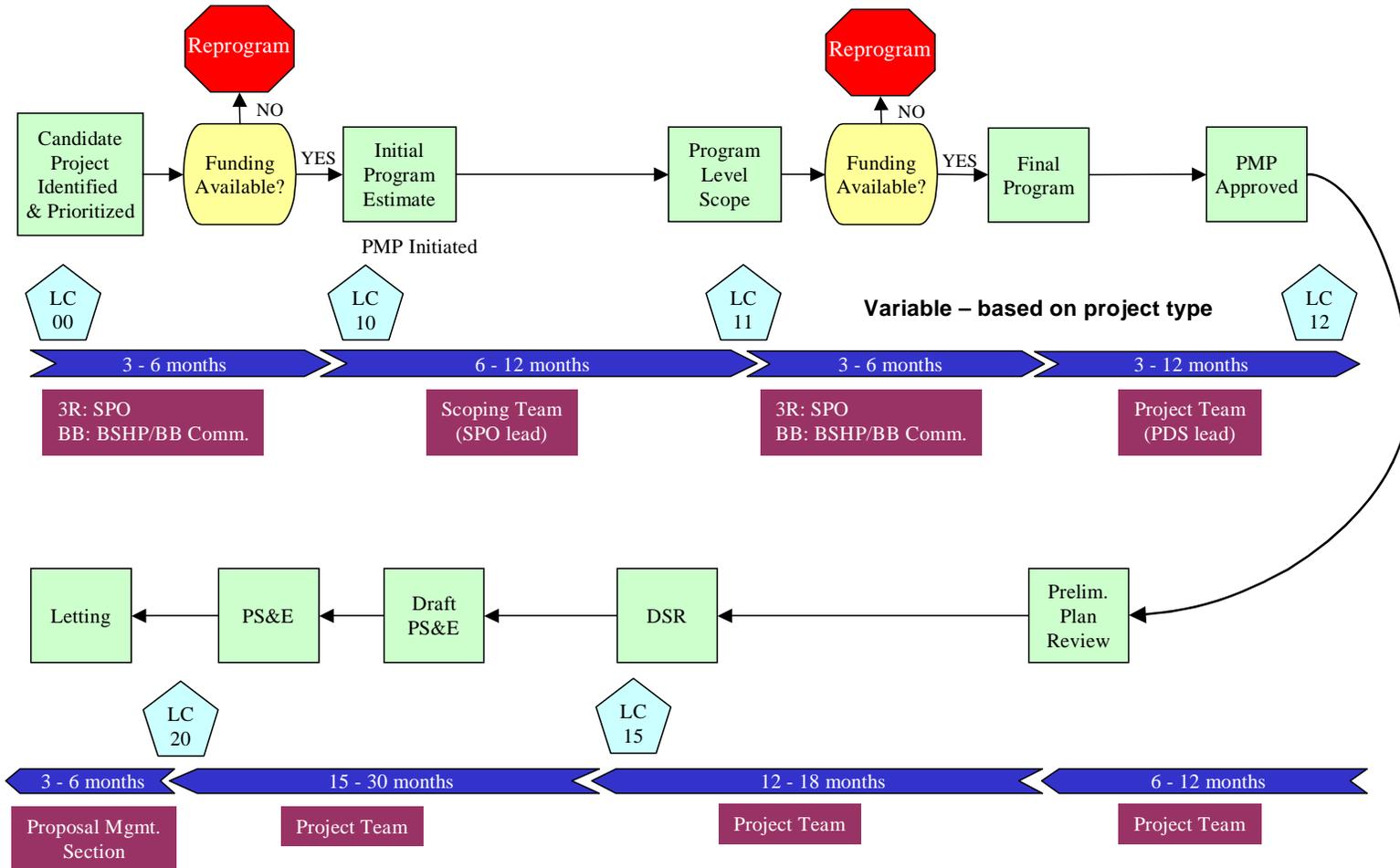
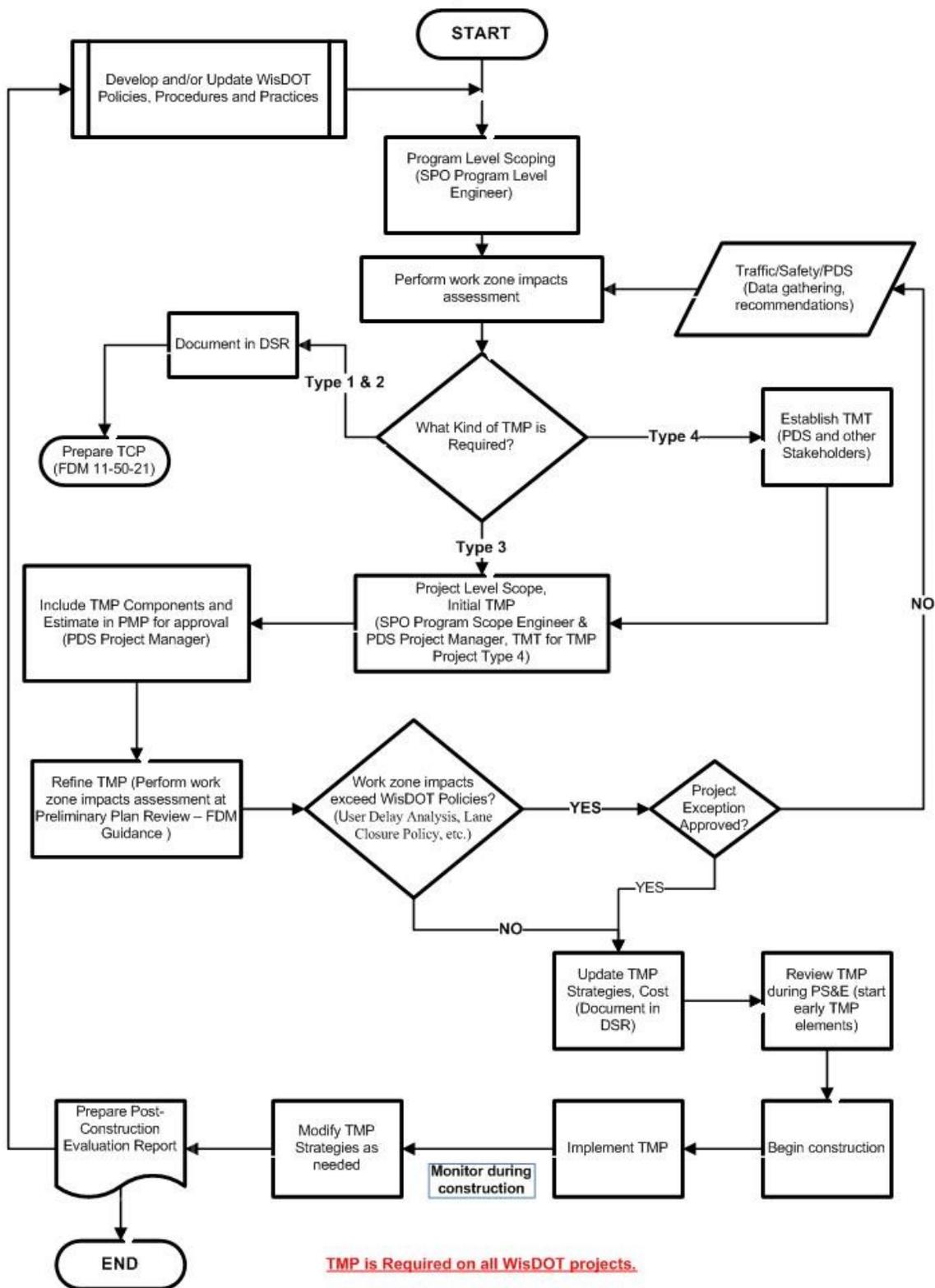


Project Development Process Overview



Project Initiation Process - Needs Identification to PMP Approved

Transportation Management Plan Process



TYPE 1	TYPE 2	TYPE 3	TYPE 4
<ul style="list-style-type: none"> ▪ Project expected to cause minimal or no traffic delays, e.g.: ▪ Work is outside traffic lanes, ▪ Work is on roadway with less than 1,500 AADT, ▪ Work is performed at off-peak hours, ▪ Work may be long duration if impacts are minimal as described above (e.g. local bridge closure) ▪ Work may involve mobile operations or short duration lane closure for less than one hour, ▪ No width or weight restrictions, ▪ No closure to side road or ramps, ▪ No hazards requiring shielding or positive protection, ▪ Accommodation for other users is not required, e.g. pedestrians, bicycles, motor cycle, ATV, snowmobiles, etc., ▪ Two way traffic is maintained at all times, except may involve flagging during off-peak hours or on roads with less than 1,500 AADT. 	<ul style="list-style-type: none"> ▪ Minimal delays: <ul style="list-style-type: none"> ▪ Expected to cause minimal delays (<15 min), ▪ Lane closure limited to times on the statewide lane closure policy, ▪ May involve delays exceeding criteria but for less than five days during project. ▪ Work may be long duration if impacts are minimal as described above, ▪ Work requiring single or multi-lane closures, ▪ Work may require single lane alternating traffic or temporary road closure, ▪ May require detour, ▪ May require side road, ramp, or conventional mainline closure on road, ▪ Project duration generally less than one single construction season, ▪ Access & detours: <ul style="list-style-type: none"> ▪ No improvements required on detours or alternate routes, ▪ No unusual access problems for commercial businesses or other high traffic generators, ▪ May impose width or weight restrictions, ▪ May require positive protection or shielding of hazards. 	<ul style="list-style-type: none"> ▪ Lanes closed and delays expected to exceed criteria for more than 5 days during work, ▪ May require detours, single or multi-lane closures, single-lane alternating traffic scheme, ▪ May require staged construction, even if through traffic is detoured, ▪ Detour or alternate route may require improvements (signing, pavement surface/width etc.), ▪ May require night work, ▪ Expedited project schedule may be required to meet community needs, ▪ Multiple closures required to high-volume side roads or ramps, ▪ Pedestrian, bicycle disruptions may require temporary walkways or paths, ▪ May impose width or weight restrictions, ▪ May require positive protection and/or shielding of hazards. 	<p>Has many characteristics of TYPE 3 but also the following:</p> <ul style="list-style-type: none"> ▪ Construction schedule is long-term requiring several months or years, ▪ Require staged construction, ▪ Work zone may affect one or more interchanges, ▪ Has significant impacts on regional and inter-regional traffic flow, ▪ Require multiple traffic management strategies, ▪ May involve multiple contracts, ▪ Might include extended lane or full closures.

Project Examples			
<ul style="list-style-type: none"> ▪ Two-lane conversion to four-lane where no side roads are closed, ▪ Local bridge projects that do not require posted detour. <p>The examples listed below assume the work is on roadway with less than 1,500 AADT or lane closures are limited to off-peak hours so delays are minimal.</p> <ul style="list-style-type: none"> ▪ Pavement marking, ▪ Signing, sign repairs, replacements. ▪ Maintenance operations, e.g. mowing, patching, ▪ Survey work, ▪ Utility work e.g. placement, maintenance. ▪ Bridge work e.g. inspection, painting. 	<ul style="list-style-type: none"> ▪ Resurfacing projects, ▪ Pavement repairs, ▪ Bridge deck overlays, ▪ Bridge replacement (conventional highway requiring detour), ▪ Bridge painting on freeways, ▪ Reconstructions with minimal delays, ▪ Intersection improvement. <p>The examples listed above assume delays meet the specified condition for this TMP Type.</p> <p><u>Develop TOP if lane or road closures on freeways, expressways, other Corridors 2020 routes, or urban arterials cause delays that exceed the criteria of FDM 11-50-30.</u></p>	<ul style="list-style-type: none"> ▪ Resurfacing, ▪ Reconstruction, ▪ Pavement replacement/reconditioning ▪ **Urban Reconstructions, ▪ **Intersection reconstruction, ▪ Bridge Replacement, or rehabilitation, ▪ Bridge deck replacement, ▪ Freeway lane or ramp closure/improvements, ▪ <u><i>Freeway and expressway resurfacing, where delays may exceed criteria on more than five days during project.</i></u> <p>** With unusual access needs or high traffic delays.</p>	<p>May include some of the TYPE 3 but also;</p> <ul style="list-style-type: none"> ▪ Freeway /Expressway reconstruction, ▪ Projects with traffic impacts beyond project corridor, e.g.: <ul style="list-style-type: none"> ▪ Marquette Interchange ▪ USH 41 corridor ▪ I-94 N/S corridor ▪ I-39/29 Wausau corridor

