



Traffic Tech Talk

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Bureau of Traffic Operations – Statewide Work Zone Engineers

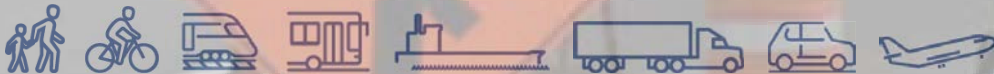
VIRTUAL

April 20, 2022

12:00 PM to 12:45 PM

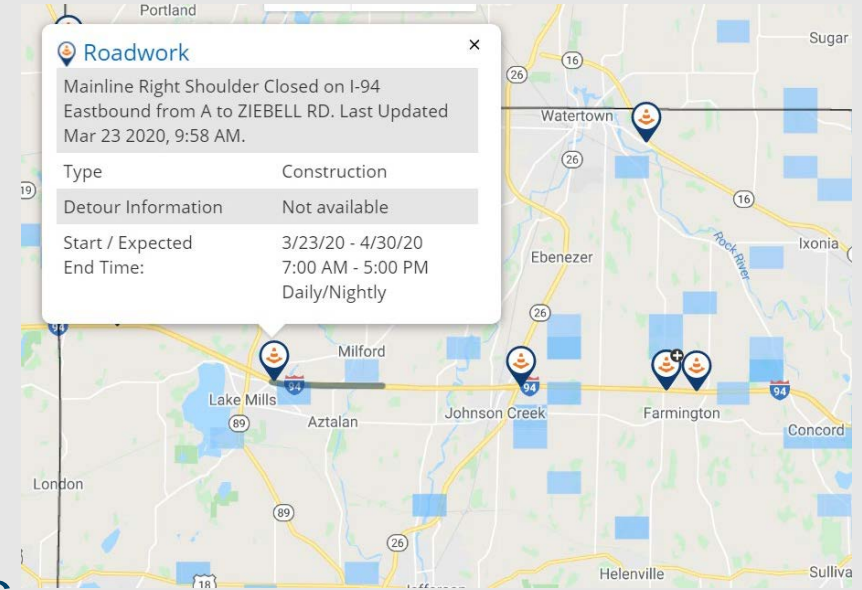
Traffic Tech Talk

- Wisconsin Lane Closure System (WisLCS) 2.0
- Work Zone Traffic Mitigation
- Work Zone Inspections
- Temporary Pavement Markings
- Pedestrian Accommodations



WisLCS

- LCS 1.0 - Launched in 2008
- LCS 2.0 – Rolled out March 15, 2022
- Supports scheduling, tracking, accepting and reporting of all estimated/planned lane closures
- Provides data feeds to other systems
 - Wisconsin 511 Website
 - Wisconsin 511 Construction Projects Website
 - OSOW Superload Permitting System
- Data is currently archived at the TOPS Lab



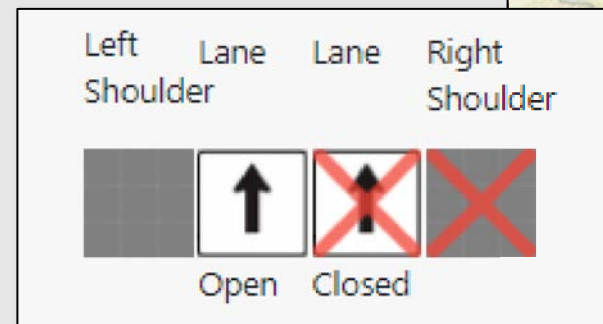
A screenshot of the Wisconsin Lane Closure System (WisLCS) website. The page header includes the Wisconsin Department of Transportation logo and the text "Wisconsin Traffic Operations and Safety Laboratory The WisTransPortal System". Below the header, there is a navigation menu with links for Home, Services, Products, Applications, Documents, Traffic Video, and Resources. The main content area features the Wisconsin Department of Transportation logo, a graphic of a worker with a stop sign, and a "DETOUR" sign. The text on the page includes: "Wisconsin Lane Closure System (WisLCS) Enter the Wisconsin Lane Closure System live site.", "New User - WisLCS Account Request Form Online form to request a Lane Closure System login account.", "WisLCS User Manual and Documentation WisLCS Quick Reference, User Manual, and other documentation.", "Lane Closure System Training Site Enter the WisLCS 2.0 Training site.", and "WisLCS Contact Information WisDOT regional contacts and technical support."



Background on LCS 2.0 Project

What has changed?

- Home Page Options
- Mapping features
- Lane Diagram
- Priority/Non-Priority route map
- Auto Acceptance Rules
- User Roles




WisLCS 2.0

Add Facility

Facility Type: [Schedule Closure](#)

Roadway Status: [Edit Lane Structure](#)

Left Shoulder Lane Lane Right Shoulder


[Add Location](#)

Begin County: Hwy:

End County:


Begin Location: End Location:

Distance From: Distance From:

Direction From: Direction From:

Latitude: Latitude:

Longitude: Longitude:



Width Restrictions

Width Restrictions?

Restriction Type:

Available Roadway Width: ft in

Effective Roadway Width: ft in

Signed Detour Available:

Vertical Restrictions

Vertical Restrictions?

Minimum Vertical Distance: ft in

Temporary Signalization:

Weight Restrictions

Weight Restrictions?

Maximum Vehicle Weight: lbs

Speed Restrictions

Speed Reduction?

Reduced Regulatory Speed:

Detour Route Info:

Additional Information:

[Save](#) [Cancel](#)

Facility Type:

Roadway Status:

[Add Location](#)

Begin County:





Roadway Status:

[Add Location](#)

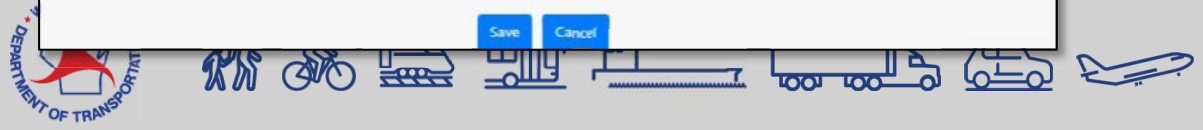
Begin County:

End County:

Left Shldr. Lane Lane Right Shldr.

