Work Zone Planning and Design

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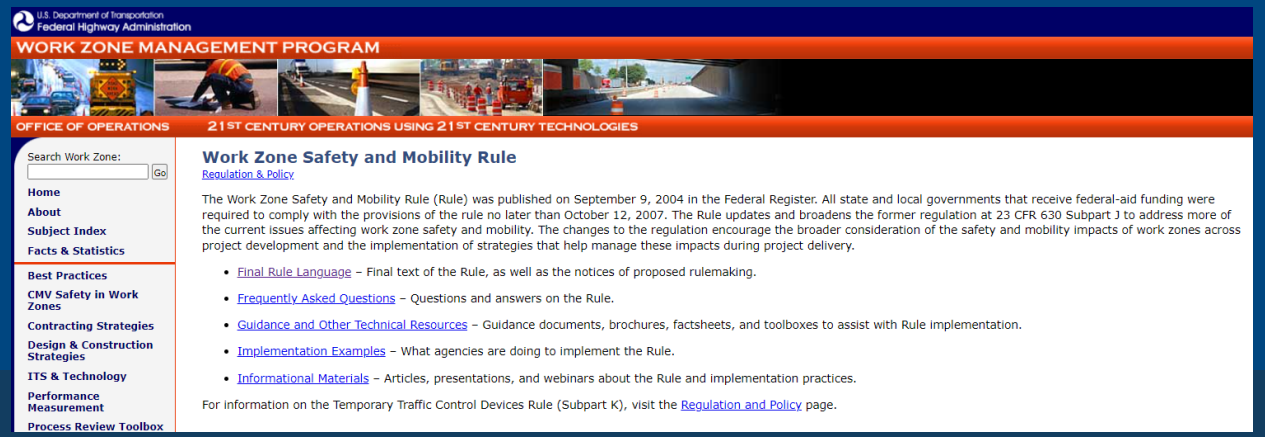
December 3rd, 2024

Work Zone Safety and Mobility

23 CFR 630

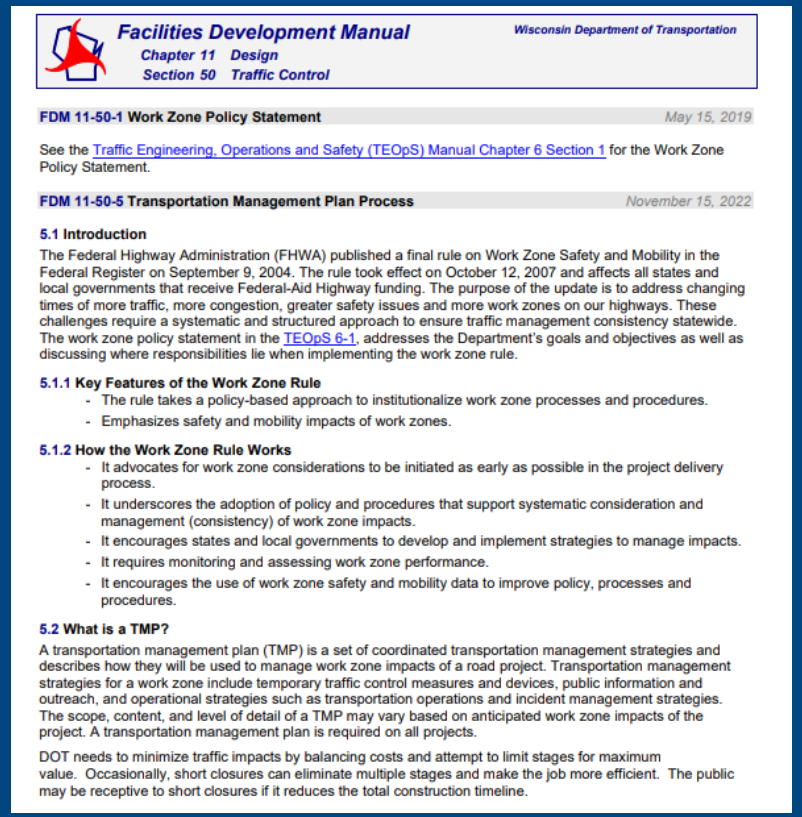
- Final Rule by FHWA published Sept. 9, 2004
- Updated December, 2024
- All states that receive Federal-aid highway funding
- Provide a systematic and structured approach to work zone traffic management
- Emphasize safety and mobility
- Development of TMPs and TCPs



Work Zone Safety and Mobility

23 CFR 630

- Consider WZ issues as early as possible
- Systematic and consistent consideration of WZ impacts
- Strategies to manage WZ impacts
- Monitor and assess WZ impacts
- Data-driven improvements to WZ policy/process/procedures



Facilities Development Manual — Wisconsin Department of Transportation
Chapter 11 Design
Section 50 Traffic Control

FDM 11-50-1 Work Zone Policy Statement *May 15, 2019*

See the Traffic Engineering, Operations and Safety (TEOpS) Manual Chapter 6 Section 1 for the Work Zone Policy Statement.

FDM 11-50-5 Transportation Management Plan Process *November 15, 2022*

5.1 Introduction

The Federal Highway Administration (FHWA) published a final rule on Work Zone Safety and Mobility in the Federal Register on September 9, 2004. The rule took effect on October 12, 2007 and affects all states and local governments that receive Federal-Aid Highway funding. The purpose of the update is to address changing times of more traffic, more congestion, greater safety issues and more work zones on our highways. These challenges require a systematic and structured approach to ensure traffic management consistency statewide. The work zone policy statement in the TEOpS 6-1, addresses the Department's goals and objectives as well as discussing where responsibilities lie when implementing the work zone rule.

5.1.1 Key Features of the Work Zone Rule

- The rule takes a policy-based approach to institutionalize work zone processes and procedures.
- Emphasizes safety and mobility impacts of work zones.

5.1.2 How the Work Zone Rule Works

- It advocates for work zone considerations to be initiated as early as possible in the project delivery process.
- It underscores the adoption of policy and procedures that support systematic consideration and management (consistency) of work zone impacts.
- It encourages states and local governments to develop and implement strategies to manage impacts.
- It requires monitoring and assessing work zone performance.
- It encourages the use of work zone safety and mobility data to improve policy, processes and procedures.

5.2 What is a TMP?

A transportation management plan (TMP) is a set of coordinated transportation management strategies and describes how they will be used to manage work zone impacts of a road project. Transportation management strategies for a work zone include temporary traffic control measures and devices, public information and outreach, and operational strategies such as transportation operations and incident management strategies. The scope, content, and level of detail of a TMP may vary based on anticipated work zone impacts of the project. A transportation management plan is required on all projects.

DOT needs to minimize traffic impacts by balancing costs and attempt to limit stages for maximum value. Occasionally, short closures can eliminate multiple stages and make the job more efficient. The public may be receptive to short closures if it reduces the total construction timeline.

Work Zone Planning

Work Zone Impact Assessments(WZIA) & Transportation Management Plans(TMP)

- Promote safety for traveling public and workers
- Minimize congestion and adverse traffic impacts
- Improved public satisfaction
- Balance the needs of the public and the project

Work Zone Impact Assessment

FDM 11-50-5.4

- Analysis of Alternatives
  - How do we balance the work and traffic?
- How can the project be built?
- What can we do with traffic?
- Determine TMP type
- Mitigation strategies based on traffic conditions
- Alternative contracting strategies
- Estimated costs

Work Zone Impact Assessment

Project Information

Project ID:	1650-02-35/65			Highway:	USH 61
Title:	Boscobel to Readstown				
Limits:	STH 60 to Bell Center Rd/B-12-19				
Length (miles):	11.8	County:	Crawford	Project Cost:	$5,200,000

Project Description

Mill and overlay 2" of HMA. Deck replacement for B-12-19, some other structure repair on box culverts

Work Zone Impact Assessment

Work Zone Alternatives

Work Zone Alternatives			
Alternative #	Main Work Zone Strategies	Feasible	Justification of nonfeasibility
1*	Full Closure with Detour	Yes	
2	Staged with Bypass structure	Yes	
3	Flagging/temp signal	No	Bridge is too narrow for temp signals
4			
5			

- Defaults
  - Multi-lane facilities, Continuous Lane Closure
  - Two-lane, two-way, Full Closure with a Detour

Work Zone Impact Assessment

Operational Considerations

Operational Considerations								
Alternative # Continued	WZ Capacity (vphpl)	Expected Delay (min.)	Expected Queue (miles)	Road User Costs ($/day)	Duration (Days)	Total Road User Costs ($)	Est. WZ Capital/TMP Cost ($)	Estimated # of Project Stages
1	0		0	$27,884		$0		1
2	1500	1	0	$0		$0		3
3	545	5	0.05	$6,848		$0		2
4						$0		
5						$0		

- Coordinate with Region Traffic

Work Zone Impact Assessment

Other Considerations

Other Considerations								
Alternative # Continued	Est. WZ Real Estate Impacts	Pedestrian Impacts	Utility Impacts	Transit Impacts	Environ. Issues with WZ	Construct-ability	Product Quality	Project Timeline Constraints
1	$0	No	No	Yes	No	No	No	Yes
2	$10,000	No	Yes	No	Yes	No	No	No
3	$0	No	No	No	No	Yes	No	No
4								
5								

Work Zone Impact Assessment

Recommendations

Recommendations			
Alternative # Continued	Safety Considerations	Recommended Alternative	TMP Type
1			2
2			2
3			2
4			
5			

Work Zone Impact Assessment

Notes and Comments

- Comments populate when yes selected

Comments on Alternative Analysis	
Notes:	Detour is STH 60 and STH 131. Used 55% of RUC due to town roads that will get around structure.
Utility Impacts:	Bypass structure could impact adjacent utilities
Transit Impacts:	Potential issues with bussing and EMS with a clousure and no bypass
Environmental Issues:	Bypass structure could have environmental impacts
Constructability:	Flagging could be an option after detour and binder is complete to do final lift but the roadway is too narrow to complete the deck replacement with temp signals so during that timeframe either a detour or bypass is needed
Project Timeline Constraints:	With a detour, and the length of the detour, we would want an iterim completion date for when the deck replacement is done.