TYPE 1	TYPE 2	TYPE 3	TYPE 4
<p>TRAFFIC CONTROL PLAN</p> <ul style="list-style-type: none"> ▪ Temporary Traffic Control (may be SDD) or references Work Zone Safety; <i>Guidelines for construction, maintenance, & utility operations</i>, ▪ May require project specific traffic control plan. <p>PUBLIC INFORMATION</p> <ul style="list-style-type: none"> ▪ Media release (optional but recommended if any delay is expected). 	<p>TRAFFIC CONTROL PLAN</p> <p>In addition to Standard Detail Drawings, the following strategies may be used.</p> <ul style="list-style-type: none"> ▪ Project specific traffic control plan, ▪ Off peak, night or weekend work, ▪ Reduced speed zones, ▪ Variable lanes (narrow lane width or use of shoulder during peak periods), ▪ Project staging, ▪ Traffic control improvements (e.g. supplemental/enhanced TTC devices,) ▪ Truck traffic/permit restrictions, ▪ Crossover, ▪ Bicycle and pedestrian information, e.g., detour routes, barricade signs. <p>PUBLIC INFORMATION & OUTREACH</p> <ul style="list-style-type: none"> ▪ Media releases, ▪ Notification to targeted groups, e.g. bicycle organizations, schools, organizations representing people with disabilities, motor cycles, snowmobiles, ATV, businesses, chamber of commerce. <p>TRANSPORTATION OPERATIONS</p> <ul style="list-style-type: none"> ▪ Fixed message signs, ▪ Changeable message signs , ▪ Radar speed message sign, ▪ Coordination of adjacent or parallel construction projects. <p>INCIDENT MANAGEMENT</p> <ul style="list-style-type: none"> ▪ Enhanced enforcement - State patrol & local law enforcement during construction, (freeways & expressways) ▪ Emergency pullouts, ▪ State Traffic Operations Center (STOC) on freeways and expressways. 	<p>TRAFFIC CONTROL PLAN</p> <p>In addition to Standard Detail Drawings, the following strategies may be used.</p> <ul style="list-style-type: none"> ▪ Project specific traffic control plan, ▪ Construction staging, ▪ Off peak, night or weekend work, ▪ Detours, ▪ Alternate route, ▪ Variable lanes (narrow lane width, e.g. 11' lanes for use during peak periods), Not on freeways, ▪ Traffic control improvements (e.g. supplemental/enhanced TTC devices,) ▪ Truck traffic/permit restrictions, ▪ Incentive/Disincentive contract clauses, ▪ Crossover, ▪ Reduced speed zones, ▪ Extended weekend closures/Full Closure, ▪ Temporary lanes or shoulder use, ▪ Lane rental, ▪ Temporary traffic screens, ▪ Movable barrier, ▪ Bicycle and pedestrian information, e.g., detour routes, temporary paths/walkways, etc., ▪ Traffic Control Specialist/surveillance items. <p>PUBLIC INFORMATION & OUTREACH</p> <ul style="list-style-type: none"> ▪ Brochures, flyers, and newsletters, ▪ Media releases, ▪ News paper articles, ▪ Public meetings/hearings, (videos, slide shows, etc.) ▪ Coordination with targeted groups: bicycle organizations, schools, organizations representing people with disabilities, motor cycles, snowmobiles, ATV, businesses, chamber of commerce, 	<p>TRAFFIC CONTROL PLAN</p> <p>In addition to Standard Detail Drawings, and traffic control plan sheets, projects in this category may include the following strategies:</p> <ul style="list-style-type: none"> ▪ Off peak, night or weekend work, ▪ Construction staging, ▪ Full roadway closures, (reduce total construction time) ▪ Lane shifts, ▪ Lane closures, ▪ Detours/alternate route, ▪ Incentive/Disincentive contract clauses, A+B Bidding, Lane rental, Variable lanes width, (11' min.) ▪ Crossover, ▪ Reduced speed zones, ▪ Truck traffic/permit restrictions, ▪ Temporary traffic screens, ▪ Reversible lanes, Movable barrier, ▪ Ramp closures, ▪ Innovative construction materials or methods, ▪ Traffic control improvements, Street improvements, ▪ Temporary bicycle or pedestrian facilities, ▪ Traffic Control Specialist/surveillance items. <p>PUBLIC INFORMATION & OUTREACH</p> <ul style="list-style-type: none"> ▪ Brochures, flyers, and newsletters, ▪ Media releases, ▪ Public meetings/hearings, (videos, slide shows, etc.) ▪ News paper articles, ▪ Coordination with targeted groups: bicycle organizations, schools, organizations representing people with disabilities, motor cycles, snowmobiles, ATV, businesses, chamber of commerce, ▪ Highway Advisory Radio (fixed or

		<ul style="list-style-type: none"> ▪ Paid advertising. <p>TRANSPORTATION OPERATIONS</p> <ul style="list-style-type: none"> ▪ Fixed message signs, ▪ Changeable message signs , ▪ Ramp metering, ▪ Radar speed message sign, ▪ Work zone ITS, ▪ Coordination with adjacent construction projects. <p>INCIDENT MANAGEMENT</p> <ul style="list-style-type: none"> ▪ Enhanced enforcement - State patrol & local, ▪ Crash investigation site, ▪ Emergency Pullouts, ▪ State Traffic Operations Center (STOC), if freeway or expressway ▪ Traffic incident management team, ▪ Pre-plan for incidents, ▪ Traffic surveillance stations (traffic detectors). 	<p>mobile)</p> <ul style="list-style-type: none"> ▪ Paid advertising, ▪ Telephone hotline, ▪ Public information center, ▪ Internet website with up to date work zone information. <p>TRANSPORTATION OPERATIONS</p> <ul style="list-style-type: none"> ▪ Fixed message signs, ▪ Changeable message signs , ▪ Ramp metering, ▪ Work zone ITS, ▪ Commercial traffic radio, ▪ Variable work hours, Park and ride lots, parking restrictions ▪ Rideshare incentives, Rideshare marketing, ▪ Transit incentives, Transit service improvements, ▪ Train or light-rail incentives, Shuttle service incentives. ▪ Coordination with adjacent or parallel construction projects. <p>INCIDENT MANAGEMENT</p> <ul style="list-style-type: none"> ▪ Enhanced enforcement - State patrol & local, ▪ Crash investigation site, Emergency Pullouts, ▪ State Traffic Operations Center (STOC), ▪ Traffic incident management team, ▪ Pre-plan for incidents, ▪ Traffic surveillance stations (traffic detectors), ▪ Freeway service patrol.
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Project Description	Use
• Project Type	<input type="checkbox"/>
• Project location	<input type="checkbox"/>
• General schedule and timeline	<input type="checkbox"/>
• Project goals and constraints (<i>benefits and challenges that may be expected</i>)	<input type="checkbox"/>
• Proposed construction phasing/staging	<input type="checkbox"/>
• Lane closure	<input type="checkbox"/>
• Related project(s) (<i>Other ongoing/planned projects adjacent on same highway, parallel routes or alternate routes that may cause cumulative effects</i>)	<input type="checkbox"/>
Existing and Future Conditions	
• Data collected and analysis/modeling approach	<input type="checkbox"/>
• Existing roadway characteristics (<i>history, roadway classification, number of lanes, unusual geometric features, urban/suburban/rural</i>)	<input type="checkbox"/>
• Existing and historical data (volumes, speed, capacity, volume to capacity ratio, percent truck, queue length, peak traffic hours)	<input type="checkbox"/>
• Existing traffic operations (<i>signal timing, traffic controls</i>)	<input type="checkbox"/>
• Incident and crash data (<i>Use most current crash data for the last three years</i>)	<input type="checkbox"/>
• Local community and business concerns/issues (<i>inputs from community and businesses</i>)	<input type="checkbox"/>
Work Zone Impacts Assessment	
• Summary of anticipated work zone impacts	<input type="checkbox"/>
• Impacts assessment of alternative project design and management strategies (<i>in conjunction with each other</i>)	<input type="checkbox"/>
▪ Construction approach/phasing/staging	<input type="checkbox"/>
▪ Work zone impacts management strategies	<input type="checkbox"/>
▪ Does the project affect other projects in other regions?	<input type="checkbox"/>
▪ What is the anticipated magnitude of traffic impacts of the proposed project on other roads/routes or corridor?	<input type="checkbox"/>
• Traffic Analysis results (<i>if applicable - use to compare existing and future traffic</i>)	
a) Traffic analysis strategies (<i>How were expected construction traffic conditions determine? Document any traffic reduction factors or other assumptions used in the calculations</i>)	<input type="checkbox"/>
b) Traffic growth rates (<i>used for analysis, include source and assumptions</i>)	<input type="checkbox"/>
c) Traffic prediction during construction (volume, delay, queue)	<input type="checkbox"/>
d) Measures of effectiveness (<i>used for the analysis, E.g. capacity, volume, queue, speed, travel time, diversions, safety, noise, environmental, adequacy of detour routes, etc.</i>)	<input type="checkbox"/>
e) Analysis tool selection methodology and justification	<input type="checkbox"/>
f) Analysis results	<input type="checkbox"/>
a) Traffic (Volume, capacity, delays, queue, noise?)	<input type="checkbox"/>
b) Safety	<input type="checkbox"/>
c) Adequacy of detour or alternate routes	<input type="checkbox"/>
d) Business/community impacts	<input type="checkbox"/>
e) Seasonal impacts	<input type="checkbox"/>
f) Pedestrian and bicyclist impacts	<input type="checkbox"/>
g) Emergency service provider impacts	<input type="checkbox"/>
h) Transit impacts	<input type="checkbox"/>
i) Cost effectiveness/evaluation of alternatives	<input type="checkbox"/>

<ul style="list-style-type: none"> • Selected alternative <ul style="list-style-type: none"> ▪ Construction approach/phasing/staging strategies ▪ Work zone impacts management strategies 	<input type="checkbox"/> <input type="checkbox"/>
Selected Work Zone Impact Management Strategies	
<ul style="list-style-type: none"> • Traffic Control Strategies <ul style="list-style-type: none"> ▪ Traffic control devices ▪ Positive protection devices (e.g. barrier) ▪ Law enforcement ▪ Flagging ▪ Temporary widening of lane/shoulder to maintain traffic lanes ▪ Off-peak lane closure/night work ▪ Ramp Closure ▪ Project coordination, contracting and ▪ Innovative construction strategies (A +B bidding, Lane rental) 	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
<ul style="list-style-type: none"> • Public Information & Outreach Strategies <ul style="list-style-type: none"> ▪ Public meetings/speaker forums ▪ Radio & TV ▪ Internet ▪ Paid ads ▪ Brochures & Mailers ▪ Telephone hotline (511) ▪ State TOC ▪ Portable changeable message signs ▪ Dynamic message signs ▪ Work zone traveler warning & information systems ▪ Highway advisory radio ▪ Availability of detour routes ▪ Availability of alternate routes ▪ Planned lane closure website ▪ Bicycle & pedestrian information 	<input type="checkbox"/> <input type="checkbox"/>
<ul style="list-style-type: none"> • Transportation Operations Strategies <ul style="list-style-type: none"> ▪ Park & Ride ▪ Ridesharing ▪ Variable work hours ▪ Incentives (transit, ridesharing) ▪ Retiming of signal on detours/alternate routes ▪ Temporary traffic signals ▪ Turn/parking restrictions ▪ Heavy vehicle restrictions ▪ Use of dynamic lane closures ▪ Ramp metering ▪ Speed limit reduction (requires temporary speed zone declaration approved by Region Traffic Engineer and State Traffic Engineer if reducing from 65mph) ▪ Law enforcement mitigation contract ▪ Movable barriers ▪ Crash cushions ▪ Temporary rumble strips ▪ Work zone ITS 	<input type="checkbox"/> <input type="checkbox"/>

	▪ Project onsite safety training	<input type="checkbox"/>
	▪ Construction safety inspector	<input type="checkbox"/>
•	Incident Management Strategies	<input type="checkbox"/>
	▪ Tow/freeway service patrol	<input type="checkbox"/>
	▪ Deployment of 511	<input type="checkbox"/>
	▪ STOC	<input type="checkbox"/>
	▪ State Patrol	<input type="checkbox"/>
	▪ Coordinate with media	<input type="checkbox"/>
	▪ Local detour routes	<input type="checkbox"/>
	▪ Incident/emergency response plan	<input type="checkbox"/>
	▪ Temporary pullouts for disabled vehicles	<input type="checkbox"/>
	▪ Temporary crash investigation sites	<input type="checkbox"/>
TMP Monitoring		
•	Monitoring requirements	<input type="checkbox"/>
•	Evaluation report of success and failures of TMP	<input type="checkbox"/>
Contingency Plans		
•	Trigger Points	<input type="checkbox"/>
•	Contractor(s) Contingency plan	<input type="checkbox"/>
•	Standby Equipment or personnel	<input type="checkbox"/>
TMP Implementation Costs		
•	Itemized cost	<input type="checkbox"/>
•	Cost responsibilities/sharing opportunities	<input type="checkbox"/>
•	Funding source(s)	<input type="checkbox"/>
Special Considerations/Attachments		
•	Special provisions (for special procedures, material, technology, or equipment)	<input type="checkbox"/>
•	Oversized truck loads	<input type="checkbox"/>

