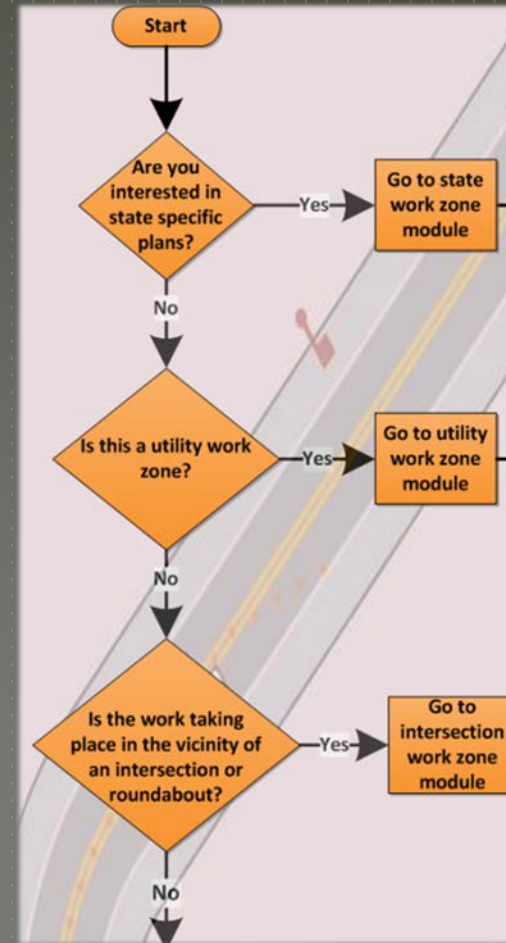
Combination of:

- ▶ 46 'Typical Applications' from 2009 MUTCD
- ▶ 102 additional "example" plans
- ▶ State-specific standard drawings

Separated into EIGHT distinct modules

Navigate flowchart logic to arrive at appropriate plan

- ▶ Additional drop down menus for site-specific information



WORK ZONE WEBSITE

Workzone.eng.wayne.edu

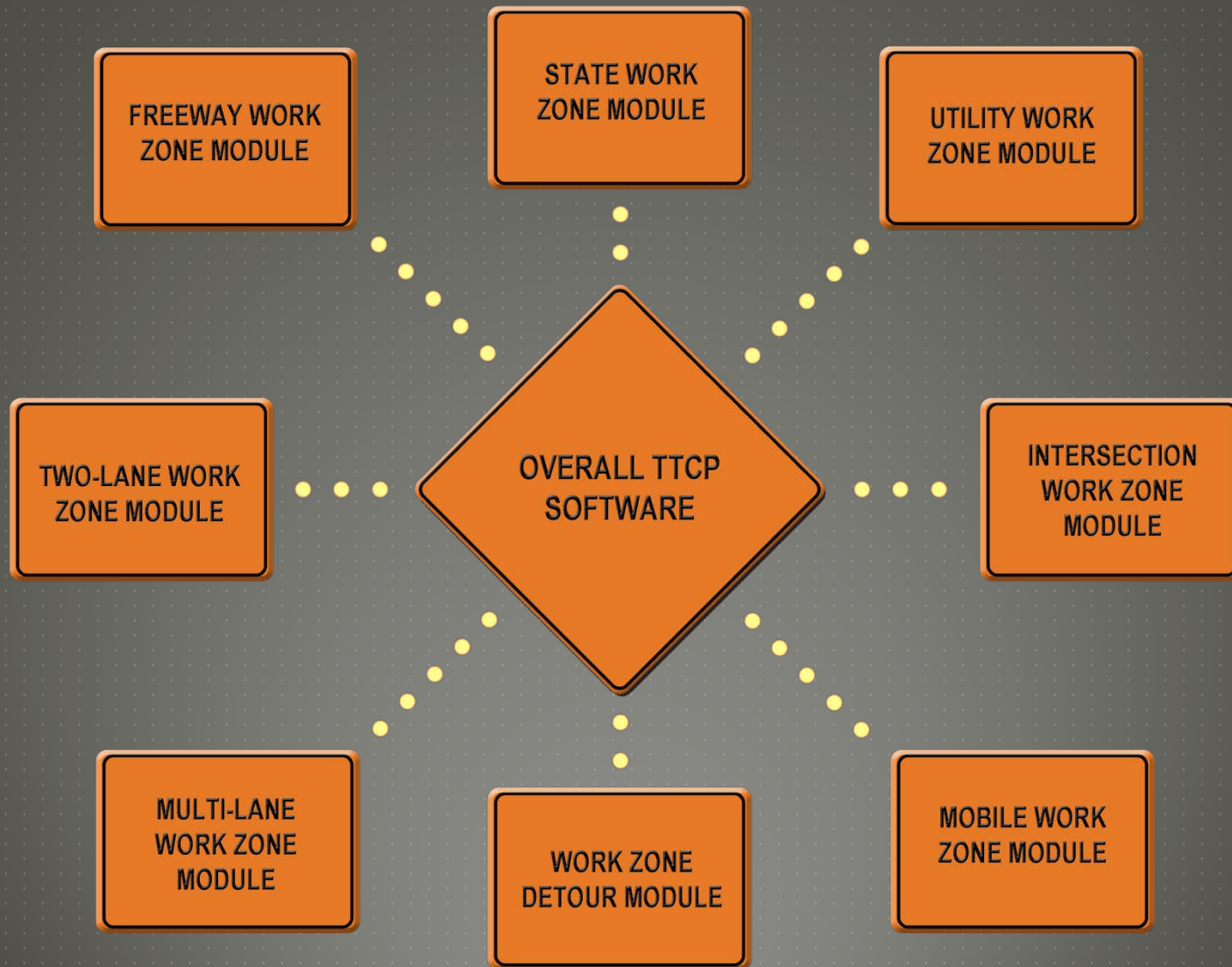
- ▶ Provides access to:
 - ▶ TTCP Software
 - ▶ Compendium of Documents
 - ▶ Case Studies
 - ▶ Guidelines and Training Materials



SYSTEM REQUIREMENTS


- 🚧 Web-based software tool compatible with:
 - ▶ Personal computers (Windows, and Apple OS)
 - ▶ Tablets and mobile devices (iOS, Android, Windows Mobile)
- 🚧 Compatible browsers include:
 - ▶ Mozilla Firefox
 - ▶ Google Chrome
 - ▶ Microsoft Internet Explorer
 - ▶ Apple Safari

TTCP MODULES



STATE-SPECIFIC WORK ZONE MODULE

- 🚧 Comprehensive list of the plans available for each state
 - ▶ Should always be checked first for appropriate state-level plans
- 🚧 Standard plans are updated periodically by WSU-TRG

[Main Module](#)

INSTRUCTIONS

Select items from the following dropdowns to find relevant standard plans or typical applications maintained by each state.

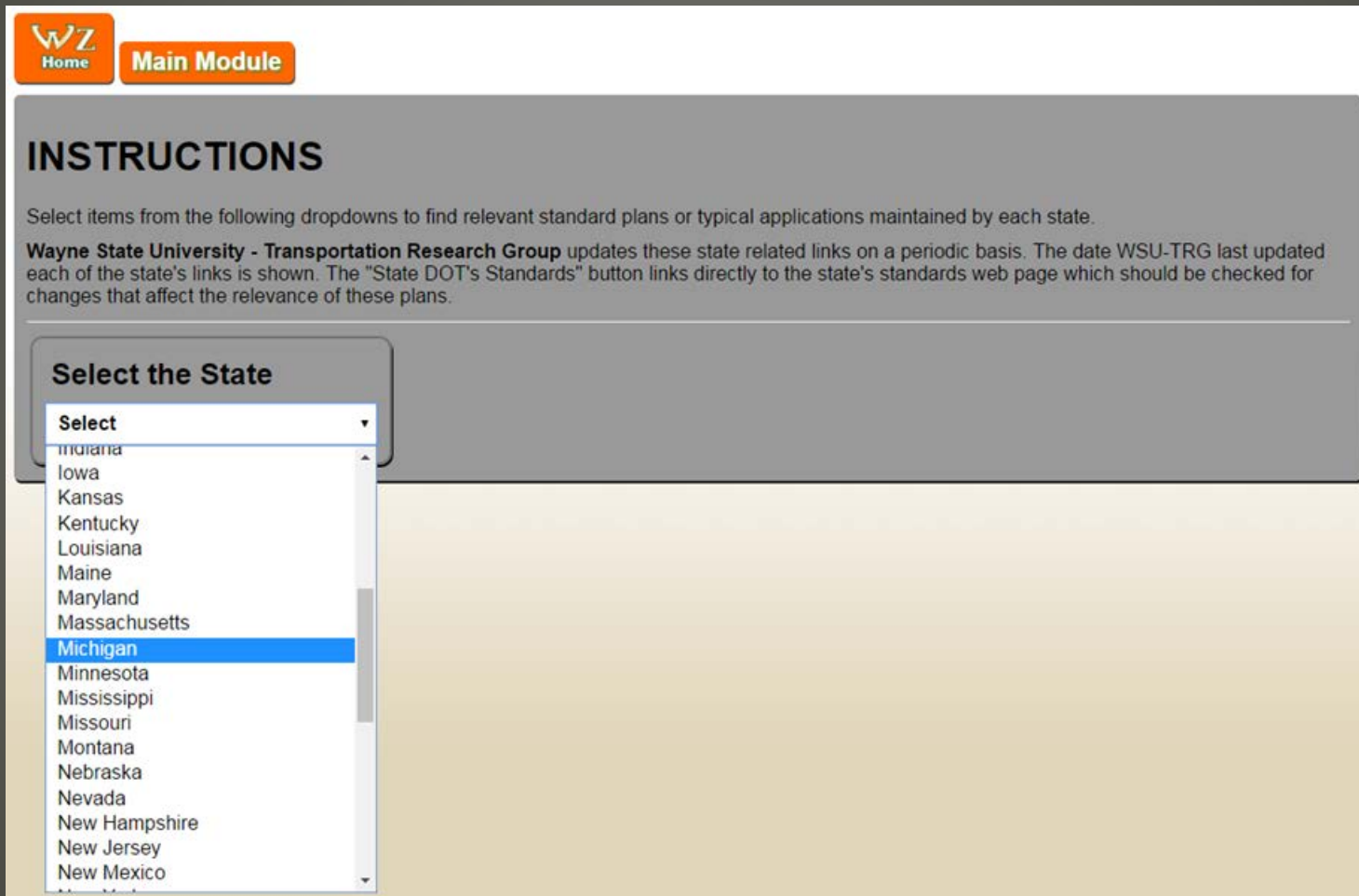
Wayne State University - Transportation Research Group updates these state related links on a periodic basis. The date WSU-TRG last updated each of the state's links is shown. The "State DOT's Standards" button links directly to the state's standards web page which should be checked for changes that affect the relevance of these plans.