Work Zone Traffic Analysis Tool(WZTAT)

- The result of a study we had TADi complete in 2020
  - Collect capacity and queue data at Wisconsin Work Zones
  - Calibrate the HCM WZ Capacity equation or develop a new model
  - Develop a software tool to calculate work zone, capacity, delay, queues, and road user costs
- WZTAT Update in 2023
  - Validate existing work zone capacity and queueing models using empirical data
  - Enhance the diversion analysis capabilities in the WZTAT
  - Implement additional revisions to the WZTAT based on user feedback

WZTAT Inputs

- Location and project information
  - Speed
  - Length
  - Area
  - County (Rural/Urban)
- Closure inputs
  - How many lanes are closed
  - Lane closure times
  - Work intensity
- Continuous Count Station Data

WisDOT Work Zone Delay

Annual Tool

Version 5.2 *Released: 03/15/2024*

User: KL Eng
Date: 6/10/2024

SB Project Inputs

Region	Northeast
County	Brown
Construction ID	1130-74-71
Highway	I-41
Direction	SB
Area Type	Urban
Normal Posted Speed Limit (mph)	70
Work Zone Speed Limit (mph)	55
Closure Length (mi)	2.00
Auto Cost/Veh-Hour of Delay	$23.79
HV Cost/Veh-Hour of Delay	$39.65
Capacity During Non-Work Hours (pce/hr/ln)	2,400

Notes:

Location: IH 41 from Main Street to Cormier Road
Count Site #s: 050379 (Year 2022) & ATR 050110 (Year 2023)
Adjustment Factor: 1.15 (83,200 / 72,200)
Growth Factor: 1% per year to 2026 (1.03%)
Diversion: None

WisDOT Work Zone Capacity Equation

$$Average\ QDR_{PCE} = 1{,}866 - 40f_{LCSI} - 132f_{barrier} - 101f_{TOD} - 205f_{area} - 207f_{CI} - 47f_{regional}$$

SB Closure Inputs

	Closure #1	Closure #2	Closure #3	Closure #4
Lane Closure Type	4 to 1	4 to 2	4 to 1	
Barrier Type	Soft	Hard	Soft	
Construction Intensity	High	High	High	

	SB
Loc. Adj. Factor	1.15
Growth % (+)	3%

SB Results

	Closure #1	Closure #2	Closure #3	Closure #4
Base Value (1,866 default)	1,866	1,866	1,866	
Lane Closure Type (f_{LCSI})	-160	-40	-160	
Barrier Type ($f_{barrier}$)	-132	0	-132	
Area Type (f_{area})	0	0	0	
Construction Intensity (f_{CI})	-207	-207	-207	
Regional ($f_{regional}$)	-47	-47	-47	
Manual Adjustment				
Estimated QDR Daytime (pce/hr/ln)	**1,320**	**1,572**	**1,320**	
Estimated QDR Nighttime* (pce/hr/ln)	**1,219**	**1,471**	**1,219**	

*6pm to 6am considered nighttime in calculations

Lane Closure Type	(f_{LCSI})
4 to 1	4
3 to 1	3
2 to 1	2
4 to 2	1
3 to 2	0.75
2 to 2	0.5
4 to 3	0.44
3 to 3	0.33

SB Duration Inputs

Closure #1	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
All Day?	☐ Monday	☐ Tuesday	☐ Wednesday	☐ Thursday	☐ Friday	☐ Saturday	☐ Sunday
Start of Closure	12:00 AM	12:00 AM	12:00 AM	12:00 AM	12:00 AM	12:00 AM	12:00 AM
End of Closure	9:00 AM	9:00 AM	9:00 AM	9:00 AM	9:00 AM	7:00 AM	8:00 AM
Overlap?	OK!	OK!	OK!	OK!	OK!	OK!	OK!

Closure #2	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Start of Closure	9:00 AM	9:00 AM	9:00 AM	9:00 AM	9:00 AM	7:00 AM	8:00 AM
End of Closure	9:00 PM	9:00 PM	9:00 PM	9:00 PM	10:00 PM	12:00 AM	9:00 PM

Closure #3	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Start of Closure	9:00 PM	9:00 PM	9:00 PM	9:00 PM	10:00 PM		9:00 PM
End of Closure	12:00 AM	12:00 AM	12:00 AM	12:00 AM	12:00 AM		12:00 AM

Closure #4	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Start of Closure							
End of Closure							

Heavy Vehicle Percentages - Daily Average

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
HV% From Manual Table	11%	11%	11%	11%	11%	11%	11%

WZTAT Outputs

- This page is the Summary and shows the impacts of the closures
  - Delay
  - Max queue
  - Road user cost
  - Diversion

WZTAT OVERALL SUMMARY - SB

Base Information			
Region	Northeast	Area Type	Urban
County	Brown	Normal Posted Speed Limit	70 mph
Construction ID	1130-74-71	Work Zone Speed Limit	55 mph
Highway	I-41 SB	Closure Length	2. mi

Months included in analysis: April, May, June, July, August

Annual HV% 0%

Version 5.2 Released: 03/15/2024 *User: KL Eng Date: 06/10/24*

Delay Legend	<15 min	15-30 min	30-60 min	60-120 min	>120 min

		Daytime WZ Capacity	Nighttime WZ Capacity	Expected Max. Delay	Expected Max. Queue	Road User Costs	Max Hourly Diversion to Local Roads (vph)
Overall	Mon-Thu Avg.			32 min	1.2 mi	$25,968 per day	0
	Friday Avg.			27 min	1.0 mi	$19,662 per day	0
	Saturday Avg.			1 min	0.1 mi	$6,566 per day	0
	Sunday Avg.			0 min	0.0 mi	$5,945 per day	0
	Daily Avg.	1,373 vphpl	1,170 vphpl	22 min	0.9 mi	$19,433 per day	0
	Daily Max.	<--------Tue 04/11/23-------->		38 min	1.7 mi	$34,113 max day	0
	Total					$2,973,297 total	
	Description: The lane closure takes place on an urban 2 mile segment of I-41 SB in Brown County in the Northeast Region.						
Closure #1	Mon-Thu Avg.			32 min	1.2 mi	$17,622 per day	0
	Friday Avg.			27 min	1.0 mi	$12,998 per day	0
	Saturday Avg.			0 min	0.0 mi	$464 per day	0
	Sunday Avg.			0 min	0.0 mi	$524 per day	0
	Daily Avg.	1,193 vphpl	1,102 vphpl	22 min	0.8 mi	$12,062 per day	0
	Daily Max.	<--------Tue 04/11/23-------->		38 min	1.4 mi	$24,246 max day	0
	Total					$1,845,452 total	
	Description: Closure #1 is a 4 lane to 1 lane closure with a soft barrier and high construction activity. Mon: 12 AM to 9 AM ---- Tue: 12 AM to 9 AM ---- Wed: 12 AM to 9 AM ---- Thu: 12 AM to 9 AM Fri: 12 AM to 9 AM ---- Sat: 12 AM to 7 AM ---- Sun: 12 AM to 8 AM						
Closure #2	Mon-Thu Avg.			8 min	1.0 mi	$8,007 per day	0
	Friday Avg.			4 min	0.5 mi	$6,408 per day	0
	Saturday Avg.			1 min	0.1 mi	$6,102 per day	0
	Sunday Avg.			0 min	0.0 mi	$5,122 per day	0
	Daily Avg.	1,422 vphpl	1,330 vphpl	5 min	0.6 mi	$7,099 per day	0
	Daily Max.	<--------Wed 07/12/23-------->		14 min	1.7 mi	$12,448 max day	---
	Total					$1,086,071 total	
	Description: Closure #2 is a 4 lane to 2 lane closure with a hard barrier and high construction activity. Mon: 9 AM to 9 PM ---- Tue: 9 AM to 9 PM ---- Wed: 9 AM to 9 PM ---- Thu: 9 AM to 9 PM Fri: 9 AM to 10 PM ---- Sat: 7 AM to 12 AM ---- Sun: 8 AM to 9 PM						
Closure #3	Mon-Thu Avg.			0 min	0.0 mi	$339 per day	0
	Friday Avg.			0 min	0.0 mi	$255 per day	0
	Saturday Avg.			---	---	---	---
	Sunday Avg.			0 min	0.0 mi	$299 per day	0
	Daily Avg.	---	1,102 vphpl	0 min	0.0 mi	$319 per day	0
	Daily Max.	---		---	---	$488 max day	---
	Total					$41,775 total	
	Description: Closure #2 is a 4 lane to 1 lane closure with a soft barrier and high construction activity. Mon: 9 PM to 12 AM ---- Tue: 9 PM to 12 AM ---- Wed: 9 PM to 12 AM ---- Thu: 9 PM to 12 AM Fri: 10 PM to 12 AM ---- Sat: no closure ---- Sun: 9 PM to 12 AM						

Queue Summary

- Monthly/Daily
- Shows when the queues form
- Identifies
  - Max
  - Duration
  - Number of hours
  - Max delay
  - Total Daily Road User Cost
- Provides a summary

WZTAT QUEUE SUMMARY - SB

Base Information			
Region	Northeast	Area Type	Urban
County	Brown	Normal Posted Speed Limit	70 mph
Construction ID	1130-74-71	Work Zone Speed Limit	55 mph
Highway	I-41 SB	Closure Length	2. mi

blank = no queue
--- = no data

Queue Legend (5.0 mi / 2.5 mi / 0.0 mi; 12 am, 6 am, noon, 6 pm, 12 am)

Version 5.2 Released: 03/15/2024 User: KL Eng Date: 6/10/2024

Delay Legend	<15 min	15-30 min	30-60 min	60-120 min	>120 min

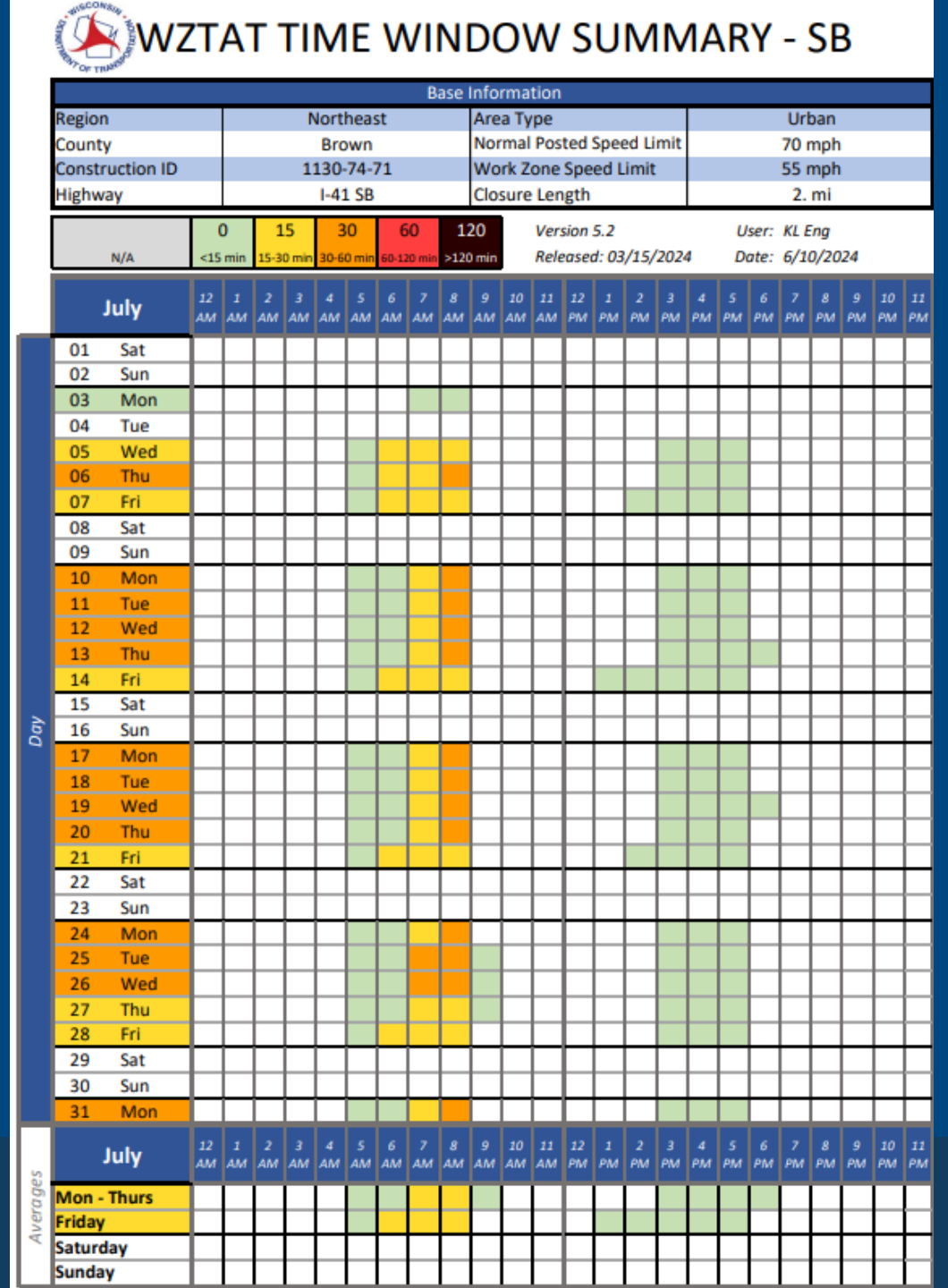
	July	Queue	Max Queue	Approx. Time of Max Queue	# of Queueing Hours	Max Delay	Total Road User Cost*
Day	01 Sat						$ 5,399
	02 Sun						$ 5,186
	03 Mon		0.3 mi	7:45 AM	2 hours	6.7 min	$ 6,947
	04 Tue						$ 5,075
	05 Wed		1.1 mi	7:45 AM	7 hours	29.4 min	$ 22,269
	06 Thu		1.2 mi	7:45 AM	7 hours	31.7 min	$ 25,935
	07 Fri		1.1 mi	7:45 AM	8 hours	28.0 min	$ 20,900
	08 Sat						$ 6,409
	09 Sun						$ 6,184
	10 Mon		1.2 mi	7:45 AM	7 hours	31.9 min	$ 25,313
	11 Tue		1.4 mi	4:30 PM	7 hours	32.7 min	$ 28,765
	12 Wed		1.7 mi	4:45 PM	7 hours	31.6 min	$ 29,549
	13 Thu		1.4 mi	4:45 PM	8 hours	31.7 min	$ 29,239
	14 Fri		1.1 mi	7:45 AM	9 hours	28.9 min	$ 22,086
	15 Sat						$ 6,461
	16 Sun						$ 6,289
	17 Mon		1.2 mi	7:45 AM	7 hours	31.2 min	$ 25,147
	18 Tue		1.2 mi	7:45 AM	7 hours	32.0 min	$ 26,521
	19 Wed		1.4 mi	4:30 PM	8 hours	33.6 min	$ 29,422
	20 Thu		1.3 mi	7:45 AM	7 hours	33.3 min	$ 28,709
	21 Fri		1.0 mi	7:45 AM	8 hours	27.5 min	$ 20,288
	22 Sat						$ 6,522
	23 Sun						$ 6,514
	24 Mon		1.2 mi	7:45 AM	7 hours	31.2 min	$ 24,979
	25 Tue		1.4 mi	7:30 AM	8 hours	36.0 min	$ 34,113
	26 Wed		1.3 mi	7:45 AM	8 hours	35.0 min	$ 29,937
	27 Thu		1.3 mi	4:30 PM	8 hours	28.6 min	$ 26,445
	28 Fri		1.0 mi	7:45 AM	7 hours	26.5 min	$ 20,840
	29 Sat						$ 6,984
	30 Sun						$ 6,710
	31 Mon		1.2 mi	7:45 AM	7 hours	30.9 min	$ 24,939