Closed Shift Left Shift Left Closed



Work Zone Traffic Mitigation

FDM 11-50-7

- The purpose of law enforcement mitigation is to provide a presence in the work zone to increase the safety for the traveling public as well as the workers.
- The primary goals of law enforcement in work zones is:
 - Speed limit enforcement
 - Targeted presence
 - Incident clearance



Work Zone Traffic Mitigation

Project Selection

- Freeways and Expressways
 - Roadway Volume
 - Traffic Staging
 - Full roadway closures, Rolling closures, Bi-directional traffic
 - Capacity Restrictions
 - Expected delay in addition to regular recurring delay, Expected queuing
 - History of crashes in the project area including CMV crashes –
 - Consider Freeway Service Team
- Non-Freeway/Expressways
 - Project-by-Project Basis



Work Zone Traffic Mitigation

When should projects consider mitigation?

- Full Roadway Closures
- Rolling Closures = REQUIRED
- Special Events, Holidays (recreational routes)
- Miscellaneous
 - Dedicated Law Enforcement (AM/PM Peak Hours) – if requesting more, detailed crash summary, detailed traffic staging and detailed traffic analysis shall be provided
 - CMV Details
- Travel Time, Meals and Mileage



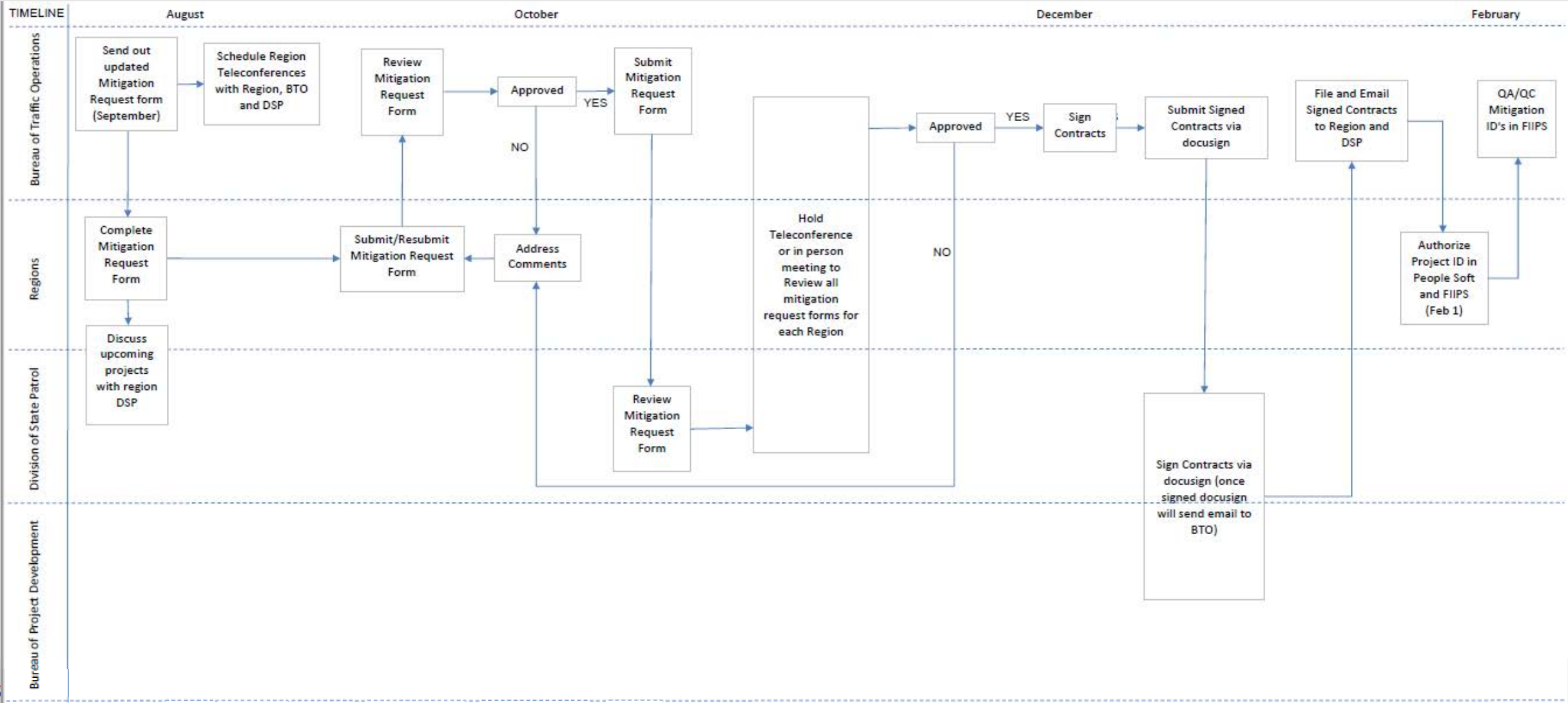
Work Zone Traffic Mitigation - Process

- Regional Mitigation Contact
- Development of Estimate
 - Spreadsheet
 - Scoping, 60% and 90% Updates
- TMP Documentation
 - Section 8 – Incident Management Strategies
- Financial Integrated Improvement Programming System (FIIPS)