Reporting/Documentation – Example Layout for TMP Type 4	
TMP Section	Description
1. Introductory Material	Cover page, Engineer stamp page, table of contents, list of figures, list of tables, list of abbreviations and symbols, and terminology.
2. Executive Summary	Provide a brief overview and summary of the project, general approach, selected construction staging, anticipated work zone impacts of the project, the chosen TMP strategies, cost for TMP, conclusion/recommendations for the project.
3. TMP Roles and Responsibilities	Document roles and responsibilities for the development, implementation, monitoring and evaluation of the TMP, i.e. TMP manager, stakeholders/review committee, approval contact(s), TMP implementation task leaders (e.g., public information liaison, incident management coordinator, etc.), TMP monitoring, and emergency contacts.
4. Project Description	Provide information on project type, project background, project area/corridor, project goals and constraints, proposed construction staging, general schedule and timeline, related projects, and other project related issues.
5. Existing and Future Conditions	Briefly describe current and anticipated future conditions for the project area, include data collection and modeling approach, existing roadway characteristics (history, roadway classification, number of lanes, geometrics, urban/suburban/rural), existing and historical traffic data (volumes, speed, capacity, volume/capacity, percent trucks, queue length, peak traffic hours), existing traffic operations (signal timing, traffic controls), incident and crash data, local community and business concerns/issues, traffic growth rates (for future construction dates), and traffic predictions during construction (volume, delay, queue), environmental concerns, etc.
6. Work Zone Impacts Assessment	Based on the TMP type, this section may include qualitative and/or quantitative analysis of work zone impacts, impact assessment of alternative strategies and impacts of the chosen strategies.
7. Work Zone Impacts Management Strategies	The objectives of this section are to minimize traffic delays, maintain or improve motorist and worker safety, and maintain access for businesses and residents. Identify strategies for both the mainline and detour routes. Where appropriate, these strategies should be documented on plan sheets
8. TMP Monitoring Requirements	TMP monitoring requirements should be included in the TMP. Include or refer to WisDOT policies, standards, requirements, and procedures for TMP implementation and monitoring.
9. Contingency Plans	Specify activities that should be undertaken to minimize traffic impact when unexpected events occur in the work zone (e.g. crash, unforeseen traffic demand, inclement weather, disabled vehicle etc.)
10. TMP Implementation Costs	Estimated costs for the chosen work zone management strategies done early in project development process. Where appropriate include cost responsibilities, sharing opportunities, and funding source(s).
11. Conclusions / Recommendations	Highlight key finding for the chosen alternatives and discuss anticipated traffic or safety concerns such as estimated queues, accessibility issues, issues with detours and any special provisions
12. Attachments/Appendices	As needed (include any information that may be relevant to the project leader/manager etc.)

SAMPLE COPY "TMP DOCUMENTATION AND REQUEST FOR APPROVAL FORM"
 A working copy of this file is at:

<http://wisconsin.gov/Pages/doing-bus/local-gov/traffic-ops/programs/workzone/workzone.aspx>

TMP DOCUMENTATION AND REQUEST FOR APPROVAL

We are requesting approval of the Transportation Management Plan (TMP) for the project detailed below. This project is categorized as TMP type _____. Impacts resulting from project activities meet the current work zone policies of the Wisconsin Department of Transportation.

TMP/Project Type	Action
A. Project that requires a DSR and is TMP Type 1, 2 or 3.	Complete and submit this document and any attachments to BPD project services liaison.
B. Project that requires a DSR and is TMP Type 4.	Complete this document as the TMP Executive Summary and submit along with separate TMP report to BPD project services liaison.
C. Project does not require DSR and is TMP Type 1, 2 or 3.	Complete and submit this document and any attachments to BPD project services liaison.
For Federal Oversight projects, coordinate early in TMP development with BPD & FHWA project liaisons.	

1. Project Information

Design ID: _____ PS&E Date: _____
 Project Title: _____ Let Date: _____
 Project Limits: _____ Project Length _____ Miles
 Highway: _____ Project Duration _____ Days
 _____ Month(s) _____ Month(s)
 County: _____ AADT _____ AADT count year

Project type (recst., recondition, SHRM, etc.): _____
 Engineer's Estimate: < \$1 Million \$1M-3M \$3M-10M >\$10M
 Is the project a National Highway System (NHS) route? Yes No
 Is the project Federal Oversight? Yes No
 OSOW Route? Yes No

2. Brief description of work activities:

3. Briefly describe the staging planned for maintaining traffic:

4. Will there be restrictions on pedestrian/bicycle access?

If Yes:

- a) Will sidewalk/multiuse path be closed? Yes No
- b) Describe how pedestrian and bicyclists will be accommodated (e.g., temporary paths, surface material, separation and protection from construction activities and drop-offs, etc.) _____
- c) Will crosswalks be provided? Yes No
 What is the spacing of crosswalks (measured in blocks or feet)? Consideration should be made for adequate spacing (measured in blocks or feet) _____
- d) Describe how the strategies are in compliance with ADA? _____

5. Briefly describe how access to traffic generators, businesses, school buses, garbage trucks, and postal services will be mitigated (alternate routes, etc.): _____

6. Will the project have lane closures? Yes No

If Yes:

- a. Are there restrictions on when lane closures are allowed? Yes No
- b. What hours/days are lane closures permitted? _____
- c. How were traffic counts used in determining permitted lane closure times? (For multi-lane road, indicate typical peak hour volume per direction of travel. For two-lane, two-way road indicate AADT) _____

7. Please provide the following:

- a. Minimum lane width to be maintained. _____
- b. Minimum height (if less than typically available) _____
- c. Available roadway width (lanes + shoulder) _____
- d. Total number of lanes maintained _____

8. Will the project be detoured? Yes No

If yes:

- a. Explain length of detour, travel times, improvements required for signal timing, surface and shoulder conditions, capacity, etc.: _____
- b. Are there width and height restrictions on the detour? Yes No

9. List major special events and holidays, and how traffic disruptions will be minimized: _____

10. Describe the method(s) (LCAT, Quadro, FDM 11-50-30, Synchro, etc.) used to estimate motorist delays or queue length? (Applicable only for freeways, expressways, and signalized corridors). _____

11. What is the anticipated travel delay during peak travel periods for freeways and expressways (also indicate frequency, e.g. daily and duration).

Please compare the peak hour volumes per lane with the work zone capacity criteria in 11-50-30. If it exceeds the estimated capacity, a delay calculation is required. If the delay is more than 15 minutes, the TMP will be a type 3 and if less than 15 minutes, it generally will be a type 2. The Regional Work Zone Engineer can assist you in determining your delay. _____

12. Identify alternate routes anticipated, and any alternate route improvements or signing planned.

13. Are any intersection traffic control changes proposed such as temporary signals, temporary changes to an all way stop, etc?

14. Are there anticipated traffic impacts from the proposed project on other roads/routes in the region/corridor? Identify other projects in the corridor (only if delay anticipated on this project) _____

15. Does the project affect other regions/states? Yes No

If yes, explain coordination and mitigation strategies: _____

16. Check mitigation strategies planned

STRATEGY	<input type="checkbox"/>	COMMENTS
Public information campaigns	<input type="checkbox"/>	_____
Off-peak lane closures	<input type="checkbox"/>	_____
Extra law enforcement	<input type="checkbox"/>	_____
Temporary widening to maintain traffic lanes	<input type="checkbox"/>	_____
Changeable message signs (PCMS)	<input type="checkbox"/>	_____
Ramp closures	<input type="checkbox"/>	_____
Temporary signals/timing revisions	<input type="checkbox"/>	_____
Coordination with adjacent projects	<input type="checkbox"/>	_____
Innovative contracting, (lane rental, A+B, etc)	<input type="checkbox"/>	_____
Temporary Emergency Pullouts	<input type="checkbox"/>	_____
Motorist service patrols	<input type="checkbox"/>	_____
Nighttime Work	<input type="checkbox"/>	_____
Enhanced Traffic control devices (Wet reflective pavement marking, temp concrete barrier, etc)	<input type="checkbox"/>	_____
Reduced regulatory speed limit (requires	<input type="checkbox"/>	_____

declaration approved by Regional Traffic Engineer, & by BHO if 65-mph hwy.)

Other (identify):

17. Describe public information strategies planned (coordinate this activity with your Regional Communications Manager):

18. Describe incident management strategies planned:

19. Describe how transit impacts will be mitigated:
a) Is access to bus stops affected? Yes No. If yes, explain

Attachment(s) Yes No
Please list: _____

Project ID: _____

Preparer of TMP: _____ Title/Company: _____
 60% (initials) 90% (initials)

Approval
Project Manager: _____ Date: _____ Telephone: _____

Reviewer (Regional Traffic or Local Prog. Mgmt. Consultant) Date
 60% (initials) 90% (initials)

Region Project Development Chief or Local Program Manager Date
 60% (initials) 90% (initials)

Concurrence:

BPD Project Services Chief Date
 60% (initials) 90% (initials)

FHWA (Federal Oversight Projects Only) Date
 60% (initials) 90% (initials)

Transportation Management Plan (TMP) Strategy Matrix

TMP Management Strategy	Improvements			Current WisDOT Use	When to Consider	Potential Benefits	Potential Challenges	Other Considerations
	Mobility	Motorist Safety	Worker Safety					
Temporary Traffic Control (TTC) Strategies								
Control Strategies								
Construction phasing/staging	✓			✓	<ul style="list-style-type: none"> Long project duration 	<ul style="list-style-type: none"> Less traffic impacts during each construction phase 	<ul style="list-style-type: none"> Longer project duration 	<ul style="list-style-type: none"> Adequate work areas Extended periods of lane/ramp closures expected When schedule allows
Full roadway closures								
Continuous (for a project phase or the entire project)			✓	✓	<ul style="list-style-type: none"> Detour routes available Project needs to be completed in a compressed timeframe Traffic volume through the project can be accommodated on detour route(s) Highway facilities Short project length 	<ul style="list-style-type: none"> Faster construction Easier, more efficient construction – larger workspace with more flexibility No traffic distractions Safer for workers Better construction (e.g., smoother ride) Public feedback often positive Reduces need to set up and take down traffic control 	<ul style="list-style-type: none"> May increase cost to motorists (time and fuel) Accessibility to businesses and residences Motorists may get lost May significantly impact local roadways used for detours 	<ul style="list-style-type: none"> Public information necessary Signage and/or capacity improvements to detour route(s) may be necessary Need enough labor and materials available for accelerated work
Off-peak/night/weekend	✓		✓	✓	<ul style="list-style-type: none"> Detour routes available High traffic volumes Low traffic volumes during work time period 	<ul style="list-style-type: none"> Faster construction Less traffic impacts Safer for workers 	<ul style="list-style-type: none"> Motorists may get lost May impact local roadways 	<ul style="list-style-type: none"> Public information necessary Signage and/or capacity improvements to detour route(s) may be necessary Need to schedule around special events
Intermittent		✓	✓	✓	<ul style="list-style-type: none"> Short project length Short project duration When work can be accomplished in short periods of time Low traffic volumes Rural areas 	<ul style="list-style-type: none"> Can close as necessary for construction purposes 	<ul style="list-style-type: none"> Can result in large delays 	<ul style="list-style-type: none"> Public information necessary Detour route(s), with signage, may be needed
Lane shifts or closures								
Reduced lane widths to maintain number of lanes (constriction)	✓			✓	<ul style="list-style-type: none"> Long project duration High traffic volumes 	<ul style="list-style-type: none"> Can maintain existing number of lanes Easier design Detour route may not be necessary Ramps can remain open 	<ul style="list-style-type: none"> Can reduce traffic capacity May interfere with contractor access Narrow lanes (may affect motorist safety) May take longer to construct Barrier could still be required for some drop-offs 	<ul style="list-style-type: none"> Fewer width reductions may be needed if the shoulder has adequate width and structural adequacy May not be feasible where traffic volumes already approach or exceed the capacity of the roadway Potential conflicts between width of roadway and width needed for work Sometimes difficult to obtain minimum lane widths
Lane closures to provide worker safety			✓	✓	<ul style="list-style-type: none"> When the remaining lanes provide adequate capacity to handle the traffic demand Minor work with short duration 	<ul style="list-style-type: none"> Safer for workers Can provide more worker space 	<ul style="list-style-type: none"> May interfere with contractor access May sacrifice project quality May cause delays 	<ul style="list-style-type: none"> In conjunction with lane shift to shoulder or median
Reduced shoulder width to maintain number of lanes	✓			✓	<ul style="list-style-type: none"> Shoulder has structural capacity Enough shoulder space available Minor work with short duration 	<ul style="list-style-type: none"> Traffic remains on routes 	<ul style="list-style-type: none"> May interfere with contractor access May compromise safety 	<ul style="list-style-type: none"> In conjunction with lane shift to shoulder or median
Shoulder closure to provide worker safety			✓	✓	<ul style="list-style-type: none"> Enough shoulder space available Minor work with short duration 	<ul style="list-style-type: none"> Traffic remains on routes 	<ul style="list-style-type: none"> May interfere with contractor access May affect motorist safety No room for breakdowns 	<ul style="list-style-type: none"> Avoid in high incident areas
Lane shift to shoulder/median to maintain number of lanes	✓			✓	<ul style="list-style-type: none"> High traffic volume Enough shoulder space available Where bridges can accommodate use Shoulder has structural capacity 	<ul style="list-style-type: none"> Traffic remains on routes Low cost Allows wider work area or maintains capacity 	<ul style="list-style-type: none"> May interfere with contractor access May compromise safety No room for breakdowns May damage the shoulder/median 	<ul style="list-style-type: none"> May need to upgrade shoulder/median Adequate structural capacity to carry traffic mix (including heavy trucks) is necessary
One-lane, two-way operation**			✓	✓	<ul style="list-style-type: none"> Highway type facilities Rural areas Short-term project covering a short distance Low traffic volume through the project 	<ul style="list-style-type: none"> Easy to set-up 	<ul style="list-style-type: none"> May result in long delays 	<ul style="list-style-type: none"> Flaggers or temporary/portable traffic signals are typically used to control traffic May be necessary to perform the work**