	July	Queue	Max Queue	Approx. Time of Max Queue	# of Queueing Hours	Max Delay	Total Road User Cost*
Averages	Mon - Thurs		1.1 mi	7:45 AM	7 hours	28.7 min	$ 24,900
	Friday		1.0 mi	7:45 AM	8 hours	27.7 min	$ 21,029
	Saturday						$ 6,355
	Sunday						$ 6,177
	Max. Queue	<--------Wed 07/12/23-------->	1.7 mi	4:45 PM	7 hours	31.6 min	$ 29,549
	Total Monthly Road User Costs					$	570,077

*If a queue is not observed, decreased speeds through the work zone can still result in delay costs.

Time Windows

- This shows the when queuing is present by hour
- This allows us to identify the work windows (white)
- Boxes that have colors indicate the queuing and the associated delay
- This helps develop the hours that end up in the Special Provisions



Region: Northeast
County: Brown
Construction ID: 1130-74-71
Highway: I-41

Growth	3%
Factor For NB	

---	0	15	30	60	120
N/A	<15	15-30	30-60	60-120	>120

Growth	3%
Factor For SB	

This output contains queue minutes for every hour of every day for both directions. Essentially, this shows the delay per vehicles for each hour. Hours with delay are highlighted based on the color scale. Growth/diversion are only editable cells and updates will be reflected on every tab throughout tool.

User: KL Eng 6/10/2024

NB Queue Minutes per Vehicle

July	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.1	12.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	0.0	0.0	0.0	0.0	0.0	2.5	11.3	23.2	30.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	0.0	0.0	0.0	0.0	0.0	3.0	11.8	24.2	30.2	1.4	0.0	0.0	0.0	0.0	0.0	1.3	5.4	4.3	0.0	0.0	0.0	0.0	0.0	0.0
7	0.0	0.0	0.0	0.0	0.0	1.2	10.1	16.5	22.5	0.0	0.0	0.0	0.0	0.0	1.1	3.9	6.8	6.8	0.0	0.0	0.0	0.0	0.0	0.0
8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	0.0	0.0	0.0	0.0	0.0	5.1	12.1	30.1	34.2	3.2	0.0	0.0	0.0	0.0	0.0	0.0	3.8	0.7	0.0	0.0	0.0	0.0	0.0	0.0
11	0.0	0.0	0.0	0.0	0.0	5.5	12.3	33.5	37.8	1.3	0.0	0.0	0.0	0.0	0.0	1.6	8.6	9.9	0.0	0.0	0.0	0.0	0.0	0.0
12	0.0	0.0	0.0	0.0	0.0	4.8	10.5	30.7	36.4	5.2	0.0	0.0	0.0	0.0	0.0	3.5	9.1	9.1	0.0	0.0	0.0	0.0	0.0	0.0
13	0.0	0.0	0.0	0.0	0.0	4.5	11.7	28.9	32.0	2.8	0.0	0.0	0.0	0.0	0.0	4.2	11.8	14.4	6.3	0.0	0.0	0.0	0.0	0.0
14	0.0	0.0	0.0	0.0	0.0	1.0	10.0	20.3	24.0	3.5	0.0	0.0	0.0	0.0	3.8	7.9	12.0	13.1	5.2	0.0	0.0	0.0	0.0	0.0
15	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17	0.0	0.0	0.0	0.0	0.0	5.1	12.2	31.0	34.2	4.4	0.0	0.0	0.0	0.0	0.0	0.1	4.6	2.8	0.0	0.0	0.0	0.0	0.0	0.0
18	0.0	0.0	0.0	0.0	0.0	6.1	12.8	35.4	37.7	5.9	0.0	0.0	0.0	0.0	0.0	2.6	7.9	8.0	0.0	0.0	0.0	0.0	0.0	0.0
19	0.0	0.0	0.0	0.0	0.0	4.4	11.1	28.0	32.2	4.3	0.0	0.0	0.0	0.0	0.0	2.7	8.9	10.9	0.0	0.0	0.0	0.0	0.0	0.0
20	0.0	0.0	0.0	0.0	0.0	4.6	11.8	28.3	30.9	2.3	0.0	0.0	0.0	0.0	0.0	0.0	5.5	6.8	0.0	0.0	0.0	0.0	0.0	0.0
21	0.0	0.0	0.0	0.0	0.0	0.0	9.1	17.8	23.3	3.4	0.0	0.0	0.1	0.5	4.6	9.7	15.4	18.3	9.7	0.0	0.0	0.0	0.0	0.0
22	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
23	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
24	0.0	0.0	0.0	0.0	0.0	5.7	13.5	26.7	29.6	6.8	0.3	0.0	0.0	0.0	0.0	1.0	6.6	5.8	0.0	0.0	0.0	0.0	0.0	0.0
25	0.0	0.0	0.0	0.0	0.0	6.1	12.8	35.9	39.9	5.7	0.0	0.0	0.0	0.0	0.0	2.7	8.5	10.7	1.2	0.0	0.0	0.0	0.0	0.0
26	0.0	0.0	0.0	0.0	0.0	3.5	10.8	28.1	30.3	0.8	0.0	0.0	0.0	0.0	0.0	2.5	9.0	11.5	0.9	0.0	0.0	0.0	0.0	0.0
27	0.0	0.0	0.0	0.0	0.0	5.3	12.7	33.4	40.4	9.3	1.9	0.0	0.0	0.0	0.0	4.7	11.4	13.7	5.4	0.0	0.0	0.0	0.0	0.0
28	0.0	0.0	0.0	0.0	0.0	0.0	9.1	18.0	23.1	0.1	0.0	0.0	0.0	0.8	4.6	8.9	14.1	16.2	11.5	0.0	0.0	0.0	0.0	0.0
29	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
31	0.0	0.0	0.0	0.0	0.0	4.6	12.3	30.0	35.2	7.0	0.0	0.0	0.0	0.0	0.0	0.9	4.3	1.0	0.0	0.0	0.0	0.0	0.0	0.0

SB Queue Minutes per Vehicle

July	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.0	6.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	0.0	0.0	0.0	0.0	0.0	8.9	16.3	21.0	29.4	0.0	0.0	0.0	0.0	0.0	0.0	1.1	6.5	4.0	0.0	0.0	0.0	0.0	0.0	0.0
6	0.0	0.0	0.0	0.0	0.0	8.9	15.3	23.1	31.7	0.0	0.0	0.0	0.0	0.0	0.0	1.2	8.1	9.0	0.0	0.0	0.0	0.0	0.0	0.0
7	0.0	0.0	0.0	0.0	0.0	7.8	16.2	19.5	28.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	6.0	2.6	0.0	0.0	0.0	0.0	0.0	0.0
8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	0.0	0.0	0.0	0.0	0.0	8.9	13.4	23.5	31.9	0.0	0.0	0.0	0.0	0.0	0.0	1.9	8.5	7.8	0.0	0.0	0.0	0.0	0.0	0.0
11	0.0	0.0	0.0	0.0	0.0	9.0	11.8	26.5	32.7	0.0	0.0	0.0	0.0	0.0	0.0	2.1	10.0	11.4	0.0	0.0	0.0	0.0	0.0	0.0
12	0.0	0.0	0.0	0.0	0.0	9.1	11.8	24.6	31.6	0.0	0.0	0.0	0.0	0.0	0.0	3.6	11.4	14.0	0.0	0.0	0.0	0.0	0.0	0.0
13	0.0	0.0	0.0	0.0	0.0	9.1	14.7	26.8	31.7	0.0	0.0	0.0	0.0	0.0	0.0	1.8	9.3	11.8	1.3	0.0	0.0	0.0	0.0	0.0
14	0.0	0.0	0.0	0.0	0.0	7.9	16.1	20.6	28.9	0.0	0.0	0.0	0.0	0.0	0.0	2.6	6.0	3.2	0.0	0.0	0.0	0.0	0.0	0.0
15	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17	0.0	0.0	0.0	0.0	0.0	9.0	13.0	24.2	31.2	0.0	0.0	0.0	0.0	0.0	0.0	1.1	8.5	7.9	0.0	0.0	0.0	0.0	0.0	0.0
18	0.0	0.0	0.0	0.0	0.0	9.0	10.7	25.5	32.0	0.0	0.0	0.0	0.0	0.0	0.0	2.2	9.5	9.0	0.0	0.0	0.0	0.0	0.0	0.0
19	0.0	0.0	0.0	0.0	0.0	8.8	11.7	27.0	33.6	0.0	0.0	0.0	0.0	0.0	0.0	2.6	9.7	11.2	0.1	0.0	0.0	0.0	0.0	0.0
20	0.0	0.0	0.0	0.0	0.0	9.1	13.7	26.0	33.3	0.0	0.0	0.0	0.0	0.0	0.0	2.9	9.7	9.8	0.0	0.0	0.0	0.0	0.0	0.0
21	0.0	0.0	0.0	0.0	0.0	7.3	15.7	19.6	27.5	0.0	0.0	0.0	0.0	0.0	0.4	1.4	4.6	1.5	0.0	0.0	0.0	0.0	0.0	0.0
22	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
23	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
24	0.0	0.0	0.0	0.0	0.0	8.7	11.4	24.8	31.2	0.0	0.0	0.0	0.0	0.0	0.0	1.6	8.3	7.7	0.0	0.0	0.0	0.0	0.0	0.0
25	0.0	0.0	0.0	0.0	0.0	8.5	14.0	33.8	36.0	2.7	0.0	0.0	0.0	0.0	0.0	1.4	8.9	10.3	0.0	0.0	0.0	0.0	0.0	0.0
26	0.0	0.0	0.0	0.0	0.0	8.9	11.3	31.2	35.0	3.6	0.0	0.0	0.0	0.0	0.0	0.5	7.4	6.6	0.0	0.0	0.0	0.0	0.0	0.0
27	0.0	0.0	0.0	0.0	0.0	9.0	10.8	26.4	28.6	0.4	0.0	0.0	0.0	0.0	0.0	3.3	10.2	10.4	0.0	0.0	0.0	0.0	0.0	0.0
28	0.0	0.0	0.0	0.0	0.0	8.2	16.4	22.4	26.5	0.0	0.0	0.0	0.0	0.0	0.0	1.7	3.7	0.1	0.0	0.0	0.0	0.0	0.0	0.0
29	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
31	0.0	0.0	0.0	0.0	0.0	9.1	13.9	23.5	30.9	0.0	0.0	0.0	0.0	0.0	0.0	1.5	8.3	8.0	0.0	0.0	0.0	0.0	0.0	0.0