	A	B	C	D	E
1	Type of Construction Work				
2	Work Zone Configuration				
3	Highway AADT				
4	Project Length (miles)				
5	Queuing Expected (yes, no)				
6	History of Crashes				
				Weekday	Weekend
Full Roadway Closures					
0	Roadways	Is law enforcement needed for full roadway closure?			
1	<i>Insert what law enforcement will be assisting with for justification</i>		Law Enforcement Officers Requested		
2			Number of hours per closure		
3			Approximate Total Number of Full Roadway Closures		
4			Total hours for Roadway Closures	0	0
5					
6	Rolling Closures	Is law enforcement needed for rolling closures?			
7	<i>Insert what law enforcement will be assisting with for justification</i>		Law Enforcement Officers Requested		
8			Number of hours per rolling closure		
9			Approximate Total number of rolling closures		
0			Total Hours for Rolling Closures	0	0
1					
2			Full Roadway Closure Sub-Total	0	0
3					
Special Events					
4	List Event	Are there narrowed lanes, lane shifts, bi-directional traffic, crossovers or lane closures in place during the special event?			
5			Law Enforcement Officers Requested		
6			Number of hours per day		
7			Number of days		
8			Total hours for Event	0	0
9					
0			Special Event Sub-Total	0	0
1					
2					
3					
4					
Holidays					
5	List Holiday	Are there narrowed lanes, lane shifts, bi-directional traffic, crossovers or lane closures in place during the holiday?			
6			Law Enforcement Officers Requested		
7			Number of hours per day		
8			Number of days		
9			Total hours for Holiday	0	0
0					



Work Zone Traffic Mitigation - Process



2021 Work Zone Inspections



2021 Work Completed By

Contractors	141
Counties	44
Utilities	17
Total	202



2021 Inspections per Region

North Central	39
Northeast	28
Northwest	36
Southeast	38
Southwest	61
Total	202



2021 Inspections per Type

Freeway Expressway	55
State Highway	84
Flagging	29
Road Closure/ Detour	22
Pedestrian	12
Total	202



Freeways/Expressways

- Type III Barricades not every ¼ mile throughout the closure
- Mounting height



Freeway Expressway	Contractor	County	Utility	Total
Advance Warning Area				
Inspected	27	27	1	55
LCS Entry Required	27	22	1	50
LCS Entry Present	26	17	1	44
Width Restriction Signing	4	0	0	4
WR Signing Rating	1.00			1.00
PCMS	13	7	0	20
PCMS Rating	1.69	1.29		1.55
FMS Present	8	0	0	8
FMS Rating	1.50			1.50
Speed Reduction Present	16	6	0	22
AW Signs Required	26	26	1	53
AW Signs Present	19	22	0	41
AW Sign Condition Ratings	1.32	1.50		1.41
AW Sign Geometrics Ratings	1.50	1.35	1.00	1.42
Sign Mounting Rating(all except FMS)	1.76	1.23		1.46
AW Sign Present at Night	5	0	0	5
AW Sign Condition Night	1.80			1.80
Smart WZ System Present	10	0	0	10
Smart WZ System Rating	1.50			1.50

State Highways

- PCMS

- Improper message
- Minimal delineation



Advance Warning Area	Contractor	County	Utility	Total
Inspected	61	9	14	84
LCS Entry Required	60	9	11	80
LCS Entry Present	54	4	4	62
Width Restriction Signing	19	0	0	19
WR Signing Rating	1.28			1.28
PCMS	10	3	0	13
PCMS Rating	2.40	2.00		2.31
FMS Present	4	0	0	4
FMS Rating	1.25			1.25
AW Signs Required	59	9	14	82
AW Signs Present	44	7	10	61
AW Sign Condition Ratings	1.30	1.14	2.00	1.39
AW Sign Geometrics Ratings	1.56	1.67	2.14	1.67
Sign Mounting Rating (all except FMS)	2.05	1.14	1.50	1.85
AW Sign Present at Night	7	0	1	8
AW Sign Condition Night	1.29		1.00	1.25

State Highways

- Utility Signing
 - Non-fluorescent
 - Mesh
 - Missing required signs
- Arrow Boards
 - Missing an arrow board with county moving operations



State Highways

- Clear Zone Issues



Flagging

- Certified Flaggers

- Total: 7,206

- Contractors: 3,112, Public: 4,094

- Improvements

- Correct signage

- Flaggers present at side roads

- Flaggers had proper apparel

- Clear travel paths



Flagging

- Still Needs Work:
 - Flagger standing next to their vehicles and not having an escape route
 - Flaggers using paddle supports and not holding/maintaining their paddle
 - Flaggers stopping initial vehicle while standing in the lane and releasing traffic while in lane
 - Spacing from W20-7A to flagger



Road Closure/Detour

- Sign Mounting
 - Mounting height
- Sign Covering
 - Hanging
 - Not fully covering
 - Incorrect color

Road Closure Signs	Contractor	County	Utility	Total
W20-3 Signs Rating	1.48			1.48
Intersection Barricade Rating	1.45			1.45
Closure Barricade Rating	1.65			1.65
Detour Sign Rating	Contractor	County	Utility	Total
Sign Geometric Rating	1.33			1.33
Sign Condition Rating	1.43			1.43
Sign Covers Required	11	0	0	11
Sign Covers Present	10	0	0	10
Sign Cover Rating	1.82			1.82

Pedestrian Accommodations

- Temporary facilities are being constructed
- Ramps need to meet proper slopes
- Accommodations need to be updated as conditions change



Worker Apparel

- Workers seen not wearing appropriate ANSI rated high-visibility safety apparel



Issues for 2022

- Pedestrian Accommodations
- Flagging Operations
 - Positioning
 - Escape route
- Utility Work Zones
 - Channelizing devices
 - Signing



Temporary Pavement Markings

FHWA Process Review

- Completed in 2021
- Identified 17 areas of improvement
- Worked with our Marking Engineer to develop new guidance



#1 4-foot skips



#1 4-foot skips

- Not taken into consideration
 - Speed
 - Volume
 - Other features
 - No paved shoulder
 - Edge lines
 - Limited devices
- What is the bid item for these?
- Should we include more guidance?
- 6F.78 (5)