Select the State

Select ▼

STATE-SPECIFIC EXAMPLE

🚧 Assuming that the State of **Michigan** is selected:



The screenshot displays a web application interface. At the top left, there is a logo with the letters 'WZ' and the word 'Home' below it. To the right of the logo is an orange button labeled 'Main Module'. Below these elements is a large grey rectangular area with the heading 'INSTRUCTIONS' in bold. The text below the heading reads: 'Select items from the following dropdowns to find relevant standard plans or typical applications maintained by each state. Wayne State University - Transportation Research Group updates these state related links on a periodic basis. The date WSU-TRG last updated each of the state's links is shown. The "State DOT's Standards" button links directly to the state's standards web page which should be checked for changes that affect the relevance of these plans.'

Below the instructions, there is a section titled 'Select the State' in bold. Under this title is a dropdown menu. The dropdown menu is open, showing a list of states. The states listed are: Indiana, Iowa, Kansas, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan (highlighted in blue), Minnesota, Mississippi, Missouri, Montana, Nebraska, Nevada, New Hampshire, New Jersey, and New Mexico. The dropdown menu has a 'Select' label at the top and a downward arrow on the right side.

STATE-SPECIFIC EXAMPLE

Returns User to Work Zone Safety Homepage

Link to the Individual State's Standard Plans Page

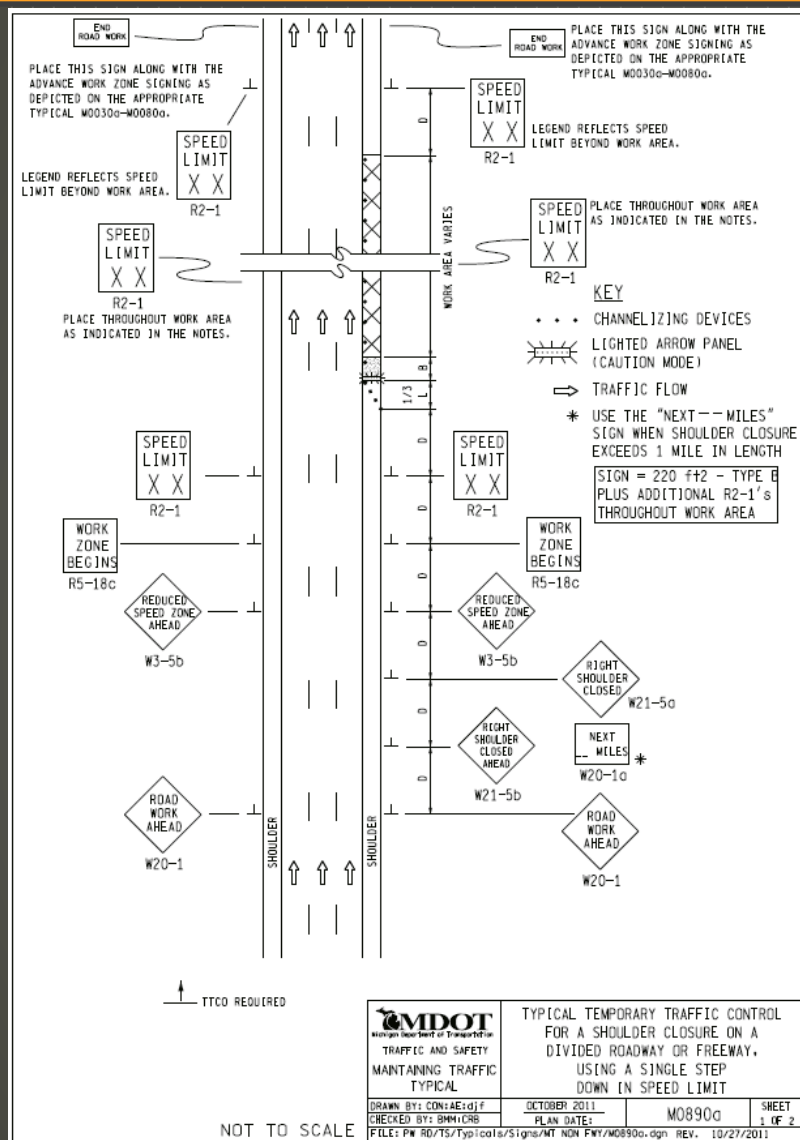
Most Recent Update of State Plans

The screenshot shows a web interface for Michigan DOT's Standards. At the top, there is a navigation bar with a 'WZ Home' button, 'Main Module', 'State Plans', and 'Michigan DOT's Standards' buttons. A date stamp indicates 'Last Updated by WSU-TRG on: 2/3/2017'. Below the navigation bar is an 'INSTRUCTIONS' section with text explaining the purpose of the page and the role of the Wayne State University - Transportation Research Group. Two dropdown menus are present: 'Select the State' (currently set to 'Michigan') and 'Select the Category' (currently set to 'All Standard Plans'). Below these is a table listing various standard plans and typical applications, each with a link to a PDF document.

Type	Name
State MUTCD	Michigan Manual on Uniform Traffic Control Devices
Guidelines	Maintenance Work Zone Traffic Control Guidelines
All Plans	All Temporary Traffic Control Plans
Typical Application	Tables for L, D and B Values
Typical Application	Shoulder Closure on a Divided Roadway or Freeway No Speed Reduction
Typical Application	Shoulder Closure on a Divided Roadway or Freeway, Using a Single Step Down in Speed Limit
Typical Application	Traffic Stoppage on a Divided Highway or Freeway

Clicking any one of the links will direct the user to a PDF of that plan

STATE-SPECIFIC EXAMPLE

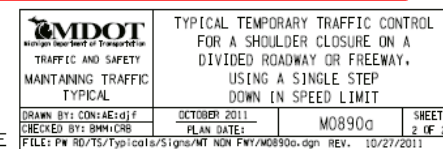


- NOTES
1. D = DISTANCE BETWEEN TRAFFIC CONTROL DEVICES
1/3 L = MINIMUM LENGTH OF TAPER
B = LENGTH OF LONGITUDINAL BUFFER
SEE M0020a FOR "D," "L," AND "B" VALUES
 2. ALL NON-APPLICABLE SIGNING WITHIN THE CIA SHALL BE MODIFIED TO FIT CONDITIONS, COVERED OR REMOVED.
 3. DISTANCES BETWEEN SIGNS, THE VALUES FOR WHICH ARE SHOWN IN TABLE D, ARE APPROXIMATE AND MAY NEED ADJUSTING AS DIRECTED BY THE ENGINEER.
 - 3A. THE "WORK ZONE BEGINS" (R5-18c) SIGN SHALL BE USED ONLY IN THE INITIAL SIGNING SEQUENCE IN THE WORK ZONE. SUBSEQUENT SEQUENCES IN THE SAME WORK ZONE SHALL OMIT THIS SIGN AND THE QUANTITIES SHALL BE ADJUSTED APPROPRIATELY.
 - 4E. THE MAXIMUM RECOMMENDED DISTANCE(S) BETWEEN CHANNELIZING DEVICES SHOULD BE EQUAL IN FEET TO THE POSTED SPEED IN MILES PER HOUR ON TAPER(S) AND TWICE THE POSTED SPEED IN THE PARALLEL AREA(S).
 5. FOR OVERNIGHT CLOSURES, TYPE III BARRICADES SHALL BE LIGHTED.
 6. WHEN CALLED FOR IN THE FHWA ACCEPTANCE LETTER FOR THE SIGN SYSTEM SELECTED, THE TYPE A WARNING FLASHER, SHOWN ON THE WARNING SIGNS, SHALL BE POSITIONED ON THE SIDE OF THE SIGN NEAREST THE ROADWAY.
 7. ALL TEMPORARY SIGNS, TYPE [I] BARRICADES, THEIR SUPPORT SYSTEMS AND LIGHTING REQUIREMENTS SHALL MEET NCHRP 350 CRASHWORTHY REQUIREMENTS STIPULATED IN THE CURRENT EDITION OF THE MICHIGAN MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, THE CURRENT EDITION OF THE STANDARD SPECIFICATIONS FOR CONSTRUCTION, THE STANDARD PLANS AND APPLICABLE SPECIAL PROVISIONS. ONLY DESIGNS AND MATERIALS APPROVED BY MDOT WILL BE ALLOWED.
 8. WHEN BUFFER AREAS ARE ESTABLISHED, THERE SHALL BE NO EQUIPMENT OR MATERIALS STORED OR WORK CONDUCTED IN THE BUFFER AREA.
 - 16B. WHEN REDUCED SPEED LIMITS ARE UTILIZED IN THE WORK AREA, ADDITIONAL SPEED LIMIT SIGNS RETURNING TRAFFIC TO ITS NORMAL SPEED SHALL BE PLACED BEYOND THE LIMITS OF THE REDUCED SPEED AS INDICATED.
 - 16E. WHEN EXISTING SPEED LIMITS ARE REDUCED MORE THAN 10 MPH, THE SPEED LIMIT SHALL BE STEPPED DOWN IN NO MORE THAN 10 MPH INCREMENTS.
 - 16F. ADDITIONAL SPEED LIMIT SIGNS REFLECTING THE REDUCED SPEED SHALL BE PLACED AFTER EACH MAJOR CROSSROAD THAT INTERSECTS THE WORK AREA WHERE THE REDUCED SPEED IS IN EFFECT, OR AFTER EACH ENTRANCE RAMP THAT COMES ONTO THE FREEWAY WHERE THE REDUCED SPEED IS IN EFFECT AND AT INTERVALS ALONG THE ROADWAY SUCH THAT NO SPEED LIMIT SIGNS REFLECTING THE REDUCED SPEED ARE MORE THAN TWO MILES
 - 29A. THE TYPE OF REFLECT
- Remember to always**

Remember to always check for state-specific versions of the work zone scenario!