Region: Northeast
County: Brown
Construction ID: 1130-74-71
Highway: I-41

Growth	3%
Factor For NB	

---	0	10	25	50	100
N/A	<10k	10-25k	25-50k	50-100k	>100k

Growth	3%
Factor For SB	

This output contains total costs for every hour of every day for both directions. Essentially, this shows the sum of queue costs and diversion cost for each hour. Hours with costs are highlighted based on the color scale. Growth/diversion are only editable cells and updates will be reflected on every tab throughout tool.

User: KL Eng *6/10/2024*

NB Total Costs (Queue+Closure+Diversion)

July	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$1k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k
2	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k
3	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$1k	$2k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k
4	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k
5	$0k	$0k	$0k	$0k	$0k	$0k	$1k	$5k	$8k	$0k	$0k	$0k	$0k	$0k	$1k	$1k	$1k	$1k	$0k	$0k	$0k	$0k	$0k	$0k
6	$0k	$0k	$0k	$0k	$0k	$0k	$1k	$5k	$8k	$0k	$0k	$0k	$0k	$0k	$1k	$1k	$1k	$1k	$0k	$0k	$0k	$0k	$0k	$0k
7	$0k	$0k	$0k	$0k	$0k	$0k	$1k	$3k	$5k	$0k	$0k	$1k	$1k	$1k	$1k	$1k	$2k	$1k	$0k	$0k	$0k	$0k	$0k	$0k
8	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k
9	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k
10	$0k	$0k	$0k	$0k	$0k	$0k	$2k	$8k	$10k	$1k	$0k	$0k	$0k	$0k	$1k	$1k	$1k	$1k	$0k	$0k	$0k	$0k	$0k	$0k
11	$0k	$0k	$0k	$0k	$0k	$0k	$2k	$10k	$13k	$0k	$0k	$0k	$0k	$0k	$1k	$1k	$2k	$3k	$0k	$0k	$0k	$0k	$0k	$0k
12	$0k	$0k	$0k	$0k	$0k	$0k	$1k	$9k	$12k	$1k	$0k	$0k	$0k	$0k	$1k	$1k	$2k	$2k	$0k	$0k	$0k	$0k	$0k	$0k
13	$0k	$0k	$0k	$0k	$0k	$0k	$1k	$8k	$9k	$1k	$0k	$0k	$1k	$0k	$1k	$1k	$3k	$5k	$1k	$0k	$0k	$0k	$0k	$0k
14	$0k	$0k	$0k	$0k	$0k	$0k	$1k	$4k	$5k	$1k	$1k	$1k	$1k	$1k	$1k	$2k	$4k	$4k	$1k	$0k	$0k	$0k	$0k	$0k
15	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k
16	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k
17	$0k	$0k	$0k	$0k	$0k	$0k	$2k	$9k	$10k	$1k	$0k	$0k	$0k	$0k	$1k	$1k	$1k	$1k	$0k	$0k	$0k	$0k	$0k	$0k
18	$0k	$0k	$0k	$0k	$0k	$1k	$2k	$11k	$13k	$1k	$0k	$0k	$0k	$0k	$1k	$1k	$2k	$2k	$0k	$0k	$0k	$0k	$0k	$0k
19	$0k	$0k	$0k	$0k	$0k	$0k	$1k	$7k	$9k	$1k	$0k	$0k	$0k	$0k	$1k	$1k	$2k	$3k	$0k	$0k	$0k	$0k	$0k	$0k
20	$0k	$0k	$0k	$0k	$0k	$0k	$1k	$7k	$9k	$1k	$0k	$1k	$1k	$0k	$1k	$1k	$1k	$2k	$0k	$0k	$0k	$0k	$0k	$0k
21	$0k	$0k	$0k	$0k	$0k	$0k	$1k	$3k	$5k	$1k	$1k	$1k	$1k	$1k	$1k	$3k	$5k	$7k	$2k	$0k	$0k	$0k	$0k	$0k
22	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$1k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k
23	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k
24	$0k	$0k	$0k	$0k	$0k	$1k	$2k	$7k	$8k	$1k	$1k	$0k	$0k	$0k	$1k	$1k	$1k	$1k	$0k	$0k	$0k	$0k	$0k	$0k
25	$0k	$0k	$0k	$0k	$0k	$1k	$2k	$12k	$14k	$1k	$0k	$0k	$0k	$0k	$1k	$1k	$2k	$3k	$0k	$0k	$0k	$0k	$0k	$0k
26	$0k	$0k	$0k	$0k	$0k	$0k	$1k	$7k	$8k	$0k	$0k	$0k	$0k	$0k	$1k	$1k	$2k	$3k	$0k	$0k	$0k	$0k	$0k	$0k
27	$0k	$0k	$0k	$0k	$0k	$0k	$2k	$10k	$14k	$2k	$1k	$0k	$0k	$0k	$1k	$1k	$3k	$4k	$1k	$0k	$0k	$0k	$0k	$0k
28	$0k	$0k	$0k	$0k	$0k	$0k	$1k	$3k	$5k	$0k	$1k	$1k	$1k	$1k	$1k	$2k	$5k	$6k	$3k	$0k	$0k	$0k	$0k	$0k
29	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$1k	$1k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k
30	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k
31	$0k	$0k	$0k	$0k	$0k	$0k	$2k	$8k	$11k	$1k	$0k	$0k	$0k	$0k	$1k	$1k	$1k	$1k	$0k	$0k	$0k	$0k	$0k	$0k

SB Total Costs (Queue+Closure+Diversion)

July	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k
2	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k
3	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$1k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k
4	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k
5	$0k	$0k	$0k	$0k	$0k	$1k	$3k	$4k	$8k	$0k	$0k	$0k	$1k	$1k	$1k	$1k	$1k	$1k	$0k	$0k	$0k	$0k	$0k	$0k
6	$0k	$0k	$0k	$0k	$0k	$1k	$2k	$5k	$9k	$0k	$0k	$0k	$0k	$1k	$1k	$1k	$2k	$2k	$0k	$0k	$0k	$0k	$0k	$0k
7	$0k	$0k	$0k	$0k	$0k	$1k	$2k	$3k	$7k	$0k	$0k	$0k	$1k	$1k	$1k	$1k	$1k	$1k	$0k	$0k	$0k	$0k	$0k	$0k
8	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k
9	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$1k	$1k	$1k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k
10	$0k	$0k	$0k	$0k	$0k	$1k	$2k	$5k	$9k	$0k	$0k	$0k	$0k	$0k	$1k	$1k	$2k	$2k	$0k	$0k	$0k	$0k	$0k	$0k
11	$0k	$0k	$0k	$0k	$0k	$1k	$1k	$6k	$9k	$0k	$0k	$0k	$0k	$0k	$1k	$1k	$3k	$3k	$0k	$0k	$0k	$0k	$0k	$0k
12	$0k	$0k	$0k	$0k	$0k	$1k	$1k	$5k	$9k	$0k	$0k	$0k	$0k	$1k	$1k	$1k	$3k	$5k	$0k	$0k	$0k	$0k	$0k	$0k
13	$0k	$0k	$0k	$0k	$0k	$1k	$2k	$6k	$9k	$0k	$0k	$0k	$0k	$1k	$1k	$1k	$2k	$3k	$0k	$0k	$0k	$0k	$0k	$0k
14	$0k	$0k	$0k	$0k	$0k	$1k	$2k	$4k	$7k	$0k	$0k	$1k	$1k	$1k	$1k	$1k	$1k	$1k	$0k	$0k	$0k	$0k	$0k	$0k
15	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k
16	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$1k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k
17	$0k	$0k	$0k	$0k	$0k	$1k	$2k	$5k	$8k	$0k	$0k	$0k	$0k	$0k	$1k	$1k	$2k	$2k	$0k	$0k	$0k	$0k	$0k	$0k
18	$0k	$0k	$0k	$0k	$0k	$1k	$1k	$6k	$9k	$0k	$0k	$0k	$0k	$1k	$1k	$1k	$2k	$2k	$0k	$0k	$0k	$0k	$0k	$0k
19	$0k	$0k	$0k	$0k	$0k	$1k	$1k	$6k	$10k	$0k	$0k	$0k	$0k	$1k	$1k	$1k	$3k	$3k	$0k	$0k	$0k	$0k	$0k	$0k
20	$0k	$0k	$0k	$0k	$0k	$1k	$2k	$6k	$10k	$0k	$0k	$0k	$0k	$1k	$1k	$1k	$3k	$3k	$0k	$0k	$0k	$0k	$0k	$0k
21	$0k	$0k	$0k	$0k	$0k	$1k	$2k	$3k	$7k	$0k	$0k	$1k	$1k	$1k	$1k	$1k	$1k	$1k	$0k	$0k	$0k	$0k	$0k	$0k
22	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k
23	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$1k	$1k	$1k	$1k	$1k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k
24	$0k	$0k	$0k	$0k	$0k	$1k	$1k	$6k	$8k	$0k	$0k	$0k	$1k	$1k	$1k	$1k	$2k	$2k	$0k	$0k	$0k	$0k	$0k	$0k
25	$0k	$0k	$0k	$0k	$0k	$1k	$2k	$10k	$11k	$1k	$0k	$0k	$0k	$0k	$1k	$1k	$2k	$3k	$0k	$0k	$0k	$0k	$0k	$0k
26	$0k	$0k	$0k	$0k	$0k	$1k	$1k	$9k	$11k	$1k	$0k	$0k	$0k	$1k	$1k	$1k	$2k	$1k	$0k	$0k	$0k	$0k	$0k	$0k
27	$0k	$0k	$0k	$0k	$0k	$1k	$1k	$6k	$7k	$0k	$0k	$0k	$0k	$1k	$1k	$1k	$3k	$3k	$0k	$0k	$0k	$0k	$0k	$0k
28	$0k	$0k	$0k	$0k	$0k	$1k	$3k	$4k	$6k	$0k	$0k	$1k	$1k	$1k	$1k	$1k	$1k	$1k	$0k	$0k	$0k	$0k	$0k	$0k
29	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k
30	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$0k	$1k	$1k	$1k	$1k	$1k	$1k	$0k	$0k	$0k	$0k	$0k	$0k	$0k
31	$0k	$0k	$0k	$0k	$0k	$1k	$2k	$5k	$8k	$0k	$0k	$0k	$0k	$1k	$1k	$1k	$2k	$2k	$0k	$0k	$0k	$0k	$0k	$0k

Region: Northeast
County: Brown
Construction ID: 1130-74-71
Highway: I-41

Growth	3%
Factor For NB	

---	1.00	1.33	1.67	2.00	2.50
N/A	100%	133%	167%	200%	250%

Highlighted based on comparison to estimated capacity.