TEOpS 3-15-5, SDD 15c8

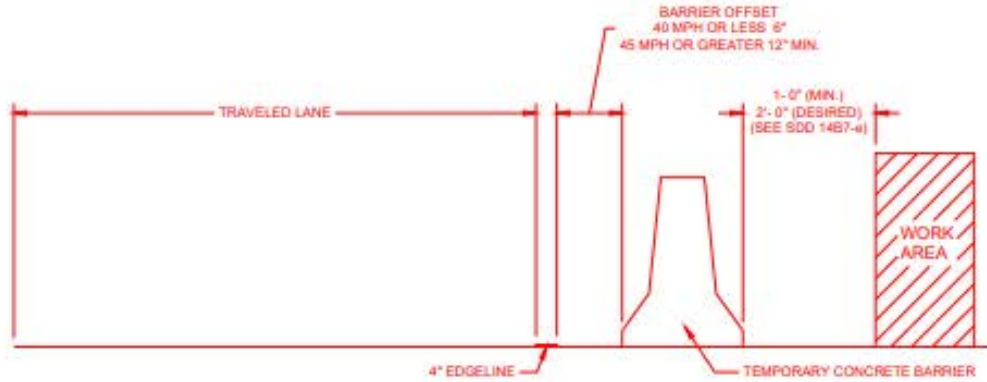


#3 Edge Line Requirements in Work Zones

- SDD does not require edge lines
- We do not factor:
 - Speed
 - Volume



SDD Update 15c8



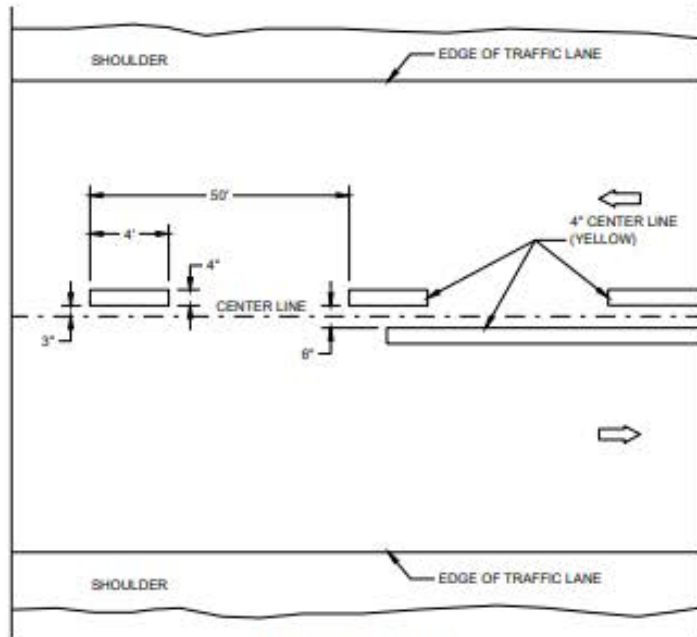
TEMPORARY BARRIER OFFSET FROM EDGE LINE

GENERAL NOTES

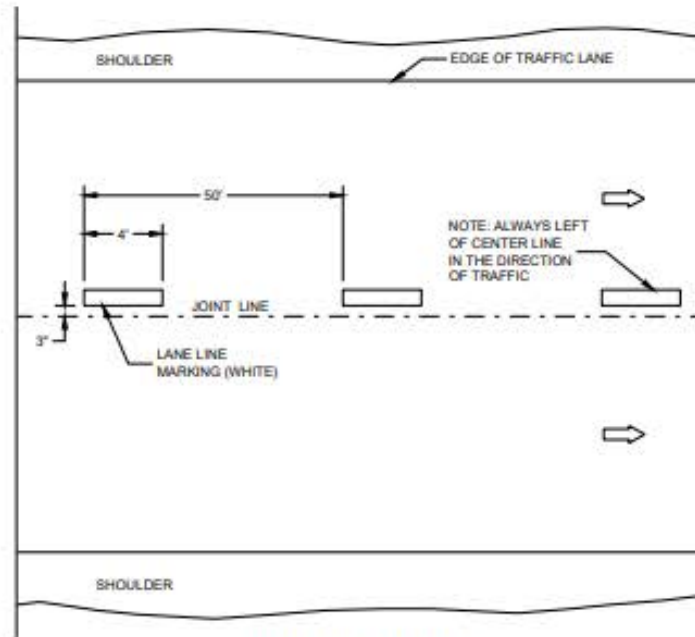
DETAILS OF CONSTRUCTION NOT SHOWN ON THIS DRAWING SHALL CONFORM TO STANDARD SPECIFICATIONS AND SPECIAL PROVISIONS.

LEGEND

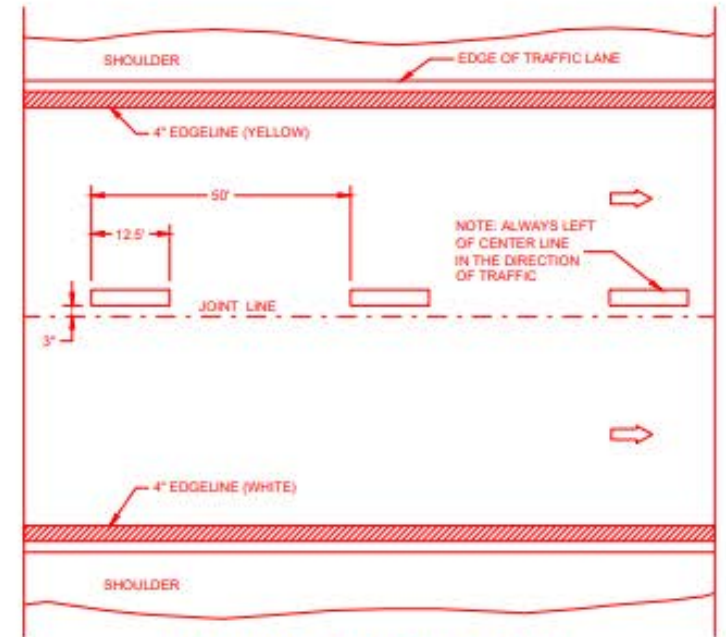
➡ DIRECTION OF TRAFFIC



TWO WAY TRAFFIC



ONE WAY TRAFFIC



FREEWAYS AND EXPRESSWAYS

#5 Early Season Cold Weather

- No provisions in the specs for marking maintenance
- This impacts early start projects such as bridge deck replacements