TMP Management Strategy	Improvements			Current WisDOT Use	When to Consider	Potential Benefits	Potential Challenges	Other Considerations
	Mobility	Motorist Safety	Worker Safety					
Two-way traffic on one side of divided facility (crossover)			✓	✓	<ul style="list-style-type: none"> Long project duration Projects with multiple construction stages/phasing Concerns for worker safety When detour routes and/or median or shoulder is not available 	<ul style="list-style-type: none"> Provides a more efficient work space Can reduce construction period Safer for workers 	<ul style="list-style-type: none"> Additional cost to construct crossovers and separations between opposing traffic Difficulty handling ramps 	<ul style="list-style-type: none"> Shoulders and/or lane width reductions may be used to maintain an adequate number of lanes Positive separations are required Where roadway geometry makes the construction of temporary crossovers practical
Reversible lanes	✓			✓	<ul style="list-style-type: none"> Where there are capacity limitations and no alternate routes Significant directional peaking of traffic Long project duration 	<ul style="list-style-type: none"> Accommodates peak traffic flow 	<ul style="list-style-type: none"> May be labor intensive Confusing to motorists Cost of positive separation 	<ul style="list-style-type: none"> Best serves commuter traffic For high speed roadways, a movable barrier system or other form of positive separation is typically used to separate and direct traffic
Ramp closures/relocation	✓	✓		✓	<ul style="list-style-type: none"> Alternative ramps/routes available Shorter construction period required High traffic volumes 	<ul style="list-style-type: none"> Faster construction Reduces mainline and cross road traffic congestion May simplify the work zone 	<ul style="list-style-type: none"> Diverts congestion elsewhere Increases cost to motorists (time and fuel) Motorists may get lost 	<ul style="list-style-type: none"> Public information necessary
Freeway-to-freeway interchange closures		✓		✓	<ul style="list-style-type: none"> Alternative routes available 	<ul style="list-style-type: none"> Construction duration can be reduced May simplify the work zone 	<ul style="list-style-type: none"> May significantly affect facility capacity Additional signage to route motorists 	<ul style="list-style-type: none"> In conjunction with accelerated construction/contracting techniques Public information necessary
Night work	✓			✓	<ul style="list-style-type: none"> Urban areas with high traffic volume High traffic volume 	<ul style="list-style-type: none"> Maintains normal capacity during the day Fewer delays 	<ul style="list-style-type: none"> May be less safe due to lighting distractions, higher speeds, and increased driver impairment Costly for labor Possible reduced quality of work May extend project duration 	<ul style="list-style-type: none"> Where feasible to carry out work in nightly increments Traffic controls can be reconfigured on a nightly basis Urban noise ordinances Need enough resources and laborers available for night work
Weekend work	✓			✓	<ul style="list-style-type: none"> Urban areas with high traffic volume High traffic volume Commuter traffic is significant 	<ul style="list-style-type: none"> Maintains normal capacity during weekdays Fewer delays 	<ul style="list-style-type: none"> May extend project duration 	<ul style="list-style-type: none"> Need to consider special events when scheduling Need enough resources and laborers available for weekend work
Work hour restrictions for peak travel	✓			✓	<ul style="list-style-type: none"> Urban areas High traffic volume Significant peaking of traffic Where significant capacity reductions are necessary 	<ul style="list-style-type: none"> Maintains normal capacity during traffic peak times Fewer delays 	<ul style="list-style-type: none"> May extend project duration 	<ul style="list-style-type: none"> Duration of work restrictions will vary by location
Pedestrian/bicycle accommodation	✓	✓		✓	<ul style="list-style-type: none"> Long project duration Significant pedestrian/bicyclist activities Existing sidewalks traverse the work zone A school route traverses the work zone 	<ul style="list-style-type: none"> Safer for pedestrians and bicyclists 	<ul style="list-style-type: none"> Additional cost to build alternate paths for pedestrians/bicyclists 	<ul style="list-style-type: none"> Need local jurisdiction support Improvements to the detour route may be needed to accommodate the diverted traffic including capacity and geometric improvements, signal retiming and coordination, signing and pavement markings, and parking restrictions
Business access improvements	✓			✓	<ul style="list-style-type: none"> Long project duration Where access to businesses may be reduced Anticipated impacts to businesses 	<ul style="list-style-type: none"> Accessibility to businesses, Positive community relations 	<ul style="list-style-type: none"> Additional cost 	<ul style="list-style-type: none"> Project business outreach
Off-site detours/use of alternate routes	✓	✓		✓	<ul style="list-style-type: none"> Where significant reduction in capacity is necessary in one or both directions High traffic volumes Long project duration Detour routes with capacity available When a full road closure is used 	<ul style="list-style-type: none"> More efficient utilization of existing transportation facilities May reduce motorist delays 	<ul style="list-style-type: none"> May require additional cost May significantly impact roadways used for detours Motorists may get lost 	<ul style="list-style-type: none"> Local municipalities Signage, capacity improvements, turning movements, parking restrictions Signal timing adjustment

Transportation Management Plan (TMP) Strategy Matrix

TMP Management Strategy	Improvements			Current WisDOT Use	When to Consider	Potential Benefits	Potential Challenges	Other Considerations
	Mobility	Motorist Safety	Worker Safety					
Traffic Control Devices								
Temporary signs								
Warning	✓	✓	✓	✓	<ul style="list-style-type: none"> In a situation that may not be readily apparent (e.g., speed reductions, road or lane narrows, etc.) 	<ul style="list-style-type: none"> Reduces potential for incidents 	<ul style="list-style-type: none"> May be ignored or missed by motorists when a lot of signage is present 	
Regulatory	✓	✓	✓	✓	<ul style="list-style-type: none"> When necessary to inform road users of traffic laws or regulations 	<ul style="list-style-type: none"> Encourages reduced speeds Reduces incident potential 	<ul style="list-style-type: none"> May be ignored or missed by motorists when a lot of signage is present 	
Guide/information	✓	✓		✓	<ul style="list-style-type: none"> When off-site detours are being used When advanced notice is necessary for road users to choose an alternate route 	<ul style="list-style-type: none"> Provides alternate route and work zone information to road users 	<ul style="list-style-type: none"> May be ignored or missed by motorists when a lot of signage is present 	
Portable changeable message signs (PCMS)	✓	✓		✓	<ul style="list-style-type: none"> When work zone information is subject to frequent changes Projects with multiple construction stages/phasing Detour routes with capacity available 	<ul style="list-style-type: none"> Effective way to communicate real-time information to road users Allows road users to adjust travel plans based on information Draws special attention to key information Can be used for incident management 	<ul style="list-style-type: none"> May be ignored or missed by motorists when a lot of signage is present Additional cost 	<ul style="list-style-type: none"> Used to supplement normal static work zone signs Needs a means of controlling/updating signs, such as the STOC
Portable changeable message signs (PCMS) with communication	✓	✓		✓	<ul style="list-style-type: none"> When work zone information is subject to frequent changes Projects with multiple construction stages/phasing Detour or alternate routes with capacity available 	<ul style="list-style-type: none"> Facilitates real-time information dissemination from STOC to the PCMS Improves work zone incident clearance Provides up to date information to the motorist. Facilitates on-site control programming 	<ul style="list-style-type: none"> Security: Wireless transmissions are not always encrypted Operating systems may be out-of-date and not compatible with STOC Software Cellular network may not provide coverage of the entire project limit Additional cost 	<ul style="list-style-type: none"> Mobile devices may have unauthorized modifications Link reliability issues such truncated data Latency and interference issues
Arrow panels/board	✓	✓	✓	✓	<ul style="list-style-type: none"> Lane closures, particularly on high-speed roadways 	<ul style="list-style-type: none"> Assists motorists in navigating and merging through and around the work zone Effective method to alert motorists of lane closures Highly visible Encourages smooth merging behavior 	<ul style="list-style-type: none"> Additional cost 	<ul style="list-style-type: none"> Used to supplement conventional traffic control devices
Channelizing devices	✓	✓	✓	✓	<ul style="list-style-type: none"> All work zone types When changes to the road configuration or potential hazards necessitate their use 	<ul style="list-style-type: none"> Helps to direct road users through the work zone Easy to set-up Delineates potential work zone hazards Easy to set-up 	<ul style="list-style-type: none"> Errant vehicles are not prevented for intruding beyond these devices 	
Temporary pavement markings	✓	✓	✓	✓	<ul style="list-style-type: none"> Long project duration When additional markings are necessary to guide road users through the work zone 	<ul style="list-style-type: none"> Provides guidance and information for road users through the work zone 	<ul style="list-style-type: none"> Visibility and durability of the markings may be limited by weather conditions and debris 	<ul style="list-style-type: none"> Need to obliterate obsolete markings to minimize possibility of misleading road users
Flaggers and uniformed traffic control officers		✓		✓	<ul style="list-style-type: none"> Low traffic volume projects in rural areas One-lane, two-way operations 	<ul style="list-style-type: none"> Helps to alert road users to the presence of work operations 	<ul style="list-style-type: none"> Reduces safety for road workers 	<ul style="list-style-type: none"> In conjunction with intermittent closure
Temporary traffic signals	✓	✓	✓	✓	<ul style="list-style-type: none"> Where the work zone operations disrupt normal traffic patterns One-lane, two-way operations For longer-term projects When additional capacity is needed 	<ul style="list-style-type: none"> Helps improve ramp and/or detour capacity Improves traffic flow through and near the work zone Improves safety 	<ul style="list-style-type: none"> Changes traffic patterns on the cross road Cost 	<ul style="list-style-type: none"> Signal installation should be warranted
Lighting devices		✓	✓	✓	<ul style="list-style-type: none"> When night work is being conducted Long project duration High traffic volume 	<ul style="list-style-type: none"> Enhances visibility of devices and delineations in the work zone Improves worker safety Guides road users through the work zone particularly during night and under adverse conditions 	<ul style="list-style-type: none"> May be distracting to motorists 	