SIGN SIZES

DIAMOND WARNING	- 48" x 48"
W20-1a PLAQUE	- 48" x 36"
R2-1 REGULATORY	- 48" x 60"
R5-18c REGULATORY	- 48" x 48"



NOT TO SCALE

STATE-SPECIFIC EXAMPLE

[Main Module](#)[State Plans](#)[Michigan DOT's Standards](#)

Last Updated by WSU-TRG on: 2/3/2017

INSTRUCTIONS

Select items from the following dropdowns to find relevant standard plans or typical applications maintained by each state.

Wayne State University - Transportation Research Group updates these state related links on a periodic basis. The date WSU-TRG last updated each of the state's links is shown. The "State DOT's Standards" button links directly to the state's standards web page which should be checked for changes that affect the relevance of these plans.

Select the State

Michigan

Select the Category

Select

All Standard Plans
Tables
Freeway
Miscellaneous
Two-Lane Two-Way
Multi-Lane
Traffic Signal Work

Selecting a specific category will filter the results

Type

State
MUTCD


[Michigan Manual on Uniform Traffic Control Devices](#)

Guidelines

[Maintenance Work Zone Traffic Control Guidelines](#)

STATE-SPECIFIC EXAMPLE

🚧 Selecting “Traffic Signal Work” will provide the plans related to traffic signal work in Michigan

**Main Module** **State Plans** **Michigan DOT's Standards** Last Updated by WSU-TRG on: 2/3/2017

INSTRUCTIONS

Select items from the following dropdowns to find relevant standard plans or typical applications maintained by each state.

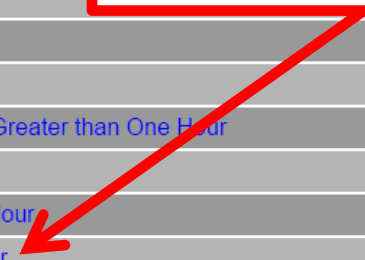
Wayne State University - Transportation Research Group updates these state related links on a periodic basis. The date WSU-TRG last updated each of the state's links is shown. The "State DOT's Standards" button links directly to the state's standards web page which should be checked for changes that affect the relevance of these plans.

Select the State
Michigan ▾

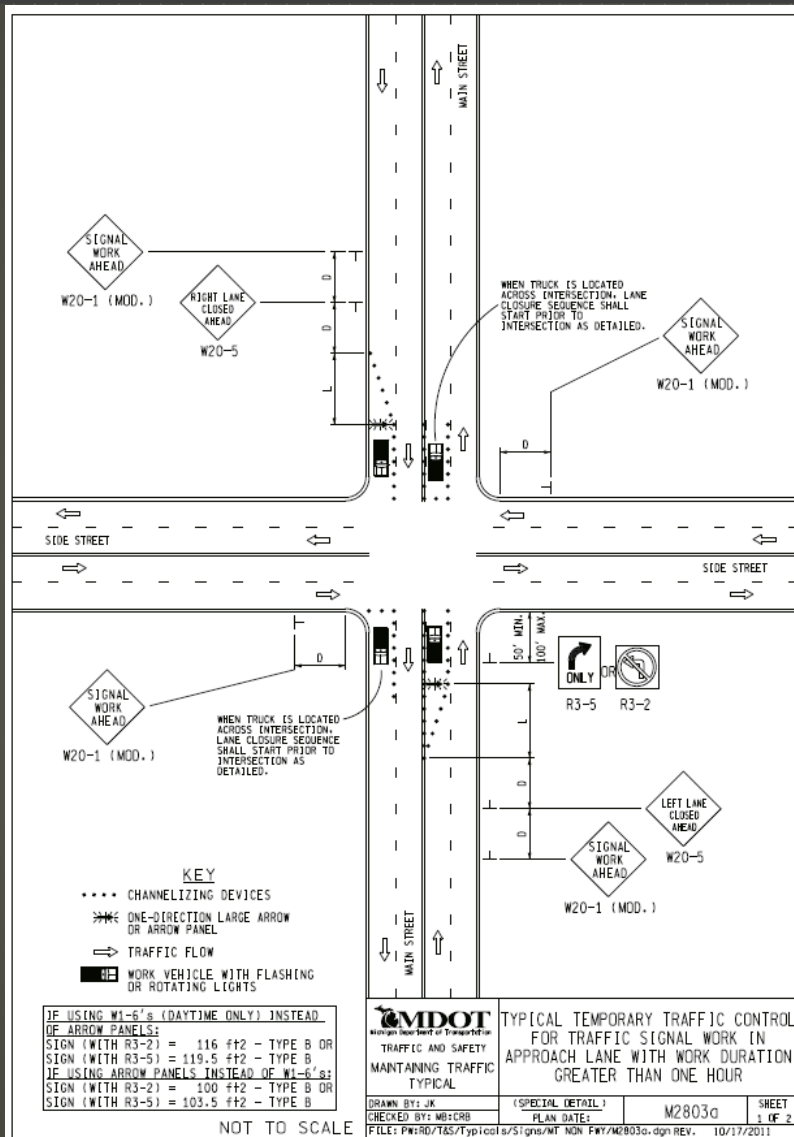
Select the Category
Traffic Signal Work ▾

Type	Name
State MUTCD	Michigan Manual on Uniform Traffic Control Devices
Guidelines	Maintenance Work Zone Traffic Control Guidelines
All Plans	All Temporary Traffic Control Plans
Typical Application	Traffic Signal Work in Intersection on a Two Lane Roadway with Work Duration Greater than One Hour
Typical Application	Traffic Signal Work in Intersection With Work Duration Less than One Hour
Typical Application	Traffic Signal Work Outside of Roadway With Work Duration Greater than One Hour
Typical Application	Traffic Signal Work in Approach Lane With Work Duration Greater than One Hour

Clicking any one of the links will direct the user to a PDF of that plan



SPECIFIC-STATE EXAMPLE



NOTES:

10. D = DISTANCE BETWEEN TRAFFIC CONTROL DEVICES AND LENGTH OF LONGITUDINAL BUFFERS 1/3 L = MINIMUM LENGTH OF TAPER SEE W0020a FOR "D" AND "L" VALUES
 2. ALL NON-APPLICABLE SIGNING WITHIN THE CONSTRUCTION INFLUENCE AREA (CIA) SHALL BE MODIFIED TO FIT CONDITIONS, COVERED OR REMOVED.
 3. DISTANCES BETWEEN SIGNS, THE VALUES FOR WHICH ARE SHOWN IN TABLE D, ARE APPROXIMATE AND MAY NEED ADJUSTING AS DIRECTED BY THE ENGINEER.
 40. THE MAXIMUM RECOMMENDED DISTANCE(S) BETWEEN CHANNELIZING DEVICES SHOULD BE EQUAL, IN FEET TO 1/2 THE POSTED SPEED IN MILES PER HOUR ON TAPERS AND TO THE POSTED SPEED IN PARALLEL AREAS.
 7. ALL TEMPORARY SIGNS, TYPE III BARRICADES, THEIR SUPPORT SYSTEMS AND LIGHTING REQUIREMENTS SHALL MEET NCHRP 350 CRASH WORTHY REQUIREMENTS STIPULATED IN THE CURRENT EDITION OF THE MICHIGAN MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, THE CURRENT EDITION OF THE STANDARD SPECIFICATIONS FOR CONSTRUCTION, THE STANDARD PLANS AND APPLICABLE SPECIAL PROVISIONS. ONLY DESIGNS AND MATERIALS APPROVED BY MDOT WILL BE ALLOWED.
 26. THE LIGHTED ARROW PANEL SHALL BE LOCATED AT THE BEGINNING OF THE TAPER AS SHOWN. WHEN PHYSICAL LIMITATIONS RESTRICT ITS PLACEMENT AS INDICATED, THEN IT SHALL BE PLACED AS CLOSE TO THE BEGINNING OF THE TAPER AS POSSIBLE.
 32. THESE SIGNS SHALL BE LEFT IN PLACE AT THEIR PRESCRIBED LOCATIONS AND UNTIL ALL TEMPORARY TRAFFIC CONTROL HAS BEEN REMOVED.
 35. THESE SIGNS ARE INTENDED TO BE USED WITHIN THE LIMITS OF THE TEMPORARY SEQUENCE SIGNING AS IS SHOWN ON 1 OF 2. THESE SIGNS ARE NOT TO BE INTERMIXED WITH ANY OTHER TEMPORARY SEQUENCE SIGNING EXCEPT AS SHOWN.
- SIGNAL IS IN OPERATION.
 - WORK AREA AND TAPERS DELINEATED BY 28" CONES (DAYTIME) OR GRABBER CONES (NIGHTTIME).
 - IF THE AERIAL BUCKET IS LOCATED OVER ACTIVE TRAVEL LANE(S), THE CONTRACTOR MUST HAVE A DESIGNATED PERSON "SPOTTER" ENSURING THAT THE LOWEST POINT OF THE BUCKET DOESN'T TRAVEL BELOW THE MINIMUM 14 FOOT VERTICAL CLEARANCE REQUIREMENTS. THE SPOTTER SHOULD KNOW THE ACTUAL HEIGHT OF THE SIGNAL TO DETERMINE THE MINIMUM WORKING HEIGHT.
 - SUFFICIENT VERTICAL DISTANCE FROM ACTIVE TRAFFIC MUST BE MAINTAINED AT ALL TIMES. IF THE WORK OPERATION REQUIRES THE MINIMUM 14 FOOT WORKING HEIGHT TO BE COMPROMISED, THE CONTRACTOR SHALL EITHER UTILIZE AN ALTERNATE SET UP OR PLACE THE INTERSECTION IN A 4 WAY STOP USING APPROPRIATE SIGNING AND USE A TRAFFIC REGULATOR TO CONTROL TRAFFIC THROUGH THE INTERSECTION.
 - TARGET ARROW W1-6 (DAYTIME) OR ARROWBOARD (NIGHTTIME).
 - ALL SIGNS SHOULD BE CONTAINED WITHIN THE SIGNAL INFLUENCE AREA.