Growth	3%
Factor For SB	

This output contains adjusted volumes for every hour of every day for both directions. Hours are highlighted if adjusted volume is greater than estimated capacity. Color scale is for how many times greater the volume is than capacity. Growth/diversion are only editable cells and updates will be reflected on every tab throughout tool.

User: KL Eng *6/10/2024*

NB Adjusted Volumes

July	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	340	227	211	171	249	400	769	1,214	1,818	2,594	3,017	3,151	2,934	2,749	2,613	2,426	2,104	1,931	1,707	1,314	1,052	842	728	541
2	287	172	165	123	143	282	513	663	1,103	1,798	2,326	2,433	2,427	2,137	1,992	1,969	1,837	1,643	1,445	1,164	1,007	719	522	334
3	185	167	140	166	323	800	1,515	2,069	1,964	2,105	2,356	2,579	2,560	2,450	2,580	2,514	2,394	2,143	1,676	1,218	996	758	1,289	619
4	308	154	130	122	213	335	603	662	894	1,407	1,651	1,864	1,822	1,678	1,606	1,573	1,501	1,293	1,356	1,116	1,045	810	586	464
5	223	131	163	195	483	1,616	2,382	3,683	2,805	2,465	2,587	2,644	2,724	2,621	3,231	3,588	3,992	3,279	2,040	1,315	1,106	801	552	288
6	285	167	156	308	524	1,643	2,573	3,716	2,948	2,735	2,782	2,916	2,882	2,959	3,459	3,914	4,295	3,644	2,465	1,681	1,290	1,087	800	452
7	407	205	229	281	561	1,552	2,410	3,402	2,947	2,776	3,039	3,215	3,404	3,364	3,898	4,103	4,116	3,768	2,643	1,949	1,453	1,253	983	646
8	492	226	185	204	300	497	912	1,121	1,734	2,570	2,670	2,780	2,849	2,709	2,641	2,457	2,365	2,066	1,797	1,526	1,248	1,100	839	753
9	637	199	186	130	182	284	629	811	1,269	1,795	2,428	2,650	2,758	2,479	2,473	2,480	2,251	2,044	1,745	1,397	1,094	781	482	275
10	194	108	130	232	513	1,768	2,826	3,998	3,067	2,739	2,684	2,763	2,856	2,658	3,246	3,711	4,238	3,455	2,172	1,494	1,240	830	624	341
11	216	190	197	300	572	1,795	2,843	4,162	3,295	2,490	2,961	2,728	2,831	2,785	3,349	3,948	4,807	3,921	2,393	1,617	1,288	959	603	375
12	316	201	194	312	558	1,748	2,939	4,111	3,370	2,825	2,768	2,906	2,900	2,826	3,545	4,199	4,521	3,768	2,412	1,565	1,252	811	599	361
13	255	175	198	316	599	1,732	2,816	3,957	3,234	2,782	2,922	3,034	3,121	3,025	3,645	4,296	4,960	4,078	2,740	1,962	1,532	1,144	829	548
14	340	257	213	306	487	1,545	2,522	3,604	3,097	3,113	3,324	3,480	3,687	3,661	4,239	4,286	4,284	3,901	2,763	2,093	1,528	1,201	840	576
15	306	219	172	182	294	522	869	1,341	1,913	2,611	2,949	2,960	2,871	2,646	2,708	2,711	2,499	2,252	1,998	1,578	1,254	1,054	797	612
16	374	213	176	169	197	345	593	794	1,258	1,964	2,607	2,761	2,832	2,650	2,522	2,364	2,255	2,035	1,817	1,423	1,044	711	435	283
17	167	118	149	230	548	1,767	2,812	4,038	3,237	2,832	2,740	2,775	2,975	2,711	3,312	3,786	4,340	3,575	2,177	1,474	1,164	792	565	353
18	288	186	203	306	595	1,836	2,851	4,235	3,171	2,836	2,675	2,821	2,806	2,736	3,336	4,085	4,473	3,774	2,290	1,613	1,354	942	609	339
19	250	175	200	321	628	1,722	2,856	3,938	3,063	2,897	2,862	2,874	2,883	2,871	3,397	4,098	4,617	4,002	2,516	1,733	1,330	1,019	719	361
20	284	213	171	315	560	1,734	2,804	3,923	3,205	2,784	2,900	3,147	3,191	2,984	3,709	3,734	4,509	3,918	2,639	1,994	1,483	1,009	811	475
21	327	253	220	267	563	1,481	2,427	3,517	2,981	3,134	3,330	3,619	3,784	3,808	4,283	4,448	4,546	4,116	2,682	1,983	1,573	1,280	850	554
22	320	211	181	206	306	539	971	1,408	1,930	2,628	2,914	3,203	2,929	2,781	2,792	2,631	2,355	2,181	1,913	1,587	1,352	1,116	700	540
23	303	220	175	141	198	316	534	745	1,338	1,953	2,532	2,702	2,806	2,667	2,537	2,453	2,365	2,010	2,028	1,472	1,181	809	516	289
24	158	155	162	225	540	1,805	2,731	3,754	3,139	3,197	3,140	2,778	2,820	2,839	3,179	3,886	4,516	3,683	2,482	1,599	1,232	865	617	367
25	310	216	211	323	605	1,831	2,845	4,258	3,283	2,744	2,667	2,798	2,893	2,958	3,450	4,096	4,560	4,027	2,656	1,882	1,498	1,224	687	397
26	287	203	210	295	602	1,673	2,807	3,962	3,187	2,688	2,756	2,787	2,801	2,823	3,518	4,069	4,694	4,065	2,575	1,793	1,469	1,116	950	809
27	574	223	194	336	605	1,777	2,771	4,133	3,435	3,013	3,068	3,063	3,086	3,065	3,595	4,374	4,740	4,034	2,735	1,989	1,599	1,238	746	379
28	285	230	208	276	516	1,485	2,444	3,529	3,007	2,869	3,214	3,493	3,693	3,860	4,238	4,325	4,453	4,014	2,997	2,166	1,644	1,346	837	471
29	304	175	153	184	288	442	933	1,382	2,176	3,063	3,166	3,223	3,006	2,933	2,850	2,781	2,664	2,414	2,189	1,699	1,498	1,228	1,128	937
30	625	218	195	152	169	323	606	930	1,419	2,137	2,734	2,823	3,029	2,631	2,730	2,478	2,540	2,061	1,836	1,415	1,033	821	493	298
31	180	102	161	249	503	1,733	2,740	3,979	3,343	3,010	2,842	2,817	2,877	2,855	3,315	3,874	4,185	3,434	2,215	1,451	1,111	738	668	340

SB Adjusted Volumes

July	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	346	238	194	195	219	434	669	897	1,360	1,750	2,149	2,188	2,235	2,162	1,991	2,060	1,997	1,771	1,547	1,432	1,288	1,108	897	653
2	375	191	194	161	200	326	430	560	1,070	1,434	1,964	2,279	2,292	2,170	2,310	2,194	2,065	1,983	1,886	1,534	1,265	1,062	649	379
3	239	143	145	219	410	1,021	1,389	1,842	1,657	1,919	2,311	2,592	2,640	2,865	2,705	2,752	2,947	2,542	2,017	1,731	1,360	1,008	699	500
4	303	167	156	149	211	335	533	631	769	1,330	1,900	2,101	2,240	2,136	2,126	2,217	2,125	1,841	1,626	1,468	1,141	816	1,214	848
5	259	180	162	315	736	2,088	2,658	3,214	2,619	2,455	2,755	2,961	3,118	3,314	3,581	3,867	4,473	3,481	2,149	1,457	1,302	943	511	271
6	190	146	178	322	795	2,081	2,763	3,368	2,576	2,406	2,595	2,767	3,039	3,151	3,433	3,877	4,758	3,848	2,341	1,696	1,475	1,158	675	345
7	232	166	168	316	762	1,924	2,486	3,020	2,600	2,445	2,737	3,002	3,293	3,544	3,750	3,829	4,434	3,400	2,248	1,757	1,575	1,199	801	482
8	323	229	195	204	288	514	872	1,205	1,578	2,080	2,438	2,717	2,756	2,887	2,859	2,715	2,628	2,246	2,159	1,832	1,439	1,081	899	615
9	454	237	180	148	213	373	560	717	1,375	1,908	2,586	3,229	3,157	3,144	3,025	2,970	2,902	2,487	2,067	1,534	1,258	1,023	535	251
10	179	143	158	375	805	2,312	2,916	3,488	2,620	2,402	2,574	2,718	2,922	3,074	3,390	3,968	4,672	3,678	2,125	1,520	1,301	916	541	284
11	149	135	161	393	818	2,298	3,010	3,710	2,835	2,504	2,444	2,694	2,688	2,868	3,556	3,987	4,999	3,910	2,374	1,657	1,553	1,053	651	362
12	180	149	180	366	834	2,255	3,019	3,619	2,771	2,523	2,549	2,755	2,878	3,167	3,545	4,185	4,961	4,062	2,229	1,680	1,405	954	751	349
13	218	141	179	392	878	2,252	2,829	3,582	2,927	2,487	2,717	2,775	3,038	3,158	3,568	3,953	4,900	4,032	2,567	1,889	1,604	1,264	685	456
14	248	201	199	325	719	1,932	2,543	2,953	2,631	2,579	3,017	3,234	3,531	3,751	3,905	3,876	4,156	3,460	2,444	1,719	1,487	1,322	813	484
15	334	198	232	240	238	527	804	1,190	1,600	2,072	2,690	2,711	2,665	2,842	2,771	2,604	2,544	2,324	2,021	1,776	1,721	1,344	935	618
16	368	214	206	153	185	367	548	818	1,420	1,949	2,835	2,913	3,065	3,167	3,088	3,092	3,061	2,773	2,253	1,795	1,222	841	511	259
17	181	120	158	387	803	2,280	2,948	3,540	2,773	2,373	2,489	2,743	2,894	3,024	3,422	3,867	4,855	3,685	2,274	1,547	1,251	890	618	551
18	207	171	181	387	768	2,280	3,070	3,718	2,813	2,400	2,490	2,632	2,710	3,148	3,349	4,000	4,829	3,700	2,283	1,718	1,393	988	630	333
19	158	162	185	404	769	2,343	3,009	3,742	2,804	2,470	2,523	2,829	2,893	3,173	3,485	4,057	4,791	3,920	2,523	1,733	1,613	1,089	656	360
20	212	201	171	362	845	2,193	2,907	3,593	2,743	2,368	2,631	2,857	2,998	3,172	3,436	4,089	4,732	3,760	2,415	1,828	1,519	1,109	700	365
21	252	148	188	360	647	1,873	2,506	2,988	2,683	2,540	2,864	3,134	3,378	3,590	3,790	3,854	4,145	3,422	2,397	1,902	1,667	1,196	978	574
22	346	245	229	193	259	496	801	1,174	1,674	2,313	2,487	2,744	2,798	2,716	2,806	2,627	2,589	2,360	2,114	1,887	1,555	1,412	944	642
23	418	282	193	149	188	366	471	773	1,417	2,071	2,715	3,204	3,385	3,296	3,351	3,472	3,049	2,829	2,315	1,787	1,348	1,016	559	302
24	174	111	162	400	818	2,368	3,147	3,652	2,830	2,450	2,560	2,677	3,182	3,523	3,689	3,931	4,694	3,686	2,164	1,719	1,208	899	580	276
25	156	161	201	428	910	2,397	3,285	3,970	3,090	2,658	2,625	2,701	3,017	3,089	3,491	3,906	4,877	3,904	2,247	1,691	1,605	986	577	316
26	191	147	180	374	886	2,312	3,133	3,974	2,999	2,761	2,781	2,840	3,067	3,276	3,365	3,800	4,755	3,661	2,310	1,565	1,585	1,096	681	379
27	244	195	185	391	900	2,277	3,106	3,756	3,093	2,716	2,720	2,978	3,262	3,343	3,526	4,141	4,761	3,769	2,368	1,823	1,561	1,115	622	354
28	216	191	173	333	736	1,969	2,535	3,279	2,980	2,740	2,925	3,156	3,564	3,494	3,678	3,937	3,983	3,383	2,161	1,686	1,579	1,280	859	522
29	322	282	225	197	243	570	885	1,582	2,107	2,573	2,962	2,901	3,030	3,077	2,962	2,838	2,778	2,484	2,126	1,780	1,776	1,386	931	731
30	426	265	206	181	200	348	571	1,003	1,607	2,211	3,035	3,445	3,553	3,448	3,276	3,324	3,192	2,734	2,315	1,843	1,367	1,027	552	301
31	185	140	159	399	846	2,221	2,895	3,459	2,739	2,473	2,628	2,868	3,043	3,292	3,492	3,918	4,714	3,721	2,194	1,578	1,222	917	552	281