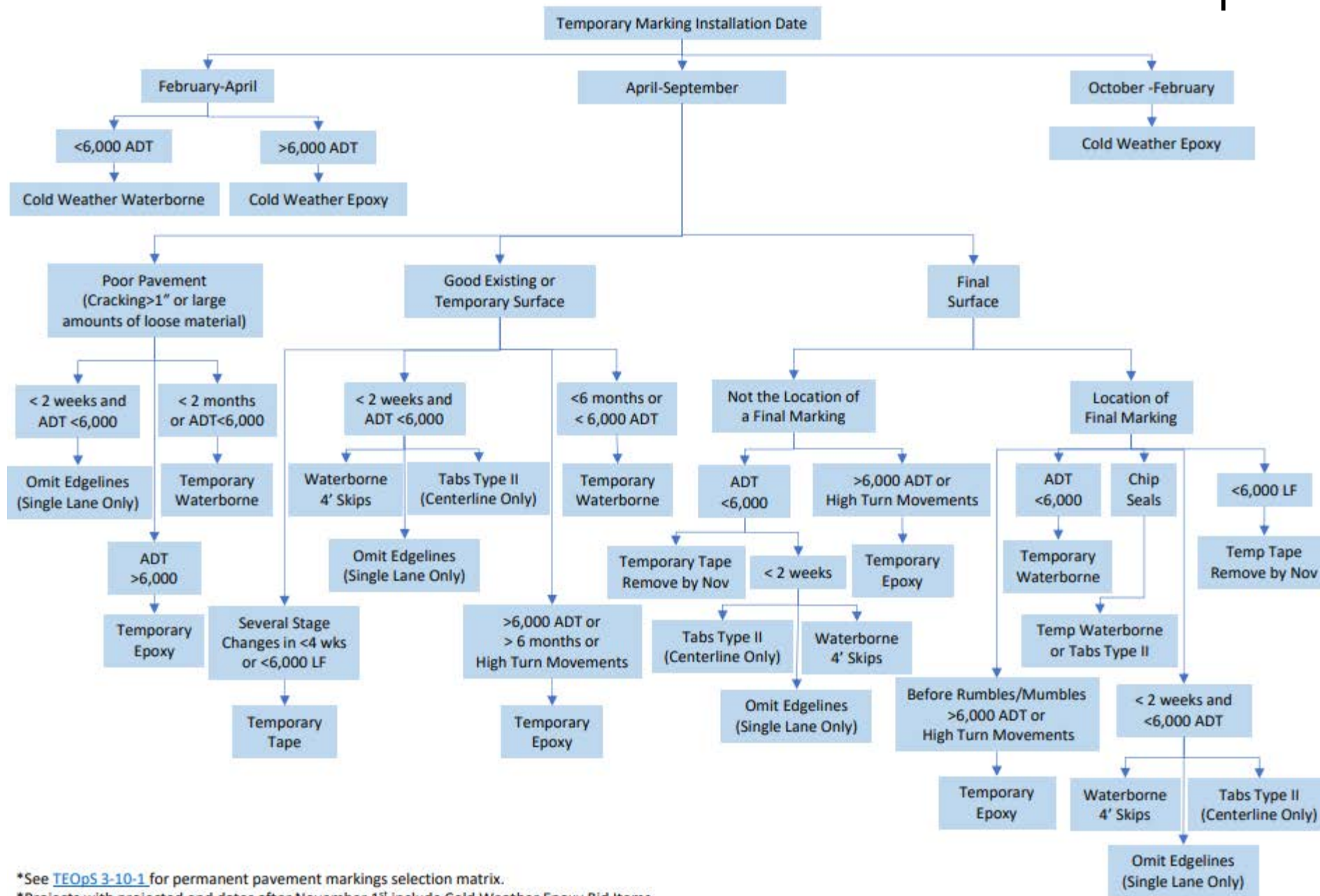
#6 Late Season Cold Weather

- Maintenance of markings for when a project cannot get permanent markings down
- Sometimes not included in the plans



Temporary Marking Selection

TEOpS 3-15-5



*See [TEOpS 3-10-1](#) for permanent pavement markings selection matrix.
 *Projects with projected end dates after November 1st include Cold Weather Epoxy Bid Items.
 *Use waterblasting to remove markings on the final surface where a groove will not be present.

Temporary Pavement Markings

- Updates to SDD's coming in May
- Updates to 2023 Standard Spec
- TEOpS 3-15-5 currently published



Pedestrian Accommodations

2022 Updates



Pedestrian Accommodations

- FDM 11-50-31
 - Created in 2014 with minor updates since
 - Stand-Alone Curb Ramp replacement program
 - Lessons learned since 2014 until now
 - Better define when accommodations are needed
 - Removal of pedestrian volumes
 - Focus on existing facilities
 - Addition of pedestrian flagging



		Duration				
		Mobile	Short Duration	Short-term	Intermediate	Long-term
		Always moving	Up to 1 hour	More than 1 hour within a single daylight period	Up to 3 days	More than 3 days
Construction Impact to Pedestrian Travel	No impacts Pedestrian Paths either do not exist on a project or work from a project does not impact pedestrian travel	Nothing required for pedestrians	Nothing required for pedestrians	Nothing required for pedestrians	Nothing required for pedestrians - Confirm during construction	Nothing required for pedestrians - Confirm during construction
	Encroachment Restricting the pedestrian path to less than the normal existing width but leaving at least 4 feet of width	Move object/work encroaching, pedestrian flagging	Move object/work encroaching, pedestrian flagging	Pedestrian Flagging Detour	Pedestrian Flagging Detour	Pedestrian Flagging Detour Temp. Facility
	Blockage The existing pedestrian path is intact but is not passable because of the following: existing path has less than 4 feet of width or work on the pathway or to something off of the pathway. Material or equipment is easily moved.	Move object/work encroaching, pedestrian flagging	Pedestrian Flagging Detour	Pedestrian Flagging Detour Temp. Facility	Pedestrian Flagging Detour Temp. Facility	Pedestrian Flagging Detour Temp. Facility
	Reconstruction The existing path has been removed and is being reconstructed. The facility is not passable.	N/A - Unlikely a pathway is able to be reconstructed in this timeframe	May not be feasible Detour Temp. Facility	Detour Temp. Facility	Detour Temp. Facility	