Remember to always check for state-specific versions of the work zone scenario!

SIGN SIZES

DIAMOND WARNING
MANDATORY MOVEMENT (R3-5)
ONE-DIRECTION LARGE ARROW (W1-6)
TURN PROHIBITION (R3-2)

48" x 48"
30" x 36"
48" x 24"
24" x 24"

MDOT
Michigan Department of Transportation
TRAFFIC AND SAFETY
MAINTAINING TRAFFIC
TYPICAL


TYPICAL TEMPORARY TRAFFIC CONTROL FOR TRAFFIC SIGNAL WORK IN APPROACH LANE WITH WORK DURATION GREATER THAN ONE HOUR

DRAWN BY: JK
CHECKED BY: MB:CRB
FILE: P:\RD\TAS\Typical s\Signs\MT NON Fwy\M2803a.dgn REV. 10/17/2011

(SPECIAL DETAIL)
PLAN DATE: M2803a
SHEET 2 OF 2

NOT TO SCALE

STATE-SPECIFIC EXAMPLE

[Main Module](#)[State Plans](#)[Michigan DOT's Standards](#) Last Updated by WSU-TRG on: 2/3/2017

INSTRUCTIONS

Select items from the following dropdowns to find relevant standard plans or special applications maintained by each state.

Wayne State University - Transportation Research Group updates these state related links on a periodic basis. The date WSU-TRG last updated each of the state's links is shown. The "State DOT's Standards" button links directly to the state's standards web page which should be checked for changes that affect the relevance of these plans.

Select the State

Michigan

Select the Category

Multi-Lane

Select the Category

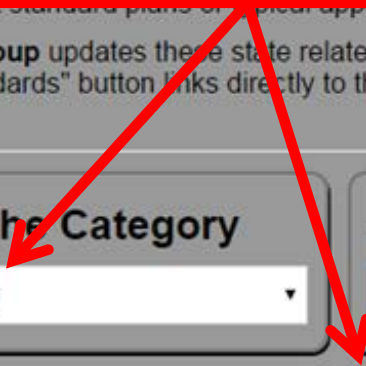
Divided

Undivided

Divided


Type	Name
------	------

Selecting some specific categories will provide a sub-category



STATE-SPECIFIC EXAMPLE

🚧 Selecting “Multi-Lane” and “Divided” will provide the plans related to multi-lane and divided work in Michigan

Main ModuleState PlansMichigan DOT's Standards Last Updated by WSU-TRG on: 2/3/2017

INSTRUCTIONS

Select items from the following dropdowns to find relevant standard plans or typical applications maintained by each state.

Wayne State University - Transportation Research Group updates these state related links on a periodic basis. The date WSU-TRG last updated each of the state's links is shown. The "State DOT's Standards" button links directly to the state's standards web page which should be checked for changes that affect the relevance of these plans.

Select the State
Michigan ▾

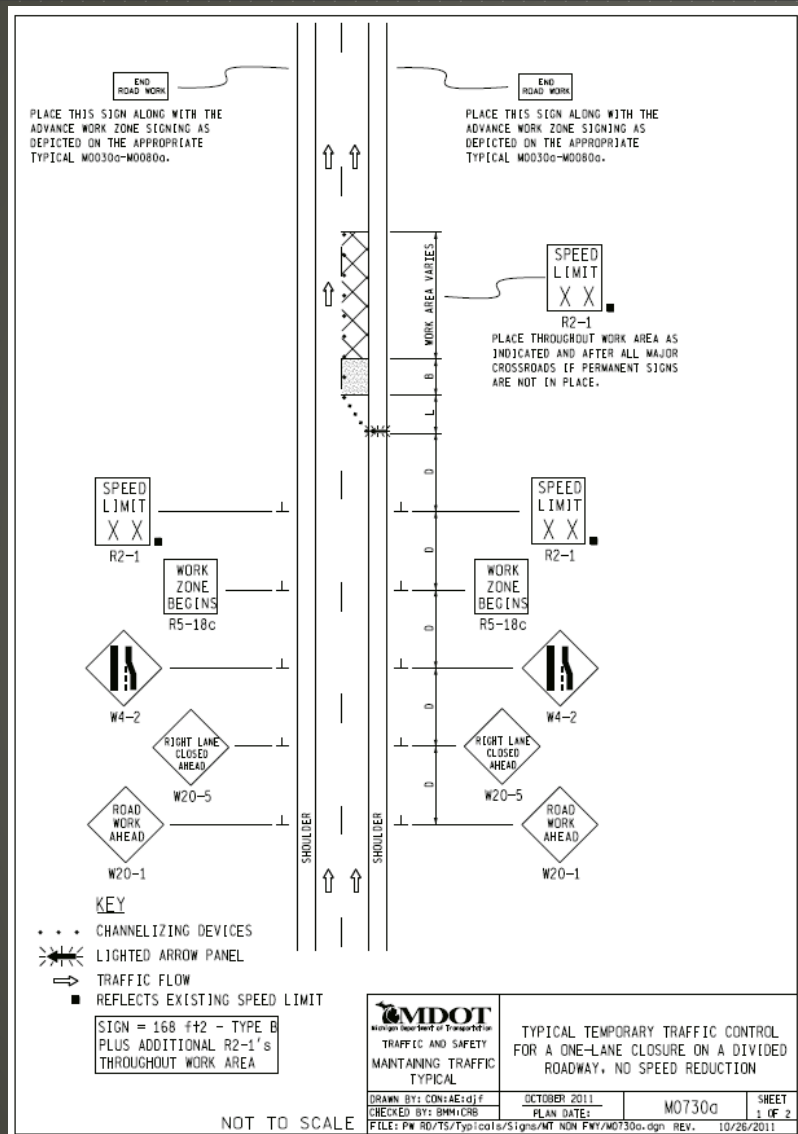
Select the Category
Multi-Lane ▾

Select the Category
Divided ▾

Type	Name
State MUTCD	Michigan Manual on Uniform Traffic Control Devices
Guidelines	Maintenance Work Zone Traffic Control Guidelines
All Plans	All Temporary Traffic Control Plans
Typical Application	One-Lane Closure on a Divided Roadway, No Speed Reduction
Typical Application	One-Lane Closure on a Divided Roadway Using a Single Step Down in Speed Limit
Typical Application	One-Lane Closure on a Divided Roadway Using a Reduced Speed Limit Where Workers Present
Typical Application	Center-Lane Closure on a Multi-Lane Divided Roadway, No Speed Reduction

Clicking any one of the links will direct the user to a PDF of that plan

SPECIFIC-STATE EXAMPLE



NOTES

18. D = DISTANCE BETWEEN TRAFFIC CONTROL DEVICES
L = MINIMUM LENGTH OF TAPER
B = LENGTH OF LONGITUDINAL BUFFER
SEE M00200 FOR "D," "L," AND "B" VALUES
2. ALL NON-APPLICABLE SIGNING WITHIN THE CIA SHALL BE MODIFIED TO FIT CONDITIONS, COVERED OR REMOVED.
3. DISTANCES BETWEEN SIGNS, THE VALUES FOR WHICH ARE SHOWN IN TABLE D, ARE APPROXIMATE AND MAY NEED ADJUSTING AS DIRECTED BY THE ENGINEER.
- 3A. THE "WORK ZONE BEGINS" (R5-10c) SIGN SHALL BE USED ONLY IN THE INITIAL SIGNING SEQUENCE IN THE WORK ZONE. SUBSEQUENT SEQUENCES IN THE SAME WORK ZONE SHALL OMIT THIS SIGN AND THE QUANTITIES SHALL BE ADJUSTED APPROPRIATELY.
- 4E. THE MAXIMUM RECOMMENDED DISTANCE(S) BETWEEN CHANNELIZING DEVICES SHOULD BE EQUAL IN FEET TO THE POSTED SPEED IN MILES PER HOUR ON TAPER(S) AND TWICE THE POSTED SPEED IN THE PARALLEL AREA(S).
5. FOR OVERNIGHT CLOSURES, TYPE III BARRICADES SHALL BE LIGHTED.
6. WHEN CALLED FOR IN THE FHWA ACCEPTANCE LETTER FOR THE SIGN SYSTEM SELECTED, THE TYPE A WARNING FLASHER, SHOWN ON THE WARNING SIGNS, SHALL BE POSITIONED ON THE SIDE OF THE SIGN NEAREST THE ROADWAY.
7. ALL TEMPORARY SIGNS, TYPE III BARRICADES, THEIR SUPPORT SYSTEMS AND LIGHTING REQUIREMENTS SHALL MEET NCHRP 350 CRASHWORTHY REQUIREMENTS STIPULATED IN THE CURRENT EDITION OF THE MICHIGAN MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, THE CURRENT EDITION OF THE STANDARD SPECIFICATIONS FOR CONSTRUCTION, THE STANDARD PLANS AND APPLICABLE SPECIAL PROVISIONS. ONLY DESIGNS AND MATERIALS APPROVED BY MDOT WILL BE ALLOWED.
8. WHEN BUFFER AREAS ARE ESTABLISHED, THERE SHALL BE NO EQUIPMENT OR MATERIALS STORED OR WORK CONDUCTED IN THE BUFFER AREA.
21. ALL EXISTING PAVEMENT MARKINGS WHICH ARE IN CONFLICT WITH EITHER PROPOSED CHANGES IN TRAFFIC PATTERNS OR PROPOSED TEMPORARY TRAFFIC MARKINGS, SHALL BE REMOVED BEFORE ANY CHANGE IS MADE IN THE TRAFFIC PATTERN. EXCEPTION WILL BE MADE FOR DAYTIME-ONLY TRAFFIC PATTERNS THAT ARE ADEQUATELY DELINEATED BY OTHER TRAFFIC CONTROL DEVICES.
26. THE LIGHTED ARROW PANEL SHALL BE LOCATED AT THE BEGINNING OF THE TAPER AS SHOWN. WHEN PHYSICAL LIMITATIONS RESTRICT ITS PLACEMENT AS INDICATED, THEN IT SHALL BE PLACED AS CLOSE TO THE BEGINNING OF THE TAPER AS POSSIBLE.

Remember to always check for state-specific versions of the work zone scenario!