Transportation Management Plans

Transportation Management Plans

11-50-5.5

- A set of coordinated strategies that describes how they will be used to manage work zone impacts of a road project
- Living document that starts with the WZIA and is completed at the end of the project construction
- Required for all WisDOT projects

Wisconsin Traffic Operations and Safety Laboratory

The WisTransPortal System

The WisTransPortal system serves the computing and data management needs of the Wisconsin Traffic Operations and Safety (TOPS) Laboratory. The project scope includes support for ITS data archiving, real-time traffic information services, transportation operations applications, and transportation research. Learn more.

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Services

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Wisconsin TMP System - Transportation Management Plans

Wisconsin TMP System LIVE Site
Enter the Wisconsin TMP System **live** site.

WisTMP User Manual and Documentation
WisTMP User Manual and other training resources.

Wisconsin TMP System Training Site
Enter the Wisconsin TMP System **training** site.

New User Account Request Form
Online form to request a WisTMP login account.

WisTMP Contact Information
WisDOT regional contacts and technical support.

Transportation Management Plans

Section 1 – Project Info

- Basic project information
- Design and Construction ID required
- Location of project in both directions
- Created by PM

* TMP Type:	2
* Region:	SE
* Local Program:	No
Created Comment:	
* Federal Oversight:	No
* Design ID:	1229-03-01
Project Title:	NORTH-SOUTH FREEWAY
* County:	OZAUKEE
* Highway:	I-43
Construction Year:	2025
Mainline AADT:	47020
Crossroad AADT:	
Construction ID(s):	1229-03-71
Project Type:	RESURFACING (OVERLAY >= 4 INCHES)
Project Limits:	STH 60 TO STH 32
Project Length:	1.7 miles

Section 1B - Project Impacts

Anticipated Begin:	05/2024
Anticipated End:	09/2024
OSOW Route:	Yes
OSOW Type:	OSOW-TR

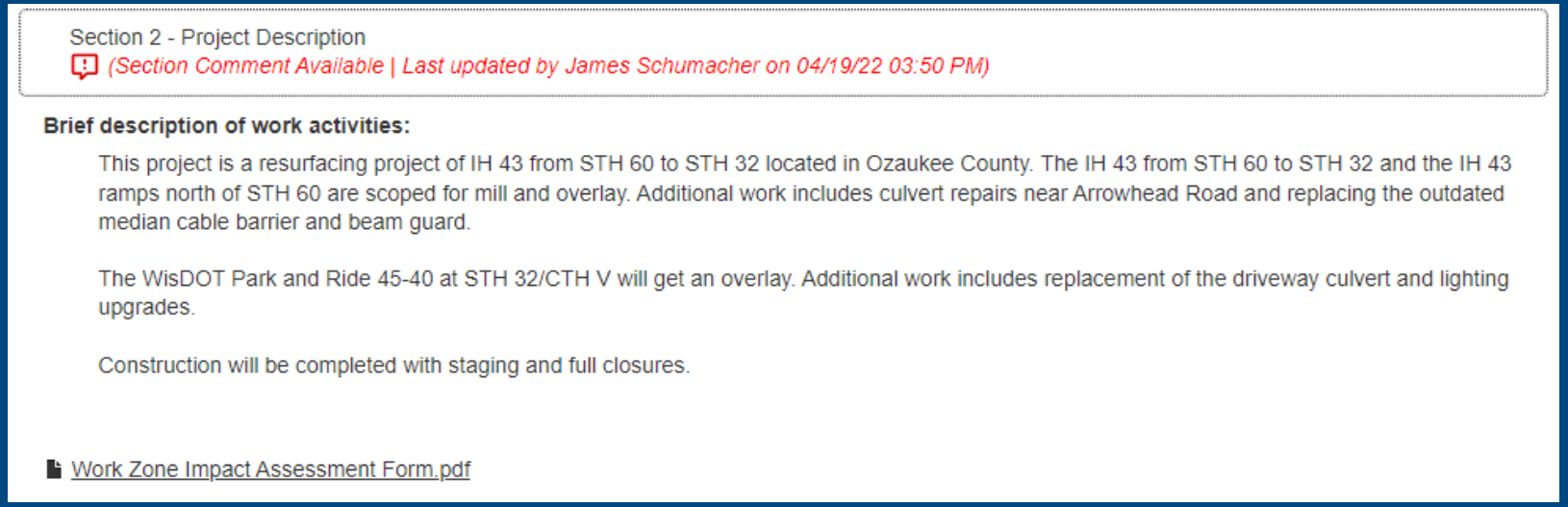
Section 1C - Location

Location Number:	1
Begin County:	OZAUKEE
End County:	OZAUKEE
Highway:	I-43 SB
Closure Type:	Mainline and Ramp
Begin Landmark:	ON RAMP FROM COUNTY V | I-43 SB/WIS 32 SB/WIS 57 SB | OZAUKEE
Direction From:	At Landmark
Distance From:	0.0 mile(s)
End Landmark:	WIS 60 (B-45-0015 BEGIN) | I-43 SB/WIS 32 SB/WIS 57 SB | OZAUKEE
Direction From:	At Landmark
Distance From:	0.0 mile(s)

Transportation Management Plans

Section 2 – Project Description

- What is this project attempting to accomplish?
- Brief explanation
- Attach WZIA at 60%



Section 2 - Project Description

(Section Comment Available | Last updated by James Schumacher on 04/19/22 03:50 PM)

Brief description of work activities:

This project is a resurfacing project of IH 43 from STH 60 to STH 32 located in Ozaukee County. The IH 43 from STH 60 to STH 32 and the IH 43 ramps north of STH 60 are scoped for mill and overlay. Additional work includes culvert repairs near Arrowhead Road and replacing the outdated median cable barrier and beam guard.

The WisDOT Park and Ride 45-40 at STH 32/CTH V will get an overlay. Additional work includes replacement of the driveway culvert and lighting upgrades.

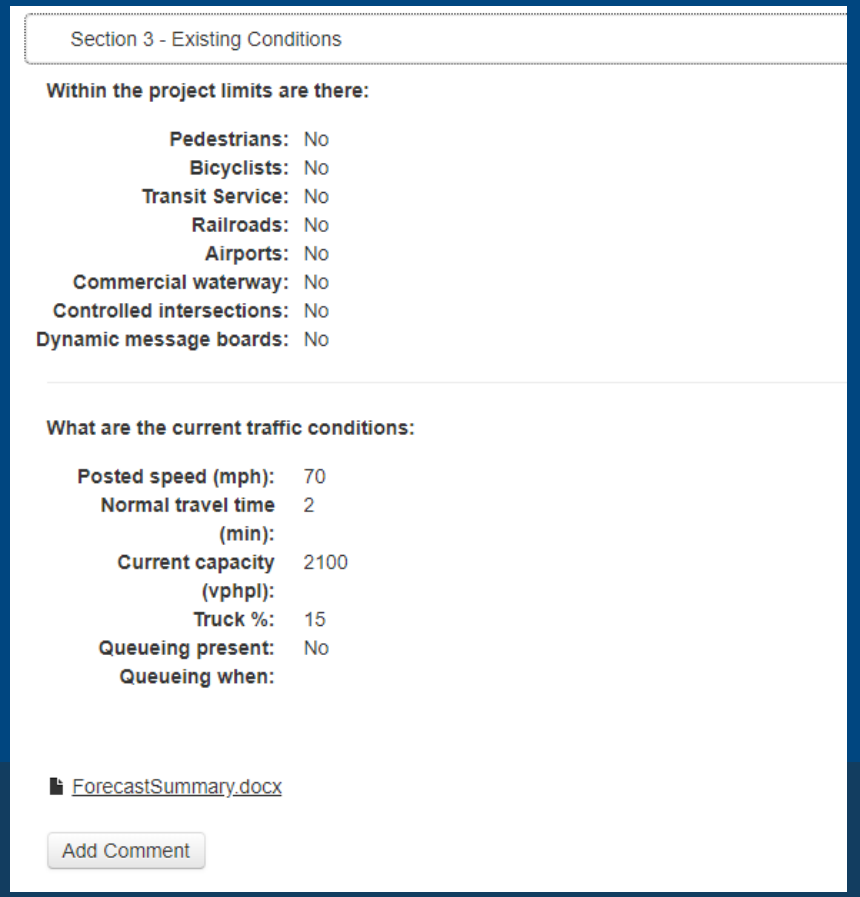
Construction will be completed with staging and full closures.