Type of Barrier Required Between Vehicle Traffic and Pedestrians

		Duration (Days)			
		<1	Up to 3	Up to 14	14<
Speed (mph)	45 and greater	None*	Temporary Pedestrian Barricade	Temporary Concrete Barrier	Temporary Concrete Barrier
	40 to 30	None*	Temporary Pedestrian Barricade	Temporary Pedestrian Barricade	Temporary Concrete Barrier
	25 and less	None*	Temporary Pedestrian Barricade	Temporary Pedestrian Barricade	Temporary Pedestrian Barricade

*If the work is moving and pedestrian shepherding is being used. If a detour route has been established the normal route should be blocked with temporary pedestrian barricades on each end of the closure.



Pedestrian Accommodations

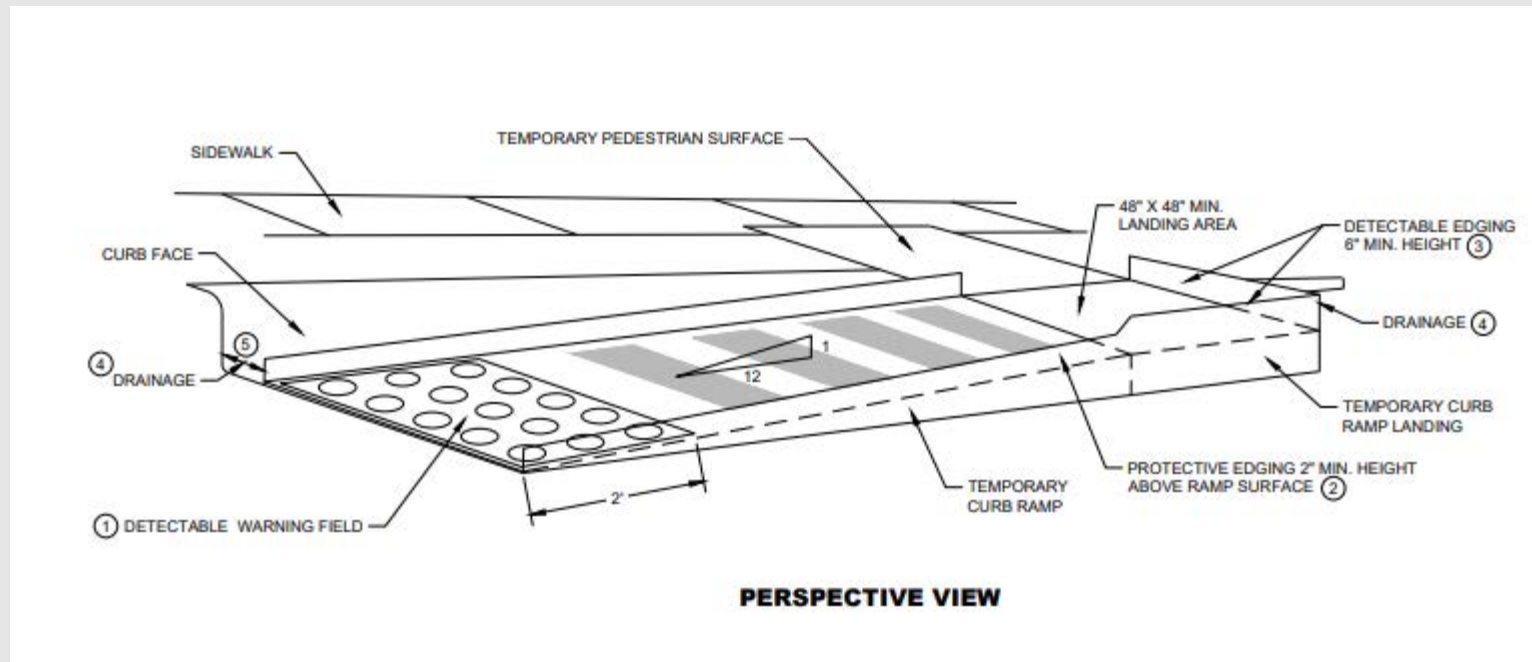
Signal Impacts

- Previously limited discussion on signals and pedestrians
- Temporary signal features need to be accessible to pedestrians
- Watch for signal conflicts between traffic and pedestrians