Transportation Management Plan (TMP) Strategy Matrix

TMP Management Strategy	Improvements			Current WisDOT Use	When to Consider	Potential Benefits	Potential Challenges	Other Considerations
	Mobility	Motorist Safety	Worker Safety					
Public Information Strategies								
Brochures and mailers	✓	✓	✓	✓	<ul style="list-style-type: none"> Urban area Long project duration Alternate travel modes available High public exposure Significant business impacts Significant residential impacts 	<ul style="list-style-type: none"> Condensed format of brochures lends itself to brief, high-impact messages Brochures have a relatively long shelf life, which is useful for projects of long duration Low cost Easy to distribute 	<ul style="list-style-type: none"> Information (e.g., dates of road closures) may change and not be reflected in the printed materials Often targets local motorists only 	<ul style="list-style-type: none"> Used in conjunction with other elements in the TMP Most useful if it gives people an alternative to driving alone through the work zone – transit, ridesharing, alternate route
Press releases/media alerts	✓	✓	✓	✓	<ul style="list-style-type: none"> Large projects - Mega/Major projects Projects with multiple phases/construction stages High public exposure Significant business impacts Significant residential impacts 	<ul style="list-style-type: none"> Cost effective if it uses free publicity to inform 	<ul style="list-style-type: none"> Often targets local motorists only 	<ul style="list-style-type: none"> For larger projects, announcements may include project start ups, periodic progress reports, and major traffic pattern changes
Paid advertisements	✓	✓	✓	✓	<ul style="list-style-type: none"> Large projects - Mega/Major projects Alternate routes available High public exposure Significant business impacts Significant residential impacts 	<ul style="list-style-type: none"> Gives travelers advanced warning to plan for delays or alternate routes Covers a large or multi-jurisdictional area Reinforces public awareness of the project Can reach many people at one time 	<ul style="list-style-type: none"> Requires advanced planning Additional cost May only target local motorists Newspaper readers may skip over ads 	<ul style="list-style-type: none"> Advance planning prior to the start of construction is essential to develop and schedule the needed advertisements
Public information center	✓	✓	✓	✓	<ul style="list-style-type: none"> Urban area Long project duration Projects with multiple phases/construction stages High public exposure Significant business impacts Significant residential impacts 	<ul style="list-style-type: none"> Single, centralized access point to information about the project Provides direct access to information and people to talk to about the project 	<ul style="list-style-type: none"> Additional cost of staffing and leasing office space and equipment 	<ul style="list-style-type: none"> Project is localized Construction zone is near major activity centers Plan to have an information hotline Center located near construction
Telephone hotline	✓	✓	✓	✓	<ul style="list-style-type: none"> Urban area Long project duration Projects with multiple phases/construction stages Detour routes available Alternate travel modes available High public exposure If frequent lane and/or ramp closures are expected 	<ul style="list-style-type: none"> Provides commuters with up-to-date traffic/construction information and demand management information Information can be accessed whenever it is needed May be easy to update 	<ul style="list-style-type: none"> Pre-recorded messages may not contain all the information that travelers need Needs to be accurate information, otherwise the information is not credible 	<ul style="list-style-type: none"> Part of incident management Can include pre-recorded messages and/or real-time interactive response information
Planned lane closure website	✓	✓	✓	✓	<ul style="list-style-type: none"> Long project duration Projects with multiple phases/construction stages Detour routes available High public exposure Project includes lane closures 	<ul style="list-style-type: none"> Information can be posted for the construction season 	<ul style="list-style-type: none"> The web site would need to be publicized for people to use 	<ul style="list-style-type: none"> This website is usually done for the entire region or State
Project website	✓	✓	✓	✓	<ul style="list-style-type: none"> Urban area Long project duration High public exposure Project and traffic information changes frequently Mega/Major projects 	<ul style="list-style-type: none"> Single access point to find out all the information for a particular project May be easy to update 	<ul style="list-style-type: none"> The website would need to be maintained for effectiveness 	<ul style="list-style-type: none"> Includes both static and/or real-time interactive information Audience needs to be made aware of the website
Public meetings/hearings	✓	✓	✓	✓	<ul style="list-style-type: none"> Long project duration High public exposure Significant business impacts Significant residential impacts 	<ul style="list-style-type: none"> Community and stakeholders can feel informed and involved in the project Opportunity to find out the information that stakeholders need 	<ul style="list-style-type: none"> Stakeholder may feel frustrated if they feel that their inputs were not considered 	<ul style="list-style-type: none"> Need to be wary of making "empty promises"
Community task forces	✓	✓	✓	✓	<ul style="list-style-type: none"> Long project duration High public exposure Significant business impacts Significant residential impacts 	<ul style="list-style-type: none"> Gets buy-in from different stakeholders 	<ul style="list-style-type: none"> Requires coordination beforehand May not be cost effective 	<ul style="list-style-type: none"> Best if developed early in planning for the project and continue meeting through design, construction, and project assessment
Coordination with media/schools/businesses/emergency services	✓	✓	✓	✓	<ul style="list-style-type: none"> Long project duration High crash rate High public exposure Significant business impact Significant residential impacts 	<ul style="list-style-type: none"> Travelers at major activity centers can plan in advance to take alternate routes 		<ul style="list-style-type: none"> Requires advanced planning and coordination with these activity centers Proximity to schools

TMP Management Strategy		Improvements			Current WisDOT Use	When to Consider	Potential Benefits	Potential Challenges	Other Considerations
		Mobility	Motorist Safety	Worker Safety					
	Work zone education and safety campaigns	✓	✓	✓	✓	<ul style="list-style-type: none"> • High traffic volume • Long project duration • Projects with multiple phases/construction stages • High crash rate 	<ul style="list-style-type: none"> • May reduce the number of fatalities and injuries in work zones • Encourages general safety when driving around work zones • Help travelers know what signs mean and what resources there are for advanced planning 	<ul style="list-style-type: none"> • Results are harder to quantify 	
	Work zone safety highway signs		✓	✓	✓	<ul style="list-style-type: none"> • High traffic volume • Long project duration • Projects with multiple phases/construction stages • High crash rate 	<ul style="list-style-type: none"> • Increases driver awareness to work zone safety concerns • May encourage speed reduction 	<ul style="list-style-type: none"> • Highway signs should be maintained – if there is no work zone, signs should be taken down 	
	Rideshare promotions	✓				<ul style="list-style-type: none"> • Urban area • Long project duration • High expectation of delay • Where advantages to carpools exist (parking cost reductions, High Occupancy Vehicles (HOV) lanes, HOV bypass lanes) 	<ul style="list-style-type: none"> • May reduce the number of vehicles traveling through the work zone • Access to HOV lanes (if that exists) • May reduce delays 	<ul style="list-style-type: none"> • Cost of promotion and initial coordination effort • Need enough participation in order to make a difference 	<ul style="list-style-type: none"> • Works with large employment centers
	Visual information (videos, slides, presentations) for meetings and web	✓	✓	✓	✓	<ul style="list-style-type: none"> • Projects with multiple phases/construction stages • High public exposure • Significant impact on businesses • Significant residential impacts 	<ul style="list-style-type: none"> • Increases community awareness and understanding of the project 	<ul style="list-style-type: none"> • Publicity needed for travelers to visit the website and view the visual information • May be expensive to produce 	<ul style="list-style-type: none"> • Supports public meetings, information center, or press releases • In conjunction with project or agency website • Requires preparation, up front planning

Transportation Management Plan (TMP) Strategy Matrix

TMP Management Strategy	Improvements			Current WisDOT Use	When to Consider	Potential Benefits	Potential Challenges	Other Considerations
	Mobility	Motorist Safety	Worker Safety					
Motorist Information Strategies								
Traffic radio	✓	✓	✓	✓	<ul style="list-style-type: none"> Long project duration Projects with multiple phases/construction stages Detour routes available Alternate travel modes available High public exposure 	<ul style="list-style-type: none"> Can reach many commuters over a wide area Little to no cost Targets people who are likely to use the information 	<ul style="list-style-type: none"> "Old" information is no longer useful 	<ul style="list-style-type: none"> Coverage more likely for major projects
Dynamic changeable message signs (DMS)	✓	✓		✓	<ul style="list-style-type: none"> Projects with multiple phases/construction stages Alternate routes available When work zone conditions are subject to frequent or on-going changes (e.g., lane and/or ramp closures expected) 	<ul style="list-style-type: none"> Provides real time information to motorists Gives public advance warning to make decisions Provides information to motorists directly affected by the project 	<ul style="list-style-type: none"> Needs to be accurate information, otherwise the information is not credible 	<ul style="list-style-type: none"> Needs means of controlling/updating messages, such as a STOC Supports incident management Need to keep information up to date and useful
Temporary motorist information signs	✓			✓	<ul style="list-style-type: none"> All situations – Advanced warning/public information and signage is generally always beneficial 	<ul style="list-style-type: none"> Provides information to motorists Warns motorists of potential hazards 	<ul style="list-style-type: none"> If project is delayed, sign is wrong 	<ul style="list-style-type: none"> Need to keep information up to date
Dynamic speed message sign		✓	✓	✓	<ul style="list-style-type: none"> High crash rate 	<ul style="list-style-type: none"> Enhances safety by reducing speeding and speed variability 		<ul style="list-style-type: none"> May not be effective without enforcement May not be effective over a long work zone length and duration
Highway advisory radio (HAR)	✓	✓		✓	<ul style="list-style-type: none"> When longer, more detailed messages than can be provided using signage are necessary Alternate routes available Long project duration Projects with multiple phases/construction stages Frequent lane and/or ramp closures expected 	<ul style="list-style-type: none"> Provides current information directly to motorists Allows for longer, more detailed messages regarding a work zone incident Promotes diversion of traffic to alternate routes when appropriate Traffic patterns may resume to normal patterns more quickly Easy to access 	<ul style="list-style-type: none"> Limited range Typically low utilization rates 	<ul style="list-style-type: none"> Signs are used to inform road users of the HAR radio Information needs to be current/real-time Newer technologies based on in-vehicle navigation systems and cell phones are replacing HAR usage Motorists may not be aware of the HAR
Extinguishable signs	✓	✓			<ul style="list-style-type: none"> When HAR is available or proposed Long project duration Projects with multiple phases/construction stages Alternate routes available 	<ul style="list-style-type: none"> Makes motorists aware that current information is available 	<ul style="list-style-type: none"> Additional cost of maintenance and operation 	<ul style="list-style-type: none"> Used in conjunction with HAR
Highway information network (web-based)	✓		✓	✓	<ul style="list-style-type: none"> Urban area Long project duration 	<ul style="list-style-type: none"> Provides helpful information to motorists in one place Convenient way to share information among stakeholders 	<ul style="list-style-type: none"> Requires advanced planning 	<ul style="list-style-type: none"> Information should be up-to-date
511 traveler information systems (wireless, handhelds)	✓	✓	✓	✓	<ul style="list-style-type: none"> Urban area Alternate travel modes available Long project duration Detour routes available 	<ul style="list-style-type: none"> Provides motorists with current information Information can be accessed whenever it is needed May be easy to update 	<ul style="list-style-type: none"> Can be distracting to the driver if used on the road Road users must have these personal devices 	<ul style="list-style-type: none"> General public awareness of 511 is needed
Freight travel information	✓	✓	✓	✓	<ul style="list-style-type: none"> Urban area Long project duration Moderate to high percentage of trucks traveling through the work zone 	<ul style="list-style-type: none"> Provides useful information to freight stakeholders May improve safety (e.g., reduce rear end collisions) by raising awareness before a work zone 	<ul style="list-style-type: none"> Additional cost of coordination and disseminating information to select group 	<ul style="list-style-type: none"> Work with the freight community to find out what information would be helpful Can be provided to a central location (e.g., trucking company) or to truckers approaching work zone via CB radio
State Traffic Operations Center (STOC)	✓	✓	✓	✓	<ul style="list-style-type: none"> Project located on a freeway in an urban area Long project duration Projects with multiple phases/ construction stages Delay highly expected for the project High public exposure 	<ul style="list-style-type: none"> Have access to real-time information on traffic and incidents and relay that to the traveling public through different media outlets 	<ul style="list-style-type: none"> Costly to build and operate Detectors may be difficult to maintain while the work zone is taking place 	