Work Zone Impact Assessment Form.pdf

Transportation Management Plans

Section 3 – Existing Conditions

- Queuing and delay
- Pedestrians
- Commercial waterway
- Railroads
- Selecting Yes, will open additional questions in Section 5


Section 3 - Existing Conditions

Within the project limits are there:

Pedestrians:	No
Bicyclists:	No
Transit Service:	No
Railroads:	No
Airports:	No
Commercial waterway:	No
Controlled intersections:	No
Dynamic message boards:	No

What are the current traffic conditions:

Posted speed (mph):	70
Normal travel time (min):	2
Current capacity (vphpl):	2100
Truck %:	15
Queueing present:	No
Queueing when:	

ForecastSummary.docx

Add Comment

Transportation Management Plans

Section 4 – Work Zone Strategies

- Lane closures/full closures/shifts
- Temporary widening
- Detours
- Day/Night
- Justification/Comments
- Cost of the temp. items

Section 4 - Work Zone Strategies

(Section Comment Available | Last updated by Andrew Heidtke on 06/28/23 10:33 AM)

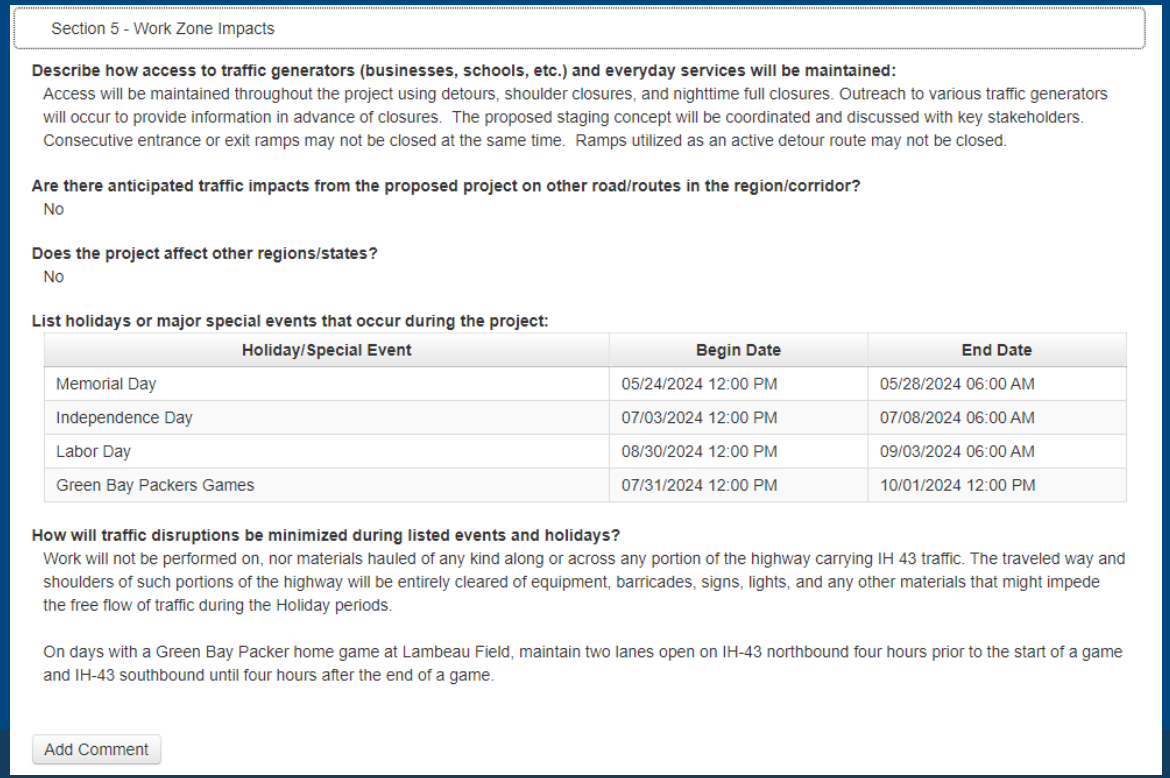
List of chosen strategies:

Strategy	Justification/Comment	Cost
Construction phasing/staging	Construction staging for mill & overlay of IH 43 from STH 60 to STH 32 and the STH 60 NB On Ramp and SB Off Ramp, mill & overlay of the Park and Ride at STH 32, cable barrier and beam guard replacement, culvert work at Arrowhead Rd, and lighting and driveway culvert replacement at the STH 32 Park and Ride.	$100000
Off-Peak/Night/Weekend Full Closure	The mill & overlay work is required to be done at night so that the full closure does not disrupt daytime traffic. The full closure is required due to the greater cost of shoulder improvement need to shift traffic onto the shoulders for single lane closures.	$73750
Lane closures	Potentially needed for cable barrier and median work along IH 43 from STH 60 to STH 32.	$44600
Shoulder Closure	The closure of the NB outside shoulder will be needed to perform culvert rehabiliation work at Arrowhead Road. Inside shoulder closures may also be utilized during median barrier work.	$20600
Ramp Closures	The closure of the STH 60 NB On and SB Off Ramps are required for mill & overlay as it is too narrow to be staged and alternate routes are sufficient to maintain access.	$35000

Transportation Management Plans

Section 5 – Work Zone Impacts

- Special Events
- Holidays
- Impacts from Section 3
- Consider nearby projects



Section 5 - Work Zone Impacts

Describe how access to traffic generators (businesses, schools, etc.) and everyday services will be maintained:

Access will be maintained throughout the project using detours, shoulder closures, and nighttime full closures. Outreach to various traffic generators will occur to provide information in advance of closures. The proposed staging concept will be coordinated and discussed with key stakeholders. Consecutive entrance or exit ramps may not be closed at the same time. Ramps utilized as an active detour route may not be closed.

Are there anticipated traffic impacts from the proposed project on other road/routes in the region/corridor?

No

Does the project affect other regions/states?

No

List holidays or major special events that occur during the project:

Holiday/Special Event	Begin Date	End Date
Memorial Day	05/24/2024 12:00 PM	05/28/2024 06:00 AM
Independence Day	07/03/2024 12:00 PM	07/08/2024 06:00 AM
Labor Day	08/30/2024 12:00 PM	09/03/2024 06:00 AM
Green Bay Packers Games	07/31/2024 12:00 PM	10/01/2024 12:00 PM

How will traffic disruptions be minimized during listed events and holidays?

Work will not be performed on, nor materials hauled of any kind along or across any portion of the highway carrying IH 43 traffic. The traveled way and shoulders of such portions of the highway will be entirely cleared of equipment, barricades, signs, lights, and any other materials that might impede the free flow of traffic during the Holiday periods.

On days with a Green Bay Packer home game at Lambeau Field, maintain two lanes open on IH-43 northbound four hours prior to the start of a game and IH-43 southbound until four hours after the end of a game.

Add Comment

Transportation Management Plans

Section 6 – Traffic Analysis

- Work with Region Traffic Section
- Software use depends on roadway
  - Freeway/expressways – WZTAT
  - Everything else – Synchro, HCS, etc
- Work Zone Capacity, Delay, Queuing

Section 6+ - Traffic Analysis

What is the anticipated travel delay during the project for each impacted roadway?

#	Location Description	WZ Capacity (vphpl)	Delay (min)	Queue (mi)
1	I-43 SB from ON RAMP FROM COUNTY V to WIS 60 (B-45-0015 BEGIN)	0	3	0.1
2	I-43 NB from WIS 60 (B-45-0015 BEGIN) to OFF RAMP TO WIS 32	0	3	0.1

How was the work zone capacity determined?

The IH-43 work zone will be closed to through traffic during the nighttime work and will utilize a detour route. Therefore, a work zone capacity was not calculated for this project.

Transportation Management Plans

Section 6+ – Lane Closure Hours

- Describe the lane closure hours that will be used for the project
- An attachment may be used to show the typical lane closure hours

Section 6+ - Lane Closure Hours

a) Are there restrictions on when lane closures are allowed?

Yes

b) What hours/days are lane closures permitted?

Full closures will be required to perform the base patching and mainline mill and overlay. Additionally, single-lane closures may be used for shoulder rehabilitation and median work (cable/beam guard). Based upon existing traffic volumes, the allowable closure times are as follows: *Weekday Peak Hours Northbound - 2:00 PM - 7:00 PM Monday, Tuesday, Wednesday, Thursday - 12:00 PM - 10:00 PM Friday Southbound - 6:00 AM - 9:00 AM Monday, Tuesday, Wednesday, Thursday, Friday - 3:00 PM - 7:00 PM Monday, Tuesday, Wednesday, Thursday, Friday *Weekend Peak Hours Northbound - No Restrictions Saturday, Sunday Southbound - No Restrictions Saturday - 10:00 AM - 7:00 PM Sunday *Full Freeway and System Ramp Closure Hours - 9:00 PM - 5:00 AM (Sunday PM to Monday AM, Monday PM to Tuesday AM, Tuesday PM to Wednesday AM, Wednesday PM to Thursday AM, Thursday PM to Friday AM) - 9:00 PM - 6:00 AM (Friday PM to Saturday AM, Saturday PM to Sunday AM) *Service Ramps Closure Hours - 6:30 PM - 6:30 AM (Sunday PM to Monday AM, Monday PM to Tuesday AM, Tuesday PM to Wednesday AM, Wednesday PM to Thursday AM, Thursday PM to Friday AM) - 8:30 PM - 6:30 AM (Friday PM to Saturday AM) - No Restrictions (Saturday PM to Sunday AM) Do not close freeway lanes or shoulders (including auxiliary lanes, system ramps and service ramps) and ensure the roadway is entirely clear for traffic during Weekday Peak Hours and Weekend Peak Hours. One freeway lane and/or shoulder may be closed on the freeway and system ramps, during Weekday Off-Peak hours and Weekend Off-Peak Hours but it must be approved by the engineer.

c) If the project is reporting zero delay, show the delay incurred if the lane closures hours identified are not followed:

Minimal delay will be incurred during the nighttime hours due to the full mainline and ramp closures. If work is extended beyond the restricted work times into the weekday AM Peak Period, congestion and local inconvenience will occur along the detour route. A summary of Road User Costs (NB/SB) is shown attached for a scenario where the full closure extends from 5-8am.

Transportation Management Plans

Section 6+ – Detours

- List any detour routes that will be used for mainline or ramp traffic
- Determine the length of the detour and the amount of time it will take to drive
- Attach detour route plans

Section 6+ - Detour Route

Detour Information

Detour Route	Normal Travel Time (min)	Detour Travel Time (min)	Detour Distance (mi)
IH 43 NB: STH 60 to CTH W to STH 32	2	5	2.9
IH 43 SB: STH 32 to CTH W to STH 60	2	5	2.6

Transportation Management Plans

Section 6+ – Intersection/Signals

- When intersections are impacted or temporary signals used document if there are any changes for timing.

Section 6+ - Intersection/Temporary Signal

Are any intersection traffic control changes proposed?

Changes to existing traffic signal timings will be required during construction to account for the loss of through lane capacity along STH 36/STH 83 and when loop detectors are being replaced. Green time splits should be adjusted to provide acceptable operations for all traffic movements. A summary of the construction peak hour delay at the 4 traffic signal intersections with adjusted signal timings is provided in the attachments.