SIGN SIZES

DIAMOND WARNING	- 48" x 48"
R2-1 REGULATORY	- 48" x 60"
R5-10c REGULATORY	- 48" x 48"

MICHIGAN DEPARTMENT OF TRANSPORTATION TRAFFIC AND SAFETY MAINTAINING TRAFFIC TYPICAL		TYPICAL TEMPORARY TRAFFIC CONTROL FOR A ONE-LANE CLOSURE ON A DIVIDED ROADWAY, NO SPEED REDUCTION	
DRAWN BY: CON/AE/dj# CHECKED BY: BMH/CRB FILE: PW RD/TS/Typical/Signs/MT NON FW/M07300.dgn REV. 10/26/2011	OCTOBER 2011 PLAN DATE:	M0730a	SHEET 2 OF 2

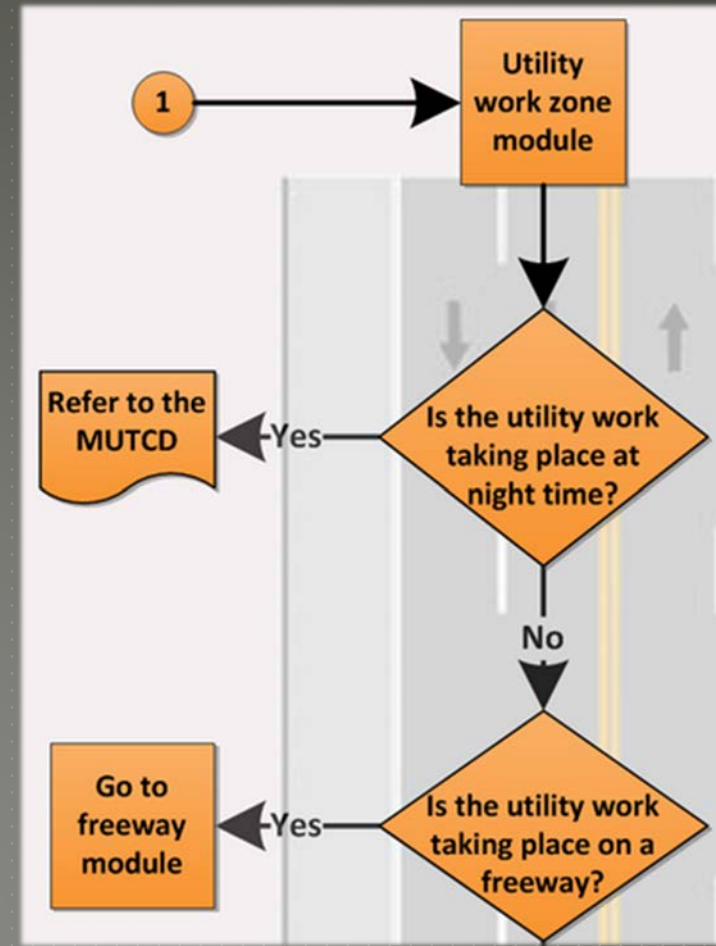
NOT TO SCALE

UTILITY WORK ZONE MODULE

“Example” plans originally developed as a part of 2006 FHWA Work Zone Safety Grant

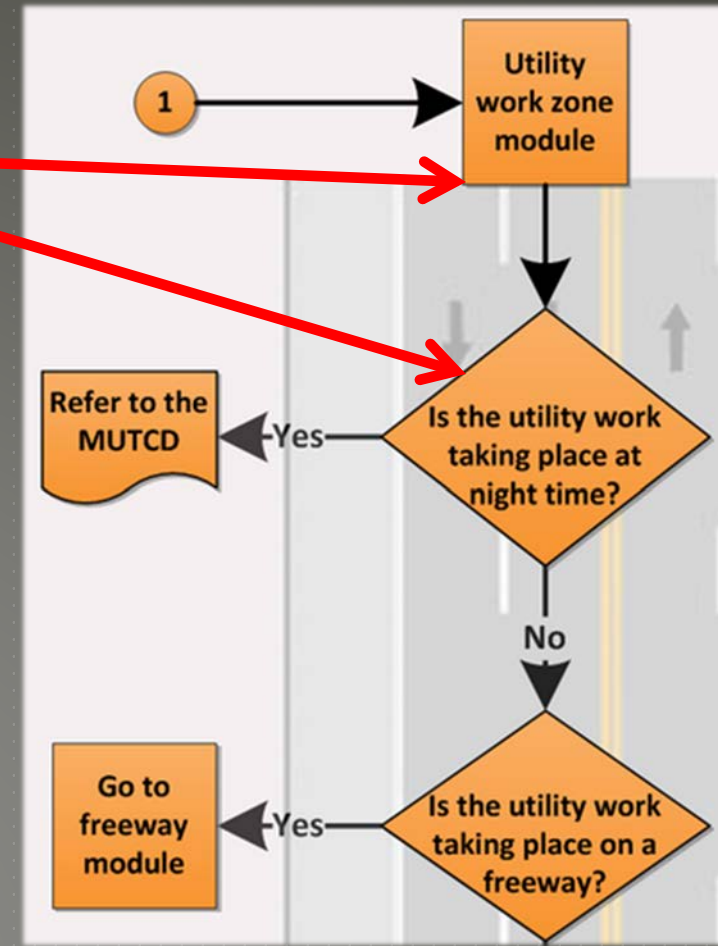
Similar to “Typical Application” counterpart in the MUTCD

- ▶ Temporary traffic control devices geared towards utility work zones
- ▶ Short or intermediate term operations
- ▶ Still compliant to National MUTCD



UTILITY WORK ZONE MODULE

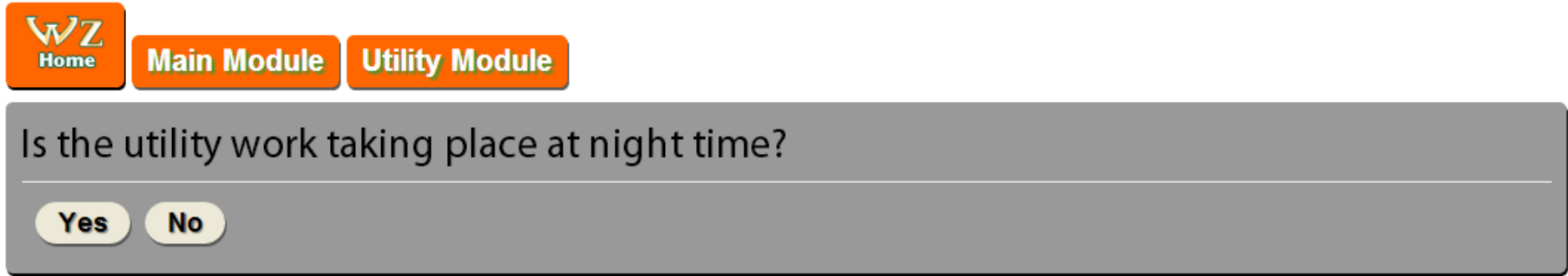
Clicking an object in the flowchart will skip to that portion of the logic



🚧 Advance through flowchart logic to appropriate TTCP

🚧 Users will be re-directed to the appropriate module as necessary

UTILITY WORK ZONE MODULE



WZ Home Main Module Utility Module

Is the utility work taking place at night time?

Yes No

- ⚠ Once an object is clicked on any flowchart, the user will be prompted with questions about the roadway and work site in question

QUICK EXAMPLE

▲ Suppose a TTCP is required for the following utility work zone:

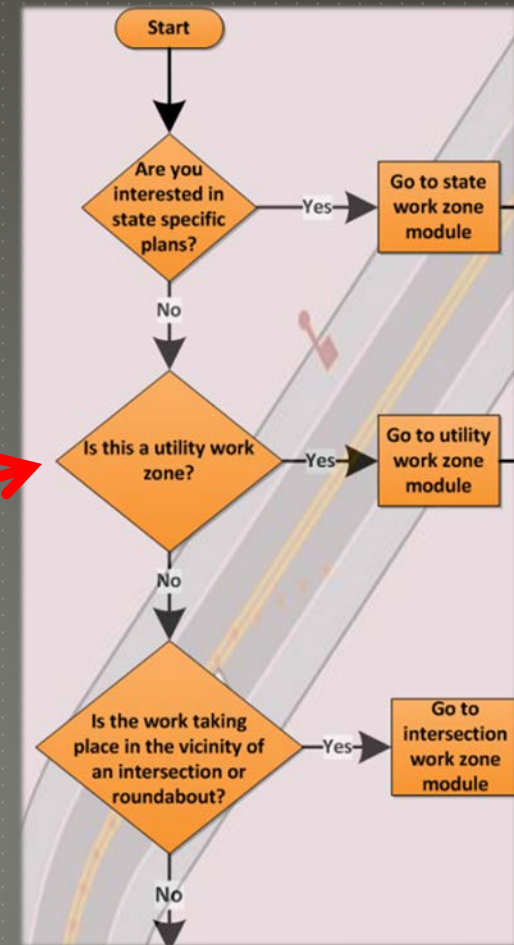
- ▶ Utility work on shoulder of a two lane roadway
- ▶ Work does not encroach onto roadway
- ▶ Urban roadway with 45 MPH posted speed limit
- ▶ Moderate traffic volumes
- ▶ 11' wide travel lanes with 10' paved shoulders



PROGRESSING THROUGH THE FLOWCHART

Begin at the **Main Module** of the TTCP Software

Since this is a Utility Work Zone, the **Utility Work Zone Module** should be selected

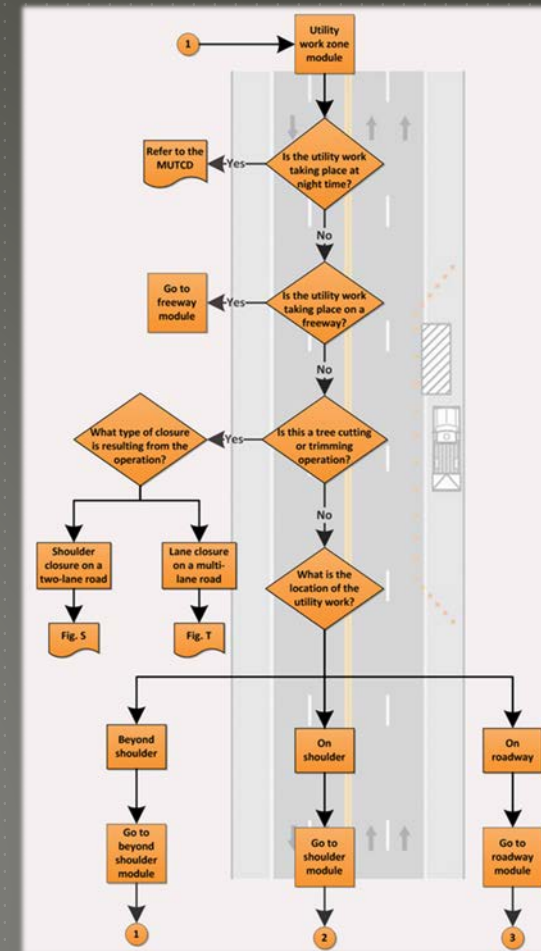


PROGRESSING THROUGH THE FLOWCHART

Utility Work Zone Module

- Plans relevant to utility work zones

Either answer every question in the logic or skip ahead by clicking the appropriate question object



ANSWER QUESTIONS

- ⚠ The first relevant question for this example involves the location of the utility work

Given that we know the work in question is taking place on the shoulder only, selecting **“On Shoulder”** is appropriate

WZ
Home

Main Module

Utility Module

What is the location of the utility work?