Transportation Management Plan (TMP) Strategy Matrix

TMP Management Strategy	Improvements			Current WisDOT Use	When to Consider	Potential Benefits	Potential Challenges	Other Considerations
	Mobility	Motorist Safety	Worker Safety					
Innovative Contracting & Construction Strategies								
Project coordination								
Coordination with other projects	✓			✓	<ul style="list-style-type: none"> • May be beneficial to any project 	<ul style="list-style-type: none"> • Reduces motorist delay • Minimizes impacts to potentially affected businesses and communities • Reduces exposure time to road work • May increase efficiencies 	<ul style="list-style-type: none"> • May be difficult to identify potential projects with which to coordinate 	<ul style="list-style-type: none"> • Routine agency meetings may address coordination at the project level, corridor level, district region level, and at the State level
Right-of-way coordination	✓			✓	<ul style="list-style-type: none"> • May be beneficial to any project 	<ul style="list-style-type: none"> • Reduces construction duration and delay 	<ul style="list-style-type: none"> • May be difficult to identify coordination opportunities 	<ul style="list-style-type: none"> • Considering right-of-way issues early in project development can minimize traffic impacts
Coordination with other transportation infrastructure	✓			✓	<ul style="list-style-type: none"> • May be beneficial to any project 	<ul style="list-style-type: none"> • Minimizes potential impacts on other transportation facilities 	<ul style="list-style-type: none"> • May be difficult to identify coordination opportunities 	
Contracting strategies								
"Low bid" design-build	✓				<ul style="list-style-type: none"> • High traffic volume • When project acceleration is desirable 	<ul style="list-style-type: none"> • Shorter project duration • Fewer traffic impacts • May reduce administrative costs • Provides a single point of contact for design and construction issues • Allows for flexibility for innovative designs, materials, and construction techniques 	<ul style="list-style-type: none"> • Use of this technique might limit the number of firms available to do both the design and construction work or might require firms to form partnerships to qualify for consideration (FDM 11-2.1.3) • May pay more for actual construction 	
A+B bidding	✓				<ul style="list-style-type: none"> • High traffic volume • Where significant reduction in capacity is anticipated • Projects with significant impacts to traffic flow, businesses, and/or the community 	<ul style="list-style-type: none"> • Reduces construction time • Fewer traffic impacts 	<ul style="list-style-type: none"> • May pay more for the work • Potential for disagreements • Issues must be resolved quickly 	<ul style="list-style-type: none"> • If a project has significant issues with utilities, time-based bidding may be difficult; it may be possible to separate that portion of the project
Incentive/disincentive clauses	✓			✓	<ul style="list-style-type: none"> • High traffic volume • Where significant reduction in capacity is anticipated • Projects with significant impacts to traffic flow, businesses, and/or the community • When an out-of-service facility needs to be replaced • No good alternate routes available 	<ul style="list-style-type: none"> • Reduces construction time • Fewer traffic impacts • Early project completion may result in significant cost savings 	<ul style="list-style-type: none"> • Potential arguments for time extensions • Issues must be resolved quickly 	<ul style="list-style-type: none"> • If a project has significant issues with utilities, time-based bidding may be difficult; it may be possible to separate that portion of the project
Lane rental	✓			✓	<ul style="list-style-type: none"> • Urban area • High traffic volume • For paving freeways • No good alternate routes available 	<ul style="list-style-type: none"> • Fewer traffic impacts • Lanes only closed for short periods, when truly needed 	<ul style="list-style-type: none"> • Requires careful timekeeping • Potential for disagreements 	
Innovative construction techniques (precast members, rapid cure materials)	✓			✓	<ul style="list-style-type: none"> • High traffic volume • Where traffic restrictions need to be minimized • When work activities need to be completed during night or weekend periods 	<ul style="list-style-type: none"> • Reduces construction time • Fewer traffic impacts 		

Transportation Management Plan (TMP) Strategy Matrix

TMP Management Strategy	Improvements			Current WisDOT Use	When to Consider	Potential Benefits	Potential Challenges	Other Considerations
	Mobility	Motorist Safety	Worker Safety					
Transportation Operations Strategies								
Transit service improvements	✓			✓	<ul style="list-style-type: none"> Transit exists with capacity and frequency Where transit use is likely to be adequate to make the improvements worthwhile 	<ul style="list-style-type: none"> Shifts some demand from highway while it is under construction 	<ul style="list-style-type: none"> Requires advance planning and coordination 	<ul style="list-style-type: none"> In conjunction with transit incentives
Transit incentives	✓				<ul style="list-style-type: none"> Where adequate transit routes and frequencies exist that serve major origins and destinations for motorists that would normally drive through the work zone if transit options were not available 	<ul style="list-style-type: none"> Shifts some demand from highway while it is under construction 	<ul style="list-style-type: none"> Requires advance planning and coordination 	<ul style="list-style-type: none"> In conjunction with transit service improvements
Shuttle services	✓			✓	<ul style="list-style-type: none"> Long project duration High expectation for delay Large amounts of similar origins and destinations 	<ul style="list-style-type: none"> Reduces vehicle trips and traffic in the work zone 	<ul style="list-style-type: none"> Can be costly 	<ul style="list-style-type: none"> Service would need to provide a benefit in terms of reduced travel time, travel and parking costs, etc. to attract users Providing express shuttles from a few key locations may increase use
Ridesharing/carpooling incentives	✓			✓	<ul style="list-style-type: none"> Long project duration High expectation for delay Few or no alternate routes Where ridesharing has the potential to reduce travel volumes Commuter traffic is significant 	<ul style="list-style-type: none"> May reduce vehicle trips and traffic 	<ul style="list-style-type: none"> Need many people participating in order for it to be cost effective 	<ul style="list-style-type: none"> In conjunction with HOV lanes and/or parking management Major activity and employment centers exist and can be targeted
Park-and-ride promotion	✓			✓	<ul style="list-style-type: none"> Long project duration High expectation for delay Alternative travel modes are available Good parking sites are available Commuter traffic is significant 	<ul style="list-style-type: none"> Can be very cost-effective to commuters May reduce the number of vehicles traveling through the work zone 		<ul style="list-style-type: none"> In conjunction with rideshare programs, transit service available at lot, HOV lanes, and/or parking management Good promotion of program is needed
High-occupancy vehicle (HOV) lanes	✓				<ul style="list-style-type: none"> Urban area Long project duration High traffic volume High expectation for delay Alternative travel modes are available 	<ul style="list-style-type: none"> Better roadway efficiency (move more people per lane) 	<ul style="list-style-type: none"> Needs a high amount of similar origins and destinations and/or incentives Taking a lane for HOV is likely to be controversial 	<ul style="list-style-type: none"> In conjunction with HOV bypass and ramp metering, express transit, park and ride, and other demand management strategies Enforcement needed
Ramp metering	✓	✓		✓	<ul style="list-style-type: none"> Long project duration Project is on a freeway There are a number of entrance ramps near the work zone Urban projects 	<ul style="list-style-type: none"> Maintains safe and smooth freeway operations Controls entrance of vehicles to the roadway 	<ul style="list-style-type: none"> May cause vehicles to idle too long May result in ramp queues on local streets Cost 	<ul style="list-style-type: none"> Queues onto local streets may cause a problem depending on their extent Can be used during peak periods or continuously Secondary effect of diverting traffic to alternate routes
Parking supply management	✓				<ul style="list-style-type: none"> Urban area Long project duration Alternate travel modes are available Limited supply of on-site and off-site parking lots 	<ul style="list-style-type: none"> Cost-effective Decreases single occupancy vehicle use when implemented in conjunction with other elements and incentives 	<ul style="list-style-type: none"> Difficult to implement unless the responsible agency owns the lot and/or parking supply is limited 	<ul style="list-style-type: none"> In conjunction with other demand management strategies
Variable work hours	✓				<ul style="list-style-type: none"> Long project duration High traffic volume Employment and activity center along corridor and alternate routes Commuter traffic is significant Significant traffic increases during peak hours 	<ul style="list-style-type: none"> Distributes peak hour commuting over longer time period, thereby reducing travel demand during the peak periods 	<ul style="list-style-type: none"> Effort to convince employers of the benefits 	<ul style="list-style-type: none"> Needs to be supported by businesses and community
Telecommuting	✓				<ul style="list-style-type: none"> Urban area High traffic volume Long project duration High expectation for delay When significant reduction in capacity anticipated 	<ul style="list-style-type: none"> Reduces vehicle trips 	<ul style="list-style-type: none"> Effort to convince employers of the benefits May effect businesses, such as restaurants that are near employment centers 	<ul style="list-style-type: none"> Needs to be supported by businesses and community

Transportation Management Plan (TMP) Strategy Matrix

TMP Management Strategy	Improvements			Current WisDOT Use	When to Consider	Potential Benefits	Potential Challenges	Other Considerations
	Mobility	Motorist Safety	Worker Safety					
Corridor/Network Management Strategies								
Signal timing/coordination improvements	✓	✓		✓	<ul style="list-style-type: none"> • Long project duration • High traffic volume • When additional capacity is needed through the intersection in the work zone or on nearby roadways during construction 	<ul style="list-style-type: none"> • Increases throughput of the roadway • Improves traffic flow • Optimizes intersection capacity • Reduces frequent stops • Improves driver safety by smoothing the flow through work zone bottlenecks 	<ul style="list-style-type: none"> • Cost of estimating new saturation flow rates and demand 	<ul style="list-style-type: none"> • Estimating both potential demand and capacity constrained volumes for obtaining the optimal coordination
Temporary traffic signals	✓	✓	✓	✓	<ul style="list-style-type: none"> • Long project duration • High traffic volume • High expectation for delay • When safety needs to be improved for new (temporary) turning movements through the work zone • When additional capacity is needed • When significant reduction in capacity anticipated 	<ul style="list-style-type: none"> • Improves traffic flow through and near the work zone • Helps achieve re-routing of traffic from project location • Improves driver safety by separating conflicting movements • Improves worker safety 	<ul style="list-style-type: none"> • Cost of signal design, placement, and operation • Changes traffic patterns on cross-roads 	<ul style="list-style-type: none"> • Signals should be warranted as per WisDOT signal warrant requirements
Street/Intersection improvements	✓	✓		✓	<ul style="list-style-type: none"> • Long project duration • High expectation for delay • When work zone results in major congestion that can be alleviated by street/intersection improvements 	<ul style="list-style-type: none"> • Provides increased capacity • Improves motorist safety 	<ul style="list-style-type: none"> • Cost • Time to design and construct 	<ul style="list-style-type: none"> • Need to plan ahead to complete these before the main roadwork
Bus turnouts	✓	✓		✓	<ul style="list-style-type: none"> • Long project duration • High occurrence of bus traffic and stops 	<ul style="list-style-type: none"> • Improves traffic flow and safety by minimizing traffic conflicts 	<ul style="list-style-type: none"> • Cost • Time to design and construct 	<ul style="list-style-type: none"> • Provision of gaps and sight distance for the buses to re-enter the traffic stream
Turn restrictions	✓	✓		✓	<ul style="list-style-type: none"> • Long project duration • High expectation for delay • When turning vehicles are causing unreasonable delays or crash potential in the work zone • When the geometric design or the available sight distance at the intersection does not adequately provide for a safe turning movement 	<ul style="list-style-type: none"> • Simple, cost-effective • Increases roadway capacity • Reduces potential congestion and delays • Improves safety 	<ul style="list-style-type: none"> • Additional delays for turning vehicles • Turning vehicles need to re-route 	
Parking restrictions	✓			✓	<ul style="list-style-type: none"> • Long project duration • When significant reduction in capacity anticipated • When traffic demand at the location can be reduced by parking restrictions • When parking spots can be converted to an additional travel lane • When restricting parking spots can improve work zone access and quicken work zone activity 	<ul style="list-style-type: none"> • Simple, cost-effective solution • Increases roadway capacity • Reduces traffic conflicts • Quickens work zone activity by improving access • Reduces duration of the work zone 	<ul style="list-style-type: none"> • Affects local parking • Will need flaggers if parking is converted to travel lane • Will need barricades if parking is closed, requiring additional setup time and cost 	<ul style="list-style-type: none"> • Impact to local businesses must be considered • May need to improve intersection geometrics to accommodate additional or relocated lanes • Can limit use to peak travel periods
Truck/heavy vehicle restrictions	✓	✓		✓	<ul style="list-style-type: none"> • Projects with high truck volume • When significant reduction in capacity anticipated • When the location has heavy truck traffic but also has potential alternate truck routes • When capacity/safety concerns exist for truck movements through work zone • Passenger cars are expected to be significantly delayed due to truck traffic 	<ul style="list-style-type: none"> • Improves passenger car flow through the work zone by removing trucks from the traffic stream 	<ul style="list-style-type: none"> • Provision of an alternate truck route may adversely affect other traffic or roads • Requires additional signage/personnel to enforce truck restrictions 	<ul style="list-style-type: none"> • Availability and sustainability of alternate routes for the trucks must be considered • Federal, State, and/or local ordinances that govern truck traffic access must be considered • Appropriate design and geometric concerns related to trucks would need to be addressed • Noise and business impacts from use of detour route may need to be considered