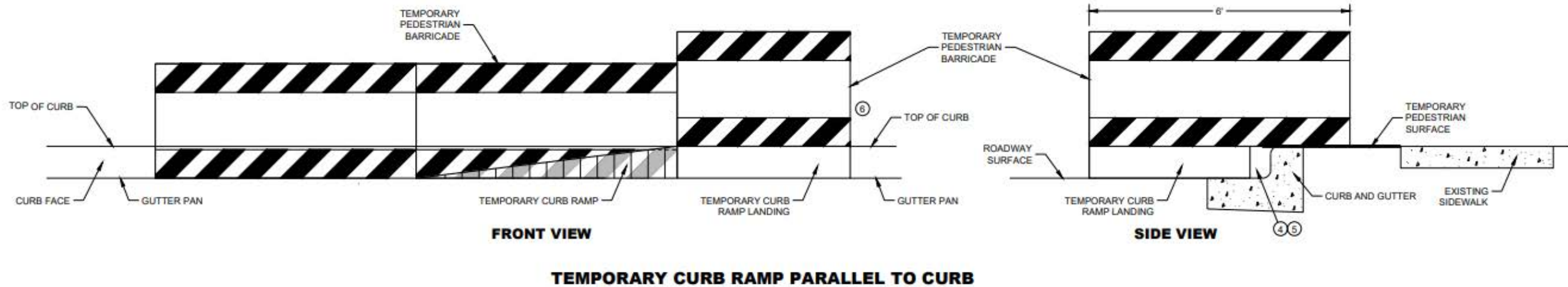
Pedestrian Accommodations

SDD Updates – Temporary Detectable Warning Fields



Pedestrian Accommodations

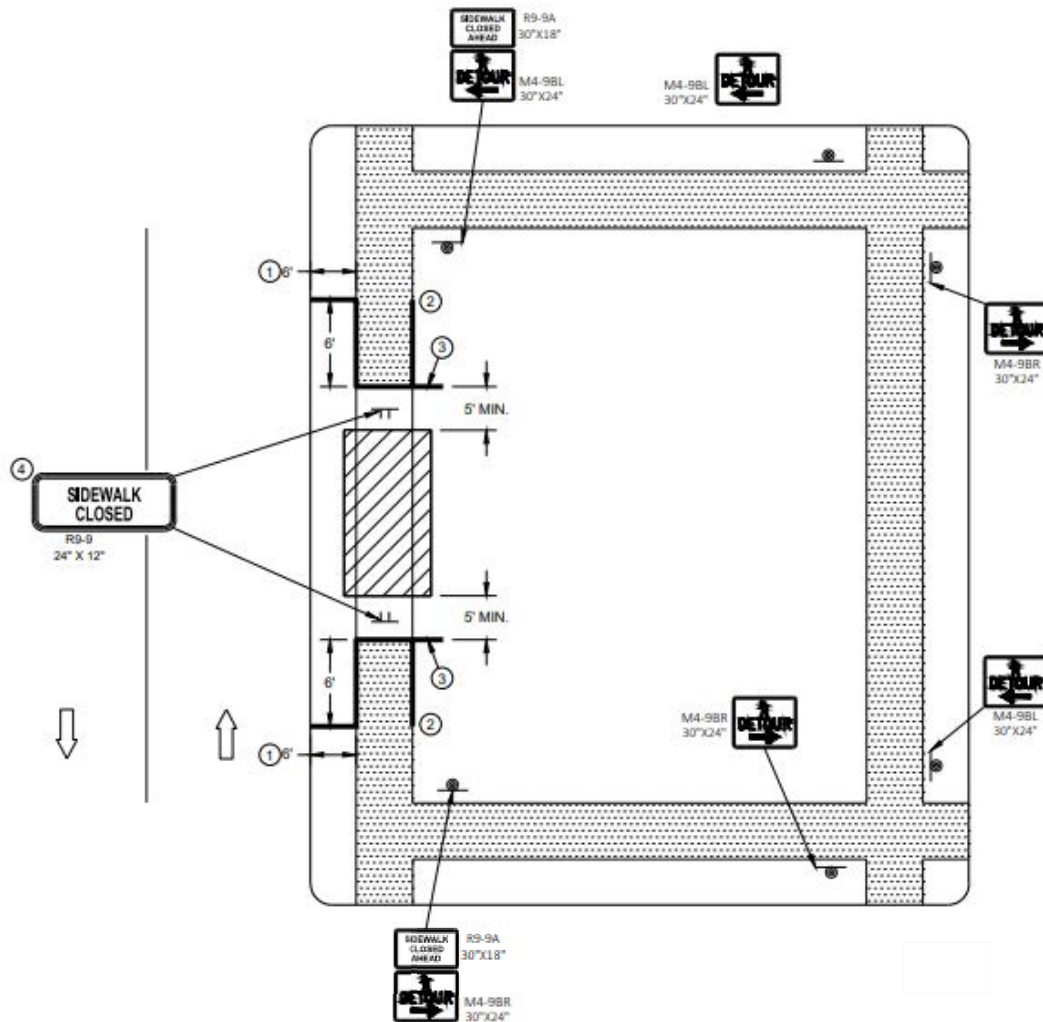
SDD Updates – Ramp Barricade Detail



Pedestrian Accommodations

SDD- Updates - Detour

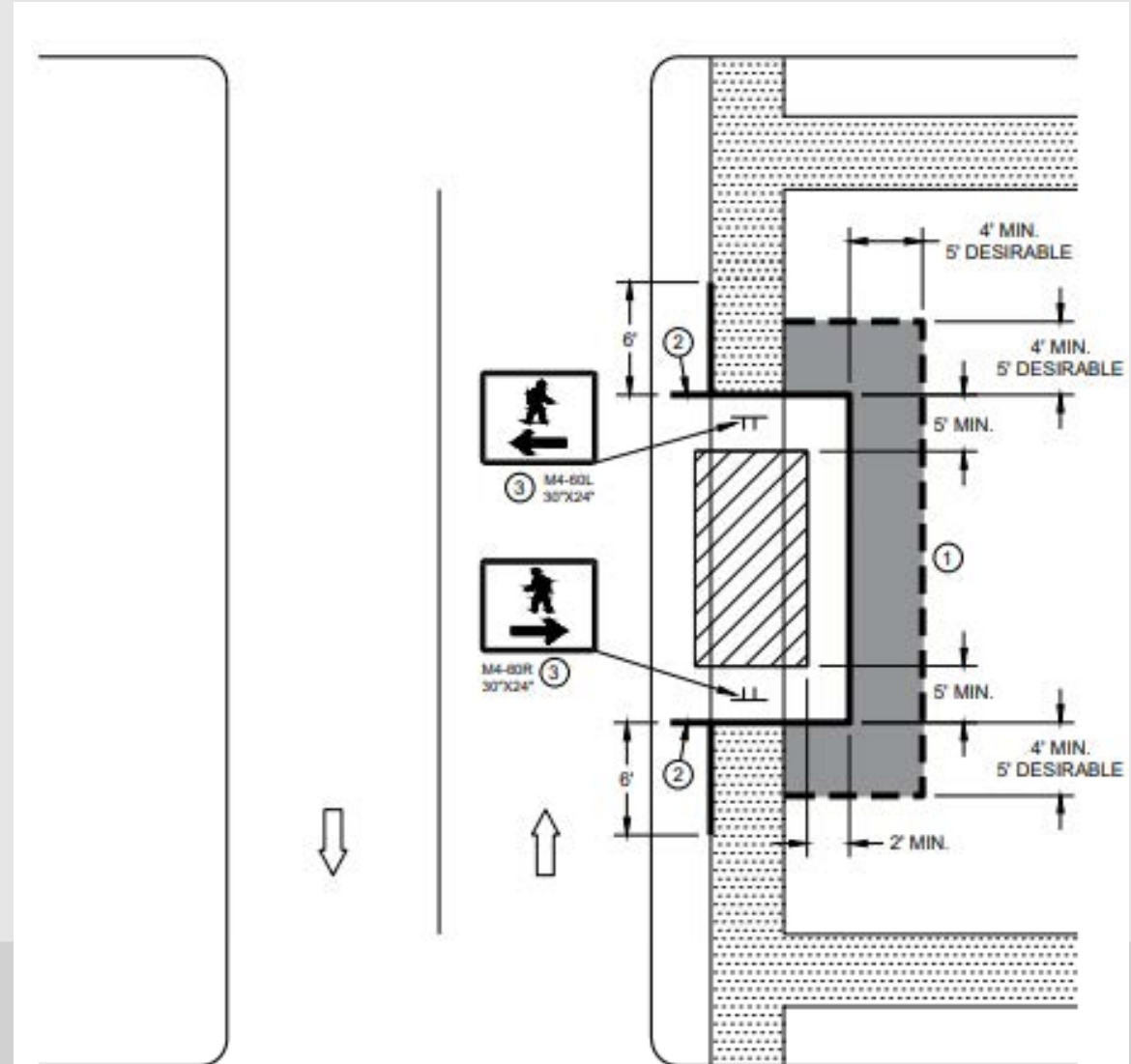
- Addition of temporary ped. barricade for blocking
- Space for sign supports