Beyond Shoulder

On Shoulder

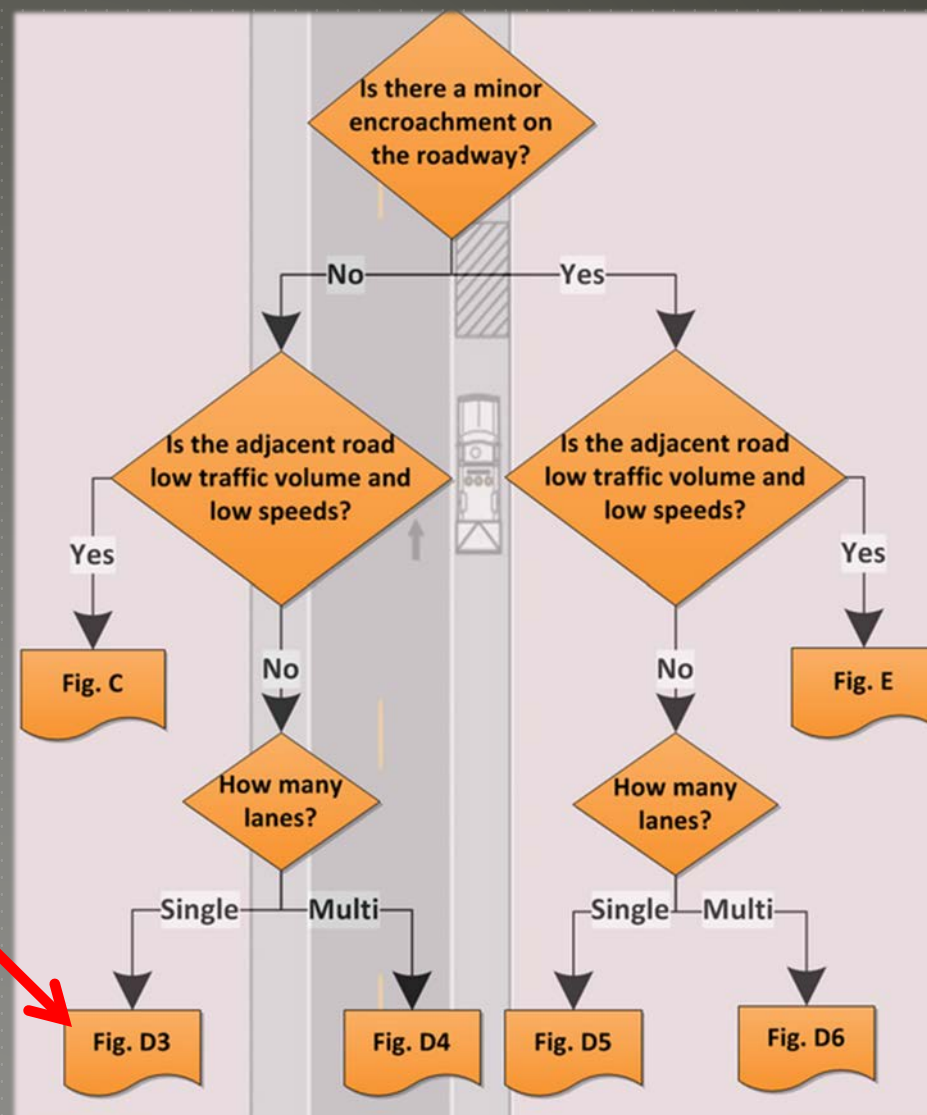
On Roadway

SUB-MODULES

▶ ‘Sub-modules’ cover specific roadway scenarios

- ▶ **Utility Work Zone “On Shoulder” Sub-Module**
- ▶ Introduce a new flowchart specific to that roadway scenario

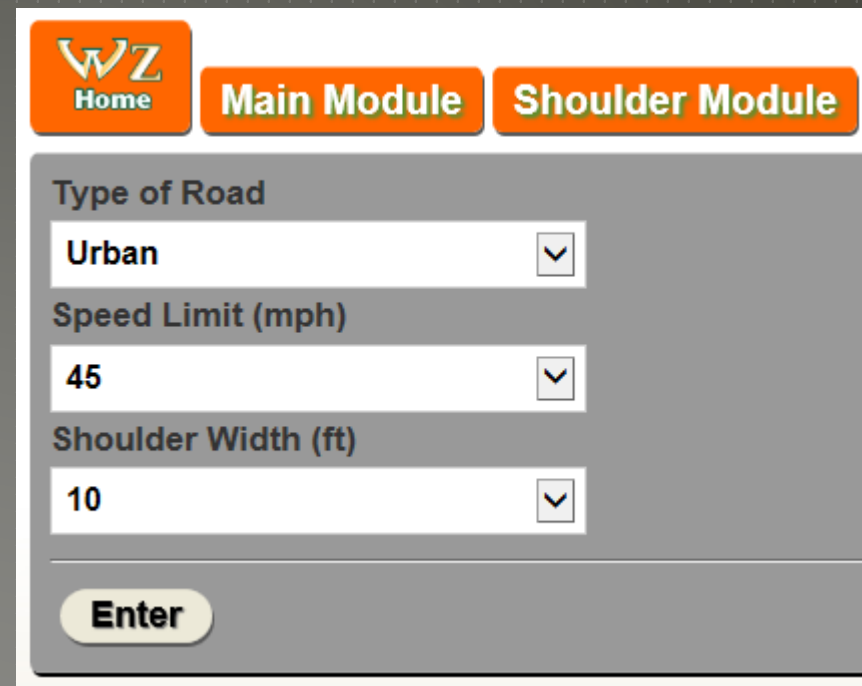
Given that we know the work is taking place on a two-lane roadway and does not have low volumes and low speed, **Figure D3** is the most appropriate TTCP



DYNAMIC QUESTIONS

Additional information about the work being performed or roadway conditions may be necessary after the appropriate plan is selected

Entered via the drop down menus



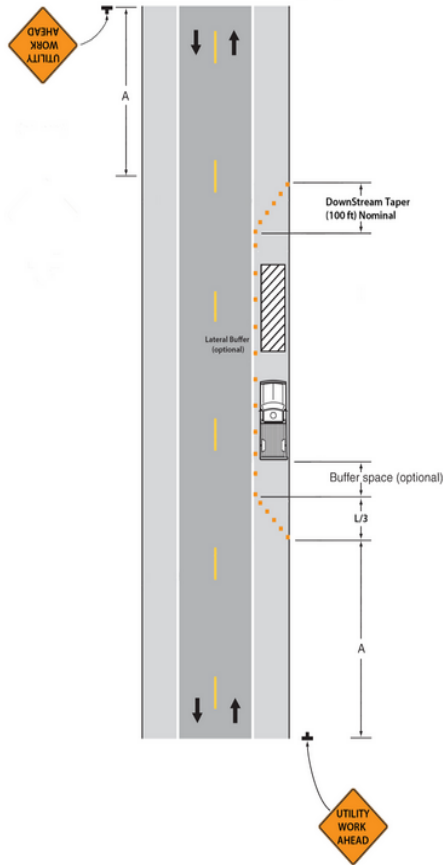
The screenshot shows a web application interface with a header bar containing three buttons: "WZ Home", "Main Module", and "Shoulder Module". Below the header, there are three dropdown menus labeled "Type of Road", "Speed Limit (mph)", and "Shoulder Width (ft)". The "Type of Road" dropdown is set to "Urban", "Speed Limit (mph)" is set to "45", and "Shoulder Width (ft)" is set to "10". At the bottom of the form is an "Enter" button.

Field	Value
Type of Road	Urban
Speed Limit (mph)	45
Shoulder Width (ft)	10

DISPLAY OF TTCP

[Main Module](#)[Shoulder Module](#)[Legend/Symbols](#)[Print](#)[Zoom](#)

Figure D3. Utility Work on Shoulder with no Encroachment (High Traffic Volume and/or High Speed)



DIMENSIONS	FEET
A (Distance Between Signs)	350
L (Merging Taper Length)	450
1/3 L (Shoulder or Parking Lane Taper Length)	150
Maximum Taper Channelizing Device Spacing	45
Maximum Tangent Channelizing Device Spacing	90

Please note that this plan is an **"Example"** Typical Application developed by the **WSU-TRG** as a part of the **2011 FHWA Work Zone Safety Grant** and may be used as a basis for preparing a temporary traffic control plan.