TMP Management Strategy		Improvements			Current WisDOT Use	When to Consider	Potential Benefits	Potential Challenges	Other Considerations
		Mobility	Motorist Safety	Worker Safety					
	Separate truck lanes	✓	✓		✓	<ul style="list-style-type: none"> • Long-duration projects with high truck volume • High expectation for delay • When significant reduction in capacity anticipated • When capacity/safety concerns exist for truck movements through work zone • Passenger cars are expected to be significantly delayed due to the trucks (e.g., areas with major inclines) 	<ul style="list-style-type: none"> • Can increase capacity of the roadway 	<ul style="list-style-type: none"> • Requires additional signage/personnel to enforce separate truck lane 	<ul style="list-style-type: none"> • Design of the dedicated truck route • State and/or local ordinances that govern truck traffic need to be considered • If shoulder is used, may need to improve it first
	Reversible lanes	✓	✓		✓	<ul style="list-style-type: none"> • Where there are capacity limitations in the direction of travel and no alternate routes • Long project duration • Significant peaking of traffic • Commuter traffic is significant 	<ul style="list-style-type: none"> • Accommodates peak traffic flow 	<ul style="list-style-type: none"> • Safety concerns • Cost of positive separation and/or additional pavement markings and signs • Confusing to infrequent road user 	<ul style="list-style-type: none"> • Works well with commuter traffic • For high speed roadways, a movable barrier system or other form of positive separation is typically used to separate and direct traffic
	Dynamic lane closure system	✓	✓	✓		<ul style="list-style-type: none"> • Long project duration • Projects with multiple construction stages/phasing • Moderate traffic volume and congestion • When needed capacity can be gained • When frequent lane closures are anticipated 	<ul style="list-style-type: none"> • Enhances mobility and safety • Controls vehicle merging at the approach • Reduces vehicle conflicts • Construction time can be reduced with additional contractor area 	<ul style="list-style-type: none"> • Cost of dynamic message signs or other messaging devices is not available in-house 	<ul style="list-style-type: none"> • Can be used in conjunction with reversible lane
	Ramp metering	✓	✓		✓	<ul style="list-style-type: none"> • Long project duration • During mainline paving of basic freeway lanes where freeway demand needs to be metered to control congestion • Project is on a freeway • There are a number of entrance ramps near the work zone 	<ul style="list-style-type: none"> • Maintains safe and smooth freeway operations • Controls entry of vehicles to the roadway • Improves safety by matching gaps between freeway and on-ramp vehicles • May help spread traffic to other roads 	<ul style="list-style-type: none"> • May result in ramp queues backing onto local streets • Cost 	<ul style="list-style-type: none"> • Potential impacts on local streets need to be considered before introducing ramp metering
	Temporary suspension of ramp metering	✓				<ul style="list-style-type: none"> • At the end of a detour where it is advantageous to get traffic onto the freeway quickly 	<ul style="list-style-type: none"> • Simple, cost-effective solution for improving traffic flow through the detour 	<ul style="list-style-type: none"> • Can lead to a potential downstream freeway bottleneck 	<ul style="list-style-type: none"> • Downstream freeway volumes must be evaluated before suspending ramp metering
	Ramp closures	✓	✓	✓	✓	<ul style="list-style-type: none"> • High traffic volume • If accelerated construction at the ramps is required • Where work zone activity requires work space associated with the ramps • Where freeway volumes at the ramp location have to be controlled • When alternate ramps/routes are available close by 	<ul style="list-style-type: none"> • Can pave/repair the full width of the ramp • Better, faster construction • Can provide work access within the work zone • May improve traffic flow on the mainline • Reduces crossroad congestion • Easy to sign in rural areas 	<ul style="list-style-type: none"> • Potential impact to business and community access • Moves congestion elsewhere • Blocks traffic pattern and forces new traffic pattern • May have negative impact on local streets in high density locations 	<ul style="list-style-type: none"> • It might affect motorist mobility adversely • Impact to local businesses should be considered • The strategy is inexpensive if only signs are used but will cost more if alternate route modifications are required • Adequate driver information signs and clearly marked detour routes need to be provided
	Railroad crossings controls		✓		✓	<ul style="list-style-type: none"> • Long project duration • When work zone stops and delays have potential of forcing vehicles to stop on railroad tracks 	<ul style="list-style-type: none"> • Enhances motorist safety • Enhances rail safety 	<ul style="list-style-type: none"> • Cost 	<ul style="list-style-type: none"> • Requires understanding on the traffic dynamics of the specific location • State and/or local ordinances that govern railroad traffic control
	Coordination with adjacent construction site(s)	✓			✓	<ul style="list-style-type: none"> • Whenever multiple work zone projects are in proximity of each other or impact the same region 	<ul style="list-style-type: none"> • Minimizes the combined impacts on road users • Potential for cost savings to road users, community, and agency • Addresses the need to maintain adequate capacity in the system • Evaluates the complete city-wide street network for capacity needs rather than individual work zones • Maintains system-wide mobility 	<ul style="list-style-type: none"> • Complexity of coordinating adjacent work zones • Cost 	<ul style="list-style-type: none"> • Accommodate anticipated travel demand by not implementing work zones on parallel highways or complementary or alternate routes • Requires good communication within and across various agencies • Some work, such as utility work, may be done by other agencies

Transportation Management Plan (TMP) Strategy Matrix

TMP Management Strategy	Improvements			Current WisDOT Use	When to Consider	Potential Benefits	Potential Challenges	Other Considerations
	Mobility	Motorist Safety	Worker Safety					
Work Zone Safety Strategies								
Speed limit reduction		✓	✓	✓	<ul style="list-style-type: none"> Where significant reduction in capacity is anticipated When turning/merging conflicts exist that cannot be otherwise resolved When there are lane or shoulder closures, traffic shifts, or other changes in geometry On detours where traffic volumes and conflicts are increased When work is adjacent to the traffic lane 	<ul style="list-style-type: none"> Enhances motorist and worker safety 	<ul style="list-style-type: none"> Traffic mobility Compliance with speed limit reductions is often poor 	<ul style="list-style-type: none"> Additional enforcement and/or increased penalties might be needed for motorist compliance with the reduced speed limits 70 & 65 mph speed reduction require BTO approval
Temporary traffic signals	✓	✓	✓	✓	<ul style="list-style-type: none"> Long project duration High traffic volume When safety needs to be improved (e.g., for temporary turning movements) When additional capacity is needed on a temporary basis during construction When high delays are expected on ramps/detour routes One-lane, two-way operations 	<ul style="list-style-type: none"> Improves worker safety by replacing flaggers with temporary signals Improves driver safety by separating conflicting movements May increase capacity 	<ul style="list-style-type: none"> Cost of signal design, placement, and operation Changes traffic patterns on cross-roads 	<ul style="list-style-type: none"> Signals should be warranted as per the agency's signal warrant requirements May lead to re-routing of traffic from project location
Temporary concrete barrier			✓	✓	<ul style="list-style-type: none"> Long project duration When long-term work zone activity is next to the travel lanes When high-speed opposing travel lanes are present 	<ul style="list-style-type: none"> Enhances safety to workers by the physical separation of the motorists from work zone Enhances motorist safety by physically separating traffic traveling in opposite directions 	<ul style="list-style-type: none"> Barrier system reduces saturation flow rates of travel lanes 	<ul style="list-style-type: none"> Temporary barrier usage should be based on length of the work zone project, volume and speeds in the location, and agency practices (See FDM 11-50-35) Screens may be mounted on the top of temporary traffic barriers to discourage gawking and reduce headlight glare
Movable traffic barrier systems	✓	✓	✓	✓	<ul style="list-style-type: none"> Long project duration Projects with multiple construction stages/phasing High traffic volume When roadway capacity can be gained Roadways with capacity limitations in the direction of travel and no alternate routes When repeated barrier shifts are needed When frequent lane closures are anticipated When reversible lanes are used 	<ul style="list-style-type: none"> Rapid and safe reconfiguration of the traffic barrier system Can provide additional space for the contractor to work Enhances motorist safety by clearly delineating direction of travel 	<ul style="list-style-type: none"> Cost Labor for movement of barrier 	<ul style="list-style-type: none"> More effective when there is a majority commuter traffic and/or fluctuating demand on the roadway Shift distance must be constant
Crashcushions		✓	✓	✓	<ul style="list-style-type: none"> Long project duration High traffic volume High crash rate When temporary hazards (e.g., work zone vehicles and other work zone-related barriers) are in proximity to motorists 	<ul style="list-style-type: none"> Protects a temporary hazard Prevents vehicle intrusion into the work space Significantly enhances safety of both motorist and worker 	<ul style="list-style-type: none"> Cost Space and labor for placement 	<ul style="list-style-type: none"> If cushion is struck frequently, replacement and repair costs may be significant
Temporary rumble strips		✓	✓		<ul style="list-style-type: none"> Long project duration High crash rate When the work zone occurs on an open stretch of highway where drivers may tend to lose alertness Where the traffic pattern has been changed Where there is alternating one-way traffic with a temporary traffic signal 	<ul style="list-style-type: none"> Alerts motorists about the presence of work zone Alerts motorists to change in traffic pattern 	<ul style="list-style-type: none"> Cost Rumble strips are not as effective in urban settings and are not appropriate for residential areas because of the noise 	<ul style="list-style-type: none"> Pavement needs to be prepared for laying rumble strips Implementation of rumble strips must be evaluated on a project-to-project basis Noise concerns in urban areas
Intrusion alarms		✓	✓		<ul style="list-style-type: none"> Long project duration High crash rate In locations where worker safety is of particular concern Areas where sight distance is limited (e.g., after curves) 	<ul style="list-style-type: none"> Wakens dozing or unalert drivers, who are a cause of roadway and work zone crashes Provides workers with critical reaction time needed to move out of harm's way 	<ul style="list-style-type: none"> Cost Can startle the errant motorist and also other adjacent vehicles 	<ul style="list-style-type: none"> Unreliable and/or frequent false alarms may cause workers to ignore the warning sounds
Warning lights		✓	✓	✓	<ul style="list-style-type: none"> Long project duration High crash rate Where attention needs to be drawn to critical information that can lead to potentially severe consequences if missed 	<ul style="list-style-type: none"> Alerts motorists to critical information that can increase both motorist and worker safety 	<ul style="list-style-type: none"> Cost Space and labor for placement 	<ul style="list-style-type: none"> Must be used smartly so that motorists will not ignore the lights State and/or local ordinances that govern signage must be considered

TMP Management Strategy		Improvements			Current WisDOT Use	When to Consider	Potential Benefits	Potential Challenges	Other Considerations
		Mobility	Motorist Safety	Worker Safety					
	Automated flagger assistance devices (AFAD)			✓		<ul style="list-style-type: none"> High crash rate Where flaggers are needed Short-term lane closures 	<ul style="list-style-type: none"> Improves worker safety by removing worker from the roadway 	<ul style="list-style-type: none"> Cost 	
	Project task force/committee		✓	✓	✓	<ul style="list-style-type: none"> Long project duration High public exposure/traffic volume High business impacts High residential impacts In locations where worker and motorist safety are of particular concern 	<ul style="list-style-type: none"> Develops solutions to safety and traffic flow issues Improves worker and motorist safety due to trained and responsible persons in-charge 	<ul style="list-style-type: none"> Cost of training Team dynamics where no one takes responsibility for a particular job 	<ul style="list-style-type: none"> Team members must be assigned specific tasks with specific objectives to achieve overall safety during the project
	Construction safety supervisors/inspectors		✓	✓	✓	<ul style="list-style-type: none"> Long project duration In locations where worker and motorist safety are of particular concern May be applicable to any work zone 	<ul style="list-style-type: none"> Improves worker and motorist safety due to trained and responsible person in-charge 	<ul style="list-style-type: none"> Cost of training 	<ul style="list-style-type: none"> In larger projects more than one person might be needed, while in smaller projects the safety supervisor may have other responsibilities
	Road safety audits		✓	✓		<ul style="list-style-type: none"> May be performed during any or all stages of a project and on existing roads 	<ul style="list-style-type: none"> Improves worker and motorist safety due to upfront identification of potential safety hazards for remediation 	<ul style="list-style-type: none"> Cost and time to perform audit 	
	TMP monitor/inspection team	✓	✓	✓	✓	<ul style="list-style-type: none"> Long project duration Projects with multiple construction stages/phasing When congestion is a concern In locations where worker and motorist safety are of particular concern 	<ul style="list-style-type: none"> Improves worker and motorist safety due to trained and responsible person in-charge Aids in identifying whether the TMP is effective and if changes are needed to improve safety and mobility Provides useful data for improving future TMPs 	<ul style="list-style-type: none"> Cost of training 	
	Team meetings		✓	✓	✓	<ul style="list-style-type: none"> Long project duration Where large projects with complex traffic conditions are present 	<ul style="list-style-type: none"> Improves worker and motorist safety 	<ul style="list-style-type: none"> Cost and time involved 	<ul style="list-style-type: none"> Team dynamics may be challenging Meetings should be regularly held to be effective
	Project on-site safety training			✓	✓	<ul style="list-style-type: none"> Long project duration In locations where worker and motorist safety are of particular concern 	<ul style="list-style-type: none"> Improves worker safety due to the clear understanding on safety procedures and specific risks associated with the project by all workers 	<ul style="list-style-type: none"> Cost of safety training for all personnel 	<ul style="list-style-type: none"> Such trainings must be conducted periodically during the project life
	Safety awards/incentives		✓	✓		<ul style="list-style-type: none"> Long project duration In locations where worker and motorist safety are of particular concern 	<ul style="list-style-type: none"> Provides an alert work force that is proactively weeding out safety problems 	<ul style="list-style-type: none"> Dissent among workers due to not receiving awards 	<ul style="list-style-type: none"> Incentives and awards must be judged in an acceptable, non-partial way
	Windshield surveys	✓	✓	✓	✓	<ul style="list-style-type: none"> Long project duration In locations where worker and motorist safety are of particular concern 	<ul style="list-style-type: none"> Identifies and addresses potential safety deficiencies Improves worker and motorist safety due to the proactive approach of identifying potential safety concerns May lead to improved traffic flow 	<ul style="list-style-type: none"> Cost and time to perform surveys 	<ul style="list-style-type: none"> Such inspections are typically conducted by designated agency staff in cooperation with project staff