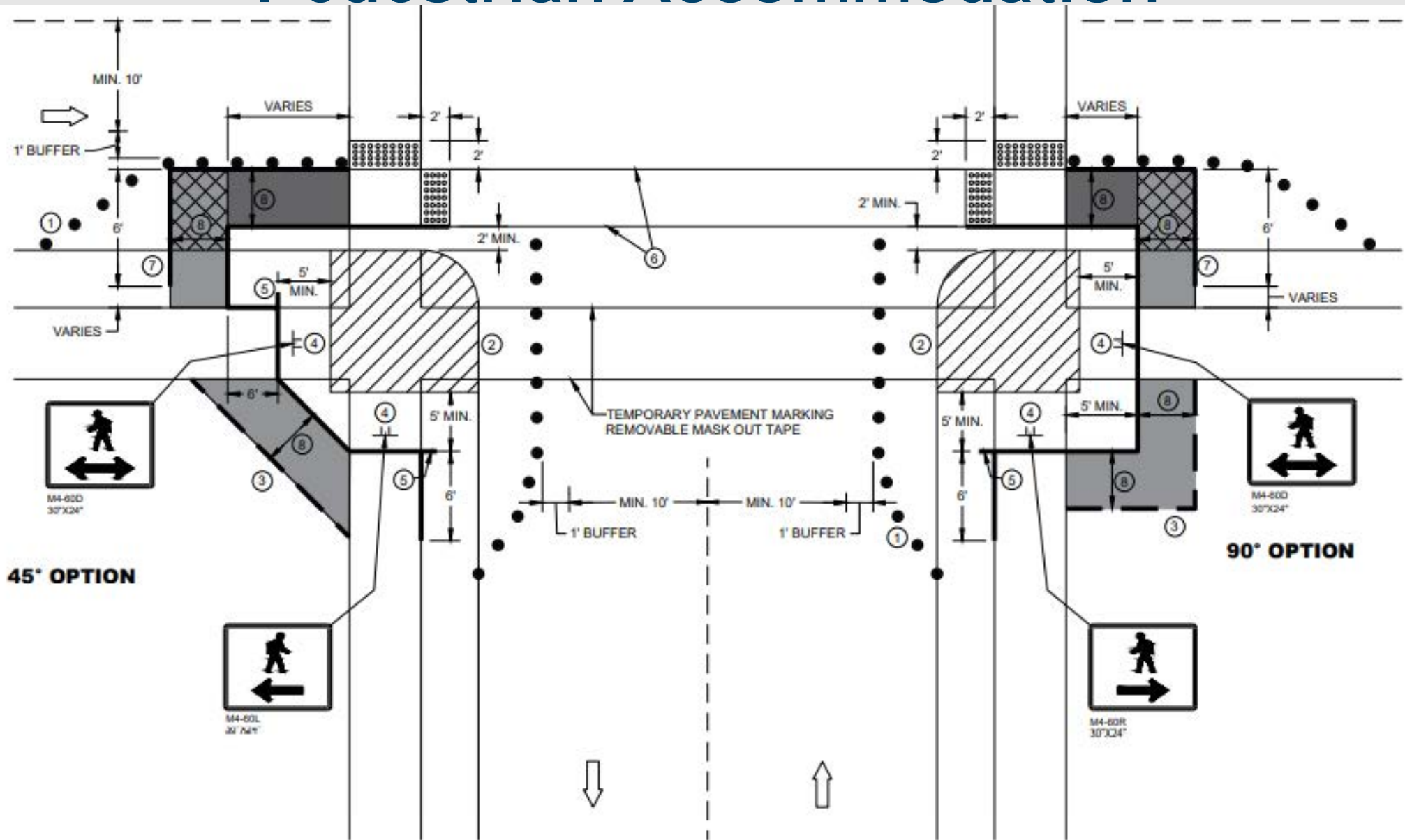
Pedestrian Accommodations

SDD Updates - Diversions

- Diversion would require TLE
- Barricade on one side
- Space for sign supports
- Requires temporary surface item



Pedestrian Accommodation



CURB RAMP PEDESTRIAN TRAFFIC CONTROL

Pedestrian Accommodations

2023 Spec. Updates

- New item for Temporary Detectable Warning Fields
- New item for Temporary Surface – Matting



Questions?

Recording Link: <https://wisconsindot.gov/Pages/doing-bus/local-gov/traffic-ops/programs/training/training.aspx>

Contact Information:

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