The appropriate plan will be displayed on screen, including all required devices

A table will be shown which displays the appropriate dimensions for the layout of TTCDs

Buttons are included at the top which allow the user to:

- Return to Work Zone Safety Homepage, the **Main Module**, or the previous module
- A display of the legend/symbols
- Printing and zoom functions

INTERSECTION MODULE

- Includes ‘typical applications’ and “example” plans appropriate for use in the vicinity of highway intersections
- Incorporates the **Roundabout Work Zone** sub-module, including “example” plans developed specifically for roundabouts
 - ▶ Not covered in the 46 TAs



INTERSECTION EXAMPLE

▲ Suppose a TTCP is required for a signalized intersection:

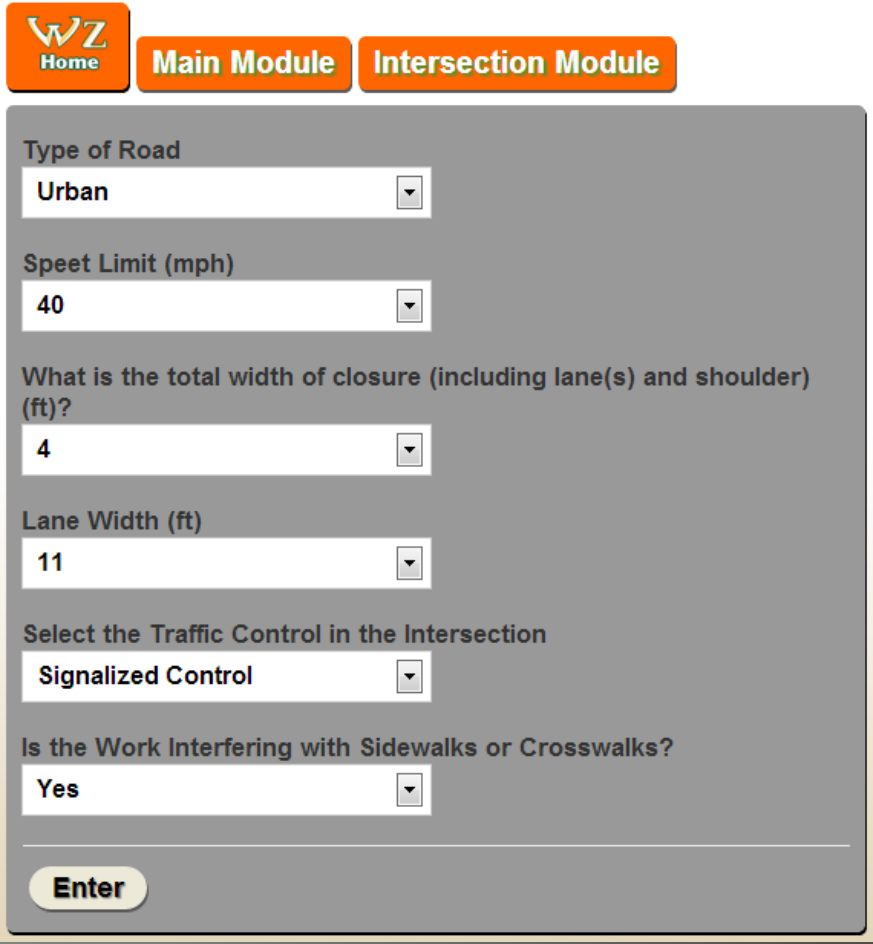
- ▶ Two approach lanes in the direction where the work is occurring
- ▶ Work on the far side of the intersection in the left lane
- ▶ Urban area with 40 MPH posted speed limit
- ▶ No shoulder with 11 foot wide travel lanes
- ▶ Work will interfere with the crosswalk



INTERSECTION EXAMPLE

Following through the flowchart logic within the **Intersection Module**, the user will be directed to dynamic questions page for TA 6H-23

Enter the additional work and site characteristics to determine the appropriate plan



The screenshot shows a web interface for the 'Intersection Module'. At the top, there are three buttons: 'WZ Home', 'Main Module', and 'Intersection Module'. The 'Intersection Module' button is highlighted. Below the buttons, the form contains several dropdown menus and a text input field. The 'Type of Road' dropdown is set to 'Urban'. The 'Speed Limit (mph)' dropdown is set to '40'. The 'What is the total width of closure (including lane(s) and shoulder) (ft)?' dropdown is set to '4'. The 'Lane Width (ft)' dropdown is set to '11'. The 'Select the Traffic Control in the Intersection' dropdown is set to 'Signalized Control'. The 'Is the Work Interfering with Sidewalks or Crosswalks?' dropdown is set to 'Yes'. At the bottom of the form, there is an 'Enter' button.

WZ Home Main Module Intersection Module

Type of Road
Urban

Speed Limit (mph)
40

What is the total width of closure (including lane(s) and shoulder) (ft)?
4

Lane Width (ft)
11

Select the Traffic Control in the Intersection
Signalized Control

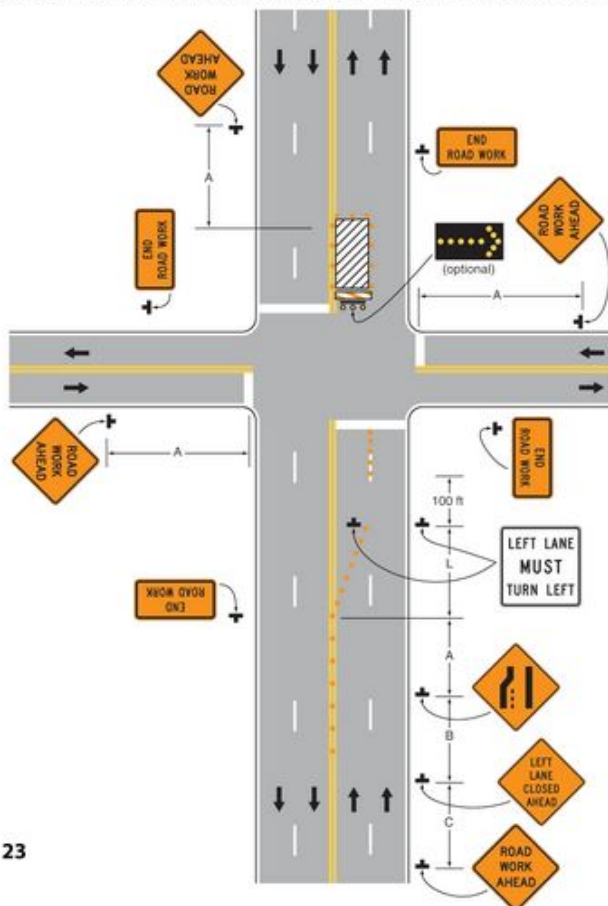
Is the Work Interfering with Sidewalks or Crosswalks?
Yes

Enter

INTERSECTION EXAMPLE

[Main Module](#)[Intersection](#)[Legend/Symbols](#)[Notes](#)[Print](#)[Zoom](#)

Figure 6H-23. Left-Hand Lane Closure on the Far Side of an Intersection



23

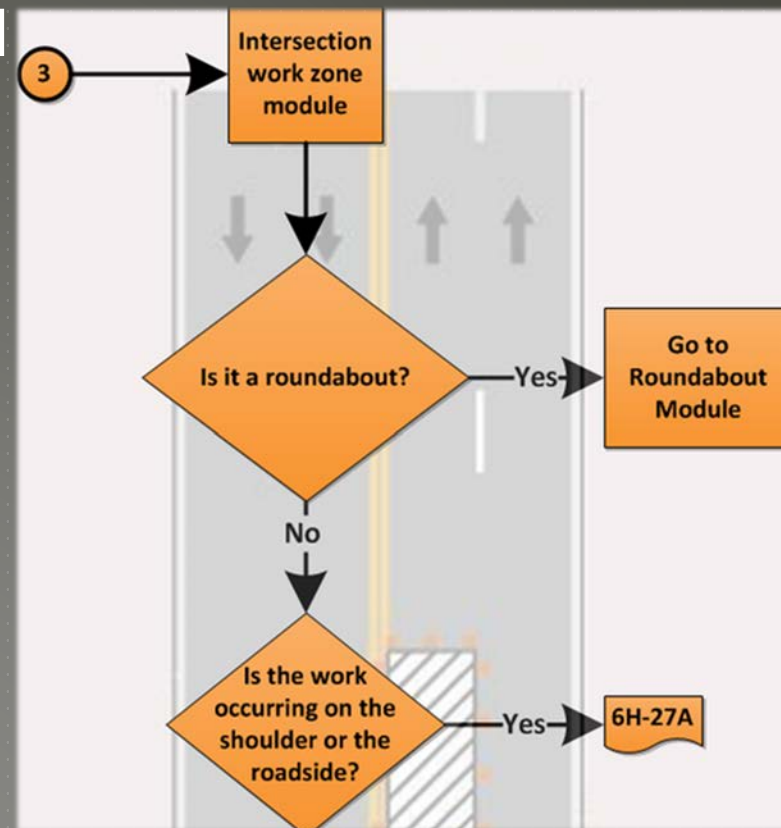
DIMENSIONS	FEET
A (Distance Between Signs)	100
B (Distance Between Signs)	100
C (Distance Between Signs)	100
L (Merging Taper Length)	295
Maximum Taper Channelizing Device Spacing	40
Maximum Tangent Channelizing Device Spacing	80

Pedestrian Detour Plan

A button is included which will display the typical application for pedestrian detours since crosswalks are affected

ROUNABOUT EXAMPLE

- 🚧 **Roundabout Module** can be found within the intersection module
- 🚧 Suppose a TTCP is required for a single-lane roundabout with the following characteristics:
 - ▶ Urban roadway with 40 MPH posted speed limit
 - ▶ 11 feet wide travel lanes with no shoulders
 - ▶ 7 foot closure within the circulating lane



ROUNDAABOUT EXAMPLE

WZ Home
Main Module
Roundabout
Legend/Symbols
Notes
Print
Zoom

**Example Single-Lane Roundabout -
Partial Closure without Shoulder Diversion**

DIMENSIONS	FEET
A (Distance Between Signs)	100
B (Distance Between Signs)	100
Maximum Taper Channelizing Device Spacing	40
Maximum Tangent Channelizing Device Spacing	80

Please note that this plan is an **"Example"** Typical Application developed by the **WSU-TRG** as a part of the **2011 FHWA Work Zone Safety Grant** and may be used as a basis for preparing a temporary traffic control plan.