Transportation Management Plans

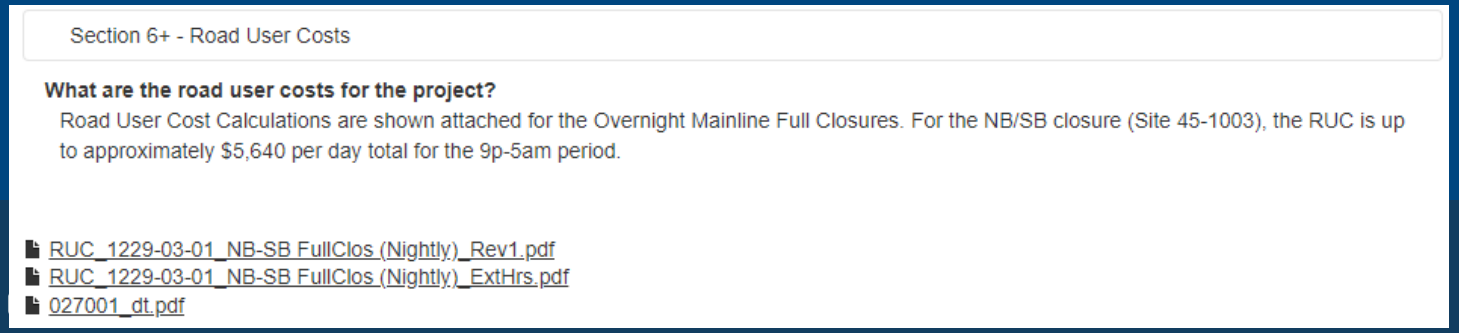
Section 6+ – Road User Costs

- Required at 60% for
  - Lane Rentals – Hourly cost for occupying a lane
  - Interim Liquidated Damages – Daily cost for a closure, in the middle of a project
  - Enhanced Liquidated Damages – Daily cost for a closure at the end of a project above the standard rates listed in Spec. 108

Transportation Management Plans

Section 6+ – Road User Costs

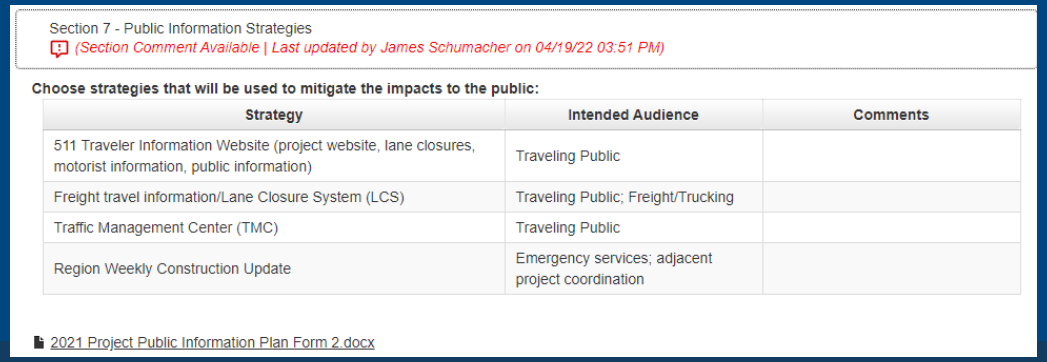
- Show the difference between normal conditions and delay conditions to justify cost recovery
- New Jersey Spreadsheet for ramps, detours, flagging
- WZTAT for freeways and expressways
- List daily road user cost in text box



Transportation Management Plans

Section 7 – Public Information Strategies

- Public information and outreach plan
  - Webform/Attachment
- How and what are we telling the public while the work is occurring
  - 511, project websites, mailers
  - Not for information on design of the project



Section 7 - Public Information Strategies

(Section Comment Available | Last updated by James Schumacher on 04/19/22 03:51 PM)

Choose strategies that will be used to mitigate the impacts to the public:

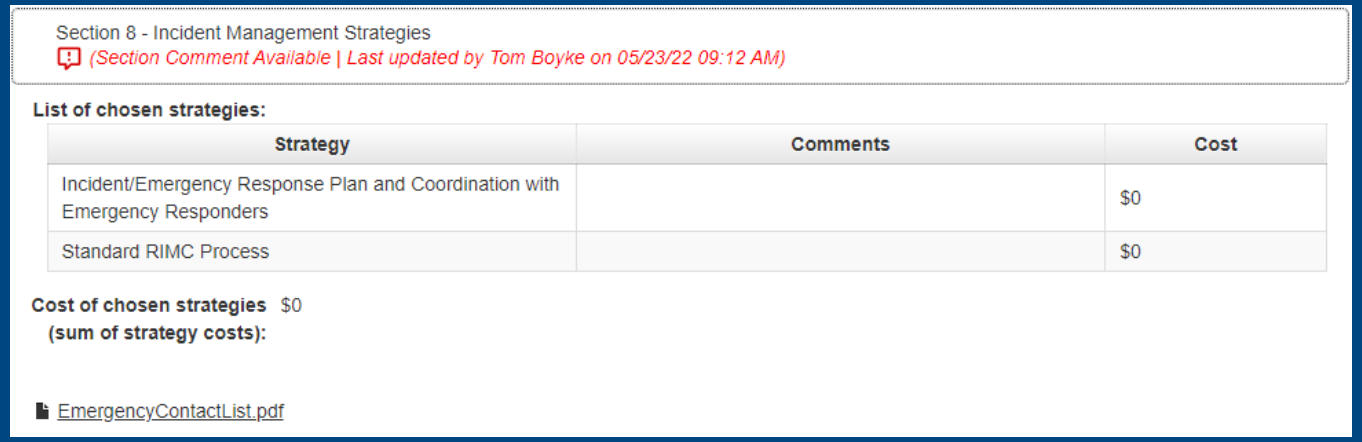
Strategy	Intended Audience	Comments
511 Traveler Information Website (project website, lane closures, motorist information, public information)	Traveling Public	
Freight travel information/Lane Closure System (LCS)	Traveling Public; Freight/Trucking	
Traffic Management Center (TMC)	Traveling Public	
Region Weekly Construction Update	Emergency services; adjacent project coordination	

2021 Project Public Information Plan Form 2.docx

Transportation Management Plans

Section 8- Incident Management Strategies

- Law enforcement mitigation
  - Discussion with Region Traffic
- Emergency construction access
- Notifying local first responders
  - Let them know about timing of closures



Section 8 - Incident Management Strategies

(Section Comment Available | Last updated by Tom Boyke on 05/23/22 09:12 AM)

List of chosen strategies:

Strategy	Comments	Cost
Incident/Emergency Response Plan and Coordination with Emergency Responders		$0
Standard RIMC Process		$0

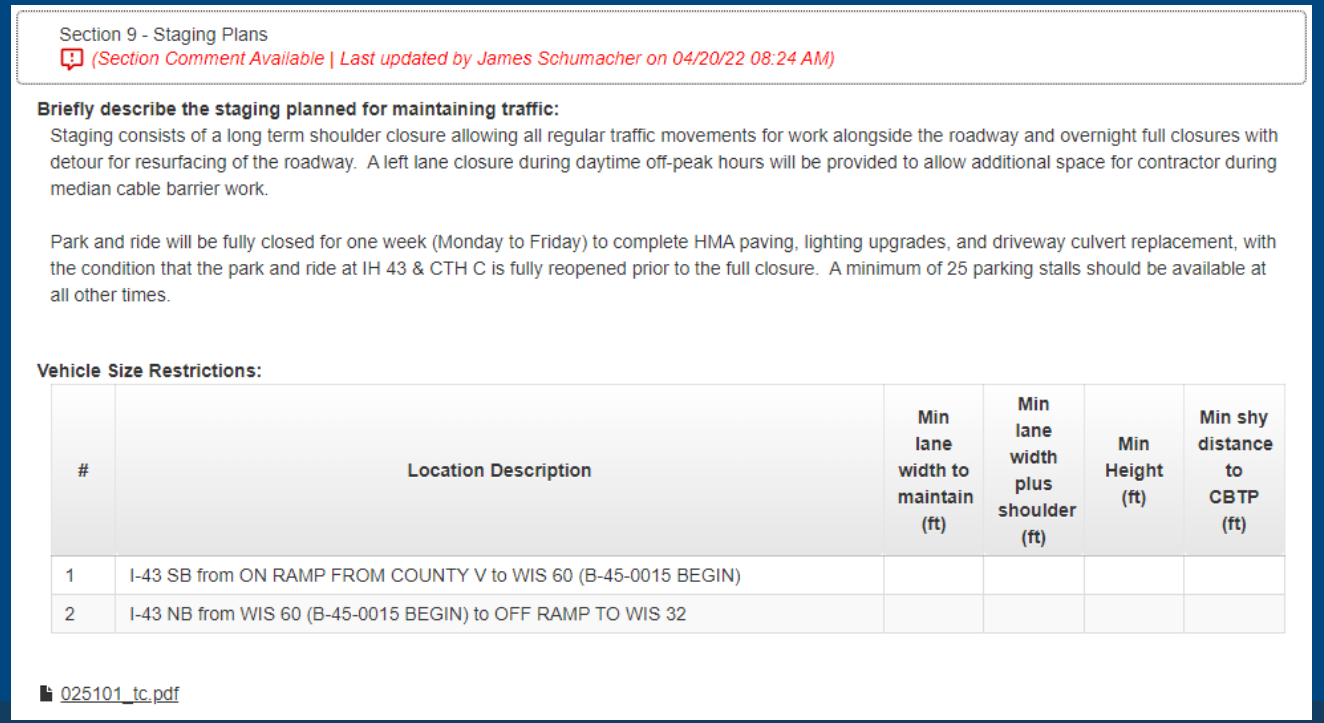
Cost of chosen strategies (sum of strategy costs): $0

EmergencyContactList.pdf

Transportation Management Plans

Section 9- Staging

- How is the project built?
- What is the plan for traffic?
- How are pedestrians able to move?
- Show us the most up to date staging plans



Section 9 - Staging Plans

(Section Comment Available | Last updated by James Schumacher on 04/20/22 08:24 AM)

Briefly describe the staging planned for maintaining traffic:

Staging consists of a long term shoulder closure allowing all regular traffic movements for work alongside the roadway and overnight full closures with detour for resurfacing of the roadway. A left lane closure during daytime off-peak hours will be provided to allow additional space for contractor during median cable barrier work.

Park and ride will be fully closed for one week (Monday to Friday) to complete HMA paving, lighting upgrades, and driveway culvert replacement, with the condition that the park and ride at IH 43 & CTH C is fully reopened prior to the full closure. A minimum of 25 parking stalls should be available at all other times.

Vehicle Size Restrictions:

#	Location Description	Min lane width to maintain (ft)	Min lane width plus shoulder (ft)	Min Height (ft)	Min shy distance to CBTP (ft)
1	I-43 SB from ON RAMP FROM COUNTY V to WIS 60 (B-45-0015 BEGIN)				
2	I-43 NB from WIS 60 (B-45-0015 BEGIN) to OFF RAMP TO WIS 32				

025101_tc.pdf

Transportation Management Plans

Section 10 – Nonstandard Mitigation

- This section is required when a Nonstandard Mitigation strategy is selected in Section 4 or 8
- See process 11-50-5
- Requires Request for Non-Standard Mitigation Strategies Approval form

Resources

- Standard Spec.
  - https://wisconsindot.gov/Pages/doing-bus/eng-consultants/cnslt-rsrces/rdwy/stndspec.aspx
- Construction Materials Manual
  - https://wisconsindot.gov/Pages/doing-bus/eng-consultants/cnslt-rsrces/rdwy/cmm.aspx
- Standard Detail Drawings
  - https://wisconsindot.gov/Pages/doing-bus/eng-consultants/cnslt-rsrces/rdwy/sdd.aspx
- Wisconsin MUTCD
  - https://wisconsindot.gov/Pages/doing-bus/local-gov/traffic-ops/manuals-and-standards/wmutcd/wmutcd.aspx
- 2020 Wisconsin Flagging Handbook
  - https://wisconsindot.gov/dtsdManuals/traffic-ops/manuals-and-standards/flagger.pdf
- Sign Code Manual
  - https://wisconsindot.gov/dtsdManuals/traffic-ops/manuals-and-standards/signcode/signcode.pdf
- Sign Plate Manual
  - https://wisconsindot.gov/Pages/doing-bus/local-gov/traffic-ops/manuals-and-standards/signplate/signplate.aspx

Questions?

Nighttime Lighting Survey

Smart Work Zone Deployment Initiative

Thank you