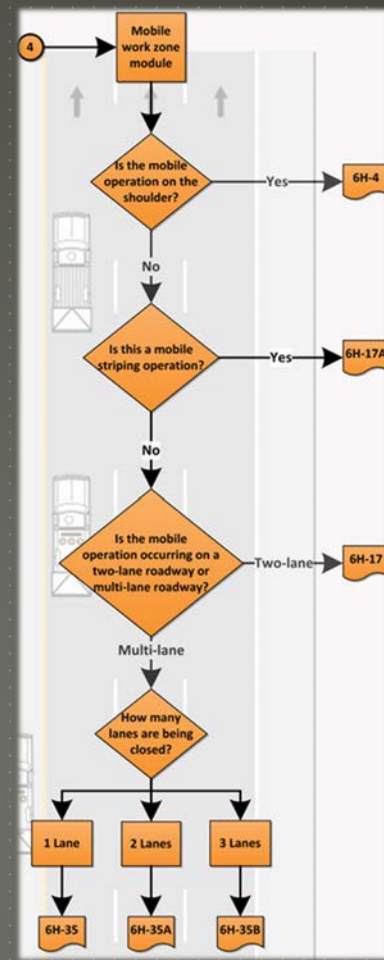
Detour Plan

Pedestrian Detour Plan

A button is included which will display the typical application for roundabout detour due to the closure

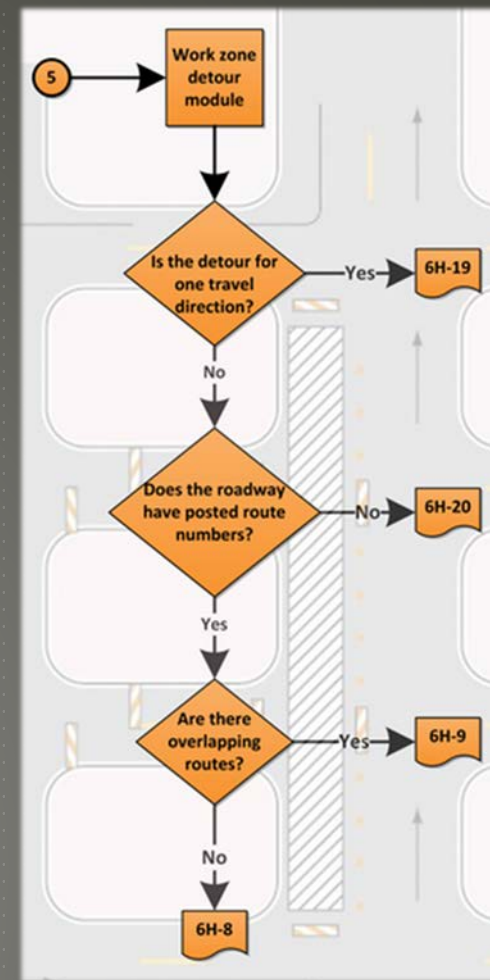
MOBILE WORK ZONE MODULE

- Includes ‘typical applications’ and “example” plans specific to mobile work zone operations
- Generalized plan for mobile striping operations not included in the MUTCD
- Expansion of TA 6H-35 for two and three lane scenarios



WORK ZONE DETOUR MODULE

- Includes the 'typical applications' for detours required for various types of highway work zone scenarios
- Specific plans are included for roundabouts and pedestrians detours as necessary within the software



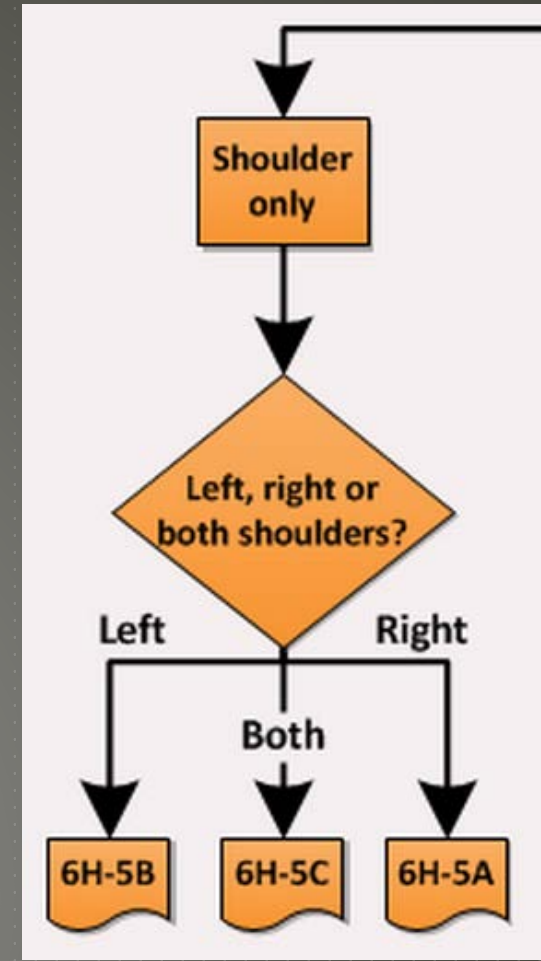
FREEWAY WORK ZONE MODULE

- Includes ‘typical applications’ and “example” plans specific to operations taking place on the freeway
- “Example” plans greatly expand on the variety of possible roadway geometries and work locations involved in freeway operations beyond the MUTCD



FREEWAY EXAMPLE

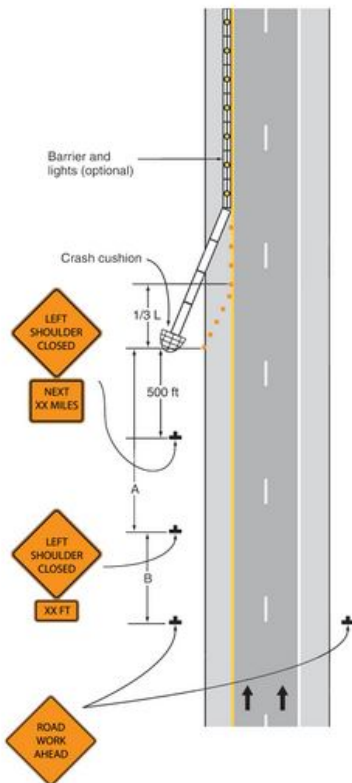
- Suppose a TTCP is required for shoulder work on an urban freeway
 - Left shoulder work
 - 6 feet wide shoulder with 12 feet wide travel lanes
 - Complete closure of shoulder
 - 70 MPH posted speed limit
- Within the **Freeway Module**, shoulder only work can be selected



FREEWAY EXAMPLE

[Main Module](#)[Freeway](#)[Legend/Symbols](#)[Notes](#)[Print](#)[Zoom](#)

Example Left Shoulder Closure on a Freeway



5B

DIMENSIONS	FEET
A (Distance Between Signs)	1000
B (Distance Between Signs)	1500
L (Merging Taper Length)	420
1/3 L (Shoulder or Parking Lane Taper Length)	140
Maximum Taper Channelizing Device Spacing	70
Maximum Tangent Channelizing Device Spacing	140

Please note that this plan is an "Example" Typical Application developed by the WSU-TRG as a part of the 2011 FHWA Work Zone Safety Grant and may be used as a basis for preparing a temporary traffic control plan.

Whenever an "example" plan is shown, a disclaimer will indicate that the plan is not a TA from the MUTCD

TWO-LANE WORK ZONE MODULE

- Includes ‘typical applications’ and “example” plans specific to operations taking place on two-lane roadways
- “Example” plans for haul roads beyond TA 6H-14, for long-term and short-term scenarios



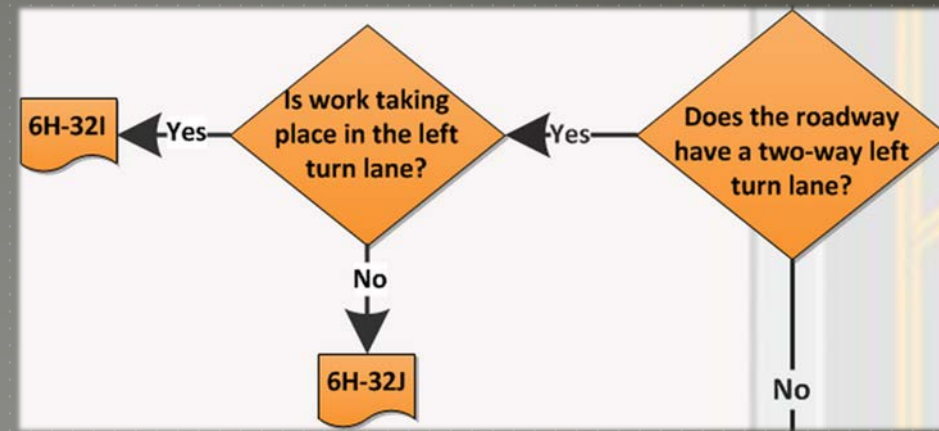
MULTI-LANE WORK ZONE MODULE

- Includes ‘typical applications’ and “example” plans specific to operations taking place on multi-lane highways
- Does not cover work zone scenarios beyond three lanes in one direction
- Specific plans for short, intermediate, and long term scenarios



MULTI-LANE EXAMPLE

- Suppose a TTCP is required for a multi-lane highway which includes a two-way left turn lane
 - Five foot closure within the two-way left turn lane
 - Rural highway with posted speed limit of 40 MPH and 11 feet wide travel lanes
- Skip to the portion of the multi-lane module which relates to highways with two-way left turn lanes



MULTI-LANE EXAMPLE

WZ
Home

Main Module

Multi-Lane Module

Legend/Symbols

Notes

Print

Zoom

Example Closure of Two-Way Left-Turn Lane

Note: Work vehicles used while work in progress

321

DIMENSIONS	FEET
A (Distance Between Signs)	500
B (Distance Between Signs)	500
L (Merging Taper Length)	295
Maximum Taper Channelizing Device Spacing	40
Maximum Tangent Channelizing Device Spacing	80

Please note that this plan is an "Example" Typical Application developed by the **WSU-TRG** as a part of the **2011 FHWA Work Zone Safety Grant** and may be used as a basis for preparing a temporary traffic control plan.

Optional TTC may also be shown in the plan, such as the optional high-level warning device shown in Example Plan 321

THANK YOU

🚧 Work Zone Safety Website

▶ <http://workzone.eng.wayne.edu/>