Transportation Management Plan (TMP) Strategy Matrix

TMP Management Strategy	Improvements			Current WisDOT Use	When to Consider	Potential Benefits	Potential Challenges	Other Considerations
	Mobility	Motorist Safety	Worker Safety					
Incident Management and Enforcement Strategies								
ITS for traffic monitoring/management	✓	✓	✓	✓	<ul style="list-style-type: none"> • Can be applicable to all situations – to convey messages that communicate accurate, timely, and pertinent information to motorists about prevailing and anticipated traffic conditions • Long project duration • Presence of permanent ITS deployment and/or STOC • High expected delay • Projects with multiple construction stages/phasing • Available detour routes exist • Frequent lane and/or ramp closures expected • Existing and potential high incident locations 	<ul style="list-style-type: none"> • Provides real-time information to motorists • Enables agency to manage the transportation system in and around the work zone in real-time • Provides road users with information to divert or take other appropriate measures in response to an incident • Informs drivers of speed limit reductions and enforcement activities • Allows motorists to avoid hazards and delays, and respond properly to changing roadway conditions • Improves driver guidance and creates safer operations 	<ul style="list-style-type: none"> • Cost • Needs accurate and reliable information that is dependable 	<ul style="list-style-type: none"> • Needs means of communication to transmit data; communication options may be limited by geography or existing infrastructure • Needs an existing or planned STOC or the establishment of one – STOC can be virtual/remote • Supports incident management • May reduce the impact on businesses created by construction activities and detours
Surveillance [closed-circuit television (CCTV), loop detectors, lasers, probe vehicles]	✓	✓		✓	<ul style="list-style-type: none"> • Long project duration • All situations - advanced warning/public information and signage is generally always beneficial 	<ul style="list-style-type: none"> • Verifies the presence of traffic problems and incidents • Helps to determine appropriate response to address an incident • Contributes to saving both motorist and worker lives by aiding quick, appropriate response from local incident response agencies 	<ul style="list-style-type: none"> • If project is delayed, sign is wrong 	<ul style="list-style-type: none"> • Supports incident management • Needs existing, planned, or virtual STOC • Requires reliable and timely data • Used to provide road user information
Helicopter for aerial surveillance	✓	✓		✓	<ul style="list-style-type: none"> • Long project duration • Projects with multiple construction stages/phasing • Large, complex work zone project 	<ul style="list-style-type: none"> • Aids in quick identification of traffic problems and incidents and quick response • Enables excellent coverage of a wide area 	<ul style="list-style-type: none"> • Cost • More often the helicopter is media-controlled rather than controlled by the project or incident agency 	<ul style="list-style-type: none"> • Supports incident management • Mostly achieved by cooperation and cost sharing with local media
Traffic screens	✓	✓		✓	<ul style="list-style-type: none"> • High traffic volumes • When crash rate is high • When headlight glare needs to be reduced • When construction is immediately adjacent to traffic 	<ul style="list-style-type: none"> • Reduces driver distraction • Reduces rubbernecking, which can prevent congestion • Reduces headlight glare 	<ul style="list-style-type: none"> • Additional cost to set up and maintain screens 	
Call boxes	✓	✓			<ul style="list-style-type: none"> • Rural/low-density highways where help is not readily available • Where cell phone coverage is poor 	<ul style="list-style-type: none"> • Provides motorists the means to reach help quickly • Expedites response and clearance times for crashes and breakdowns 	<ul style="list-style-type: none"> • Cost 	<ul style="list-style-type: none"> • Call boxes must be accessible within walking distance from the incident • With increasing use of cell phones and cell phone coverage, call boxes are becoming less common
Mile-post markers		✓			<ul style="list-style-type: none"> • Long project duration • May be applicable to any work zone 	<ul style="list-style-type: none"> • Provides the motorist with the location information critical for getting quick help • Aids in responding to incidents or breakdowns • Helpful in managing traffic records and subsequent analysis 		<ul style="list-style-type: none"> • With the 911 mandate and increasing use of cell phones this might not be necessary in the future for pin-pointing incident locations for 911 dispatchers • The spacing of the markers is important. Placing markers a tenth of a mile apart rather than a mile apart enables motorists to more easily reference their location • Location markers can be helpful in areas where people may become easily confused, such as at a complicated intersection
Freeway service patrol (FSP)	✓	✓		✓	<ul style="list-style-type: none"> • Long project duration • High public exposure/traffic volume • Where incidents can create significant delays • Where shoulder width reductions or closures are expected • Existing and potential high incident locations 	<ul style="list-style-type: none"> • Reduces the time required to remove the incident from the roadway 	<ul style="list-style-type: none"> • Cost of maintaining dedicated towing equipment and crew 	<ul style="list-style-type: none"> • Parking areas and turnaround locations are needed for the tow trucks to ensure quick response times • Towing services are generally contracted, while freeway service patrols are more likely to be publicly operated

TMP Management Strategy		Improvements			Current WisDOT Use	When to Consider	Potential Benefits	Potential Challenges	Other Considerations
		Mobility	Motorist Safety	Worker Safety					
	Coordination with media	✓	✓		✓	<ul style="list-style-type: none"> Long project duration High public exposure/traffic volumes Mega/Major Projects 	<ul style="list-style-type: none"> Procedures to be followed in the event of an incident or major traffic delay are established in advance Helps to ensure the news media is able to convey factual information concerning incidents and traffic delays Provides advance guidance to motorists on major traffic delays and incidents 	<ul style="list-style-type: none"> Requires time to develop good relationships and procedures 	<ul style="list-style-type: none"> Personnel turnover or extended time between occurrences may mean procedures need to be refreshed
	Local detour routes	✓			✓	<ul style="list-style-type: none"> Long project duration High traffic volume High crash rate Where detour routes are available 	<ul style="list-style-type: none"> Proactive approach helps in having a readily available, well-thought out plan for detours when incidents and major traffic delays happen 	<ul style="list-style-type: none"> Cost 	<ul style="list-style-type: none"> Requires advance approval or authorization from the local agency for the use of the detour route in the event of an incident Need a means to communicate the alternate routes to travelers when appropriate
	Contract support for incident management	✓	✓		✓	<ul style="list-style-type: none"> Long project duration High crash rate In large urban areas with large and frequent work zone projects 	<ul style="list-style-type: none"> Provides additional, dedicated personnel for incident management 	<ul style="list-style-type: none"> Cost 	<ul style="list-style-type: none"> During road projects, it is important to have people available on call who can quickly get to an incident when needed Need to establish means of coordinating with existing/other incident response Require law enforcement mitigation contract
	Incident/emergency management coordinator	✓	✓	✓	✓	<ul style="list-style-type: none"> Long project duration Large complex project where on-going incident management is necessary High public exposure/traffic volume 	<ul style="list-style-type: none"> Provides a dedicated, responsible person for managing incidents and ensuring that traffic safety and mobility goals are met 	<ul style="list-style-type: none"> Cost 	
	Incident/emergency response plan	✓	✓	✓	✓	<ul style="list-style-type: none"> Long project duration Major/complex work zone projects where there is potential for recurring significant incidents High public exposure/traffic volume 	<ul style="list-style-type: none"> Prompt and appropriate response and clearance of incidents 	<ul style="list-style-type: none"> Cost Predicting and planning for potential incidents 	<ul style="list-style-type: none"> Multi-agency coordinated effort is needed for identifying potential incidents and planning for them
	Dedicated (paid) police enforcement		✓	✓	✓	<ul style="list-style-type: none"> Long project duration High crash rate In large and complex work zone locations where enforcement is an issue or incident support is desired 	<ul style="list-style-type: none"> Enhances safety of motorists and workers Supports incident management Promotes orderly traffic flow 	<ul style="list-style-type: none"> Cost 	<ul style="list-style-type: none"> Police should be adequately trained to perform their duties safely
	Cooperative police enforcement		✓	✓		<ul style="list-style-type: none"> Long project duration High crash rate In complex work zone locations where enforcement is an issue May be applicable in any work zone 	<ul style="list-style-type: none"> Enhances safety of motorists and workers Supports incident management Promotes orderly traffic flow 	<ul style="list-style-type: none"> Enforcement is provided on an as-available basis as reimbursement of enforcement costs is generally not provided 	<ul style="list-style-type: none"> Similar to dedicated (paid) police enforcement except for the cost Police should be adequately trained to perform their duties safely
	Increased penalties for work zone violations		✓	✓	✓	<ul style="list-style-type: none"> Long project duration May be applicable in any work zone 	<ul style="list-style-type: none"> Improves safety by promoting compliance with work zone regulations 		<ul style="list-style-type: none"> Requires enforcement to be effective

Transportation Management Plan (TMP) Strategy Matrix

TMP Management Strategy	Improvements			Current WisDOT Use	When to Consider	Potential Benefits	Potential Challenges	Other Considerations
	Mobility	Motorist Safety	Worker Safety					
Other Innovative Construction Strategies								
Accelerate bridge construction (ABC), prefabricated elements & systems (PBES), geosynthetic reinforced soil (GRS)	✓	✓	✓	✓	<ul style="list-style-type: none"> • High traffic volume • Emergency Bridge Replacement • Evacuation route or over railroad or navigable channel • Costly temporary structure • Remote site locations • Limited construction periods 	<ul style="list-style-type: none"> • Reduced on-site construction time • Minimized traffic impacts of bridge construction projects • Increased construction work zone safety • Less disruption to the environment • Increased constructability • Increased quality and lowers life cycle costs • Flexibility in design 	<ul style="list-style-type: none"> • Traffic detour issues • Technical issues related to seismic design, structure durability and reliability • Poor communication and coordination between stakeholders • Lack of technology for rapid bridge construction and replacement technologies for extreme events • Development needed in design methodologies, contracting approaches, material supply chain management • Cost of self-propelled modular transporter (SPMT) 	<ul style="list-style-type: none"> • Where incidents can create significant delays • May require a change in project planning/staging • How it is justified
Rolling slowdown/roadblock		✓	✓	✓	<ul style="list-style-type: none"> • Setting bridge beams • Placing overhead sign structures • Pulling power lines across the roadway • Blasting Operations • Installing cantilever trusses • Clearing debris • Pavement repair • Removing disabled vehicles • Moving Equipment Across the Roadway 	<ul style="list-style-type: none"> • Short duration work • Worker safety 	<ul style="list-style-type: none"> • Slow traffic • Requires coordinated communication effort • Law enforcement 	
Split-lane merge construction staging	✓	✓	✓	✓	<ul style="list-style-type: none"> • High traffic volume • High public exposure • Long project duration • Limited availability of detours • Where incidents can create significant delays 	<ul style="list-style-type: none"> • Maintains safe and smooth freeway operations 	<ul style="list-style-type: none"> • Driver confusion • Requires more control devices • Requires longer temporary concrete barrier (TCB) • Requires extensive press releases • May need raised pavement markers 	<ul style="list-style-type: none"> • Used on Madison Beltline
Precast pavement repair	✓	✓	✓	✓	<ul style="list-style-type: none"> • High traffic volume • High public exposure • High user delay • Limited availability of detours 	<ul style="list-style-type: none"> • Expedite project opening to traffic • Minimize user delay • Reduced lane closures • Less traffic disruption • Improved safety in work zone • Low maintenance service life 	<ul style="list-style-type: none"> • Higher cost of fabricating pavement slabs • Higher initial learning curve • May need justification 	<ul style="list-style-type: none"> • Fabricating plant location • Transportation of panels • Site access for heavy cranes • Rapid removal of old pavement • Rapid preparation of base/subbase • Panel installation challenges • matching pavement grade
Oversized load detection (WZ ITS)	✓	✓	✓		<ul style="list-style-type: none"> • When work activities reduce height clearances below minimum requirements • When roadway corridor is frequently used by unpermitted, illegal oversized loads • On roadways with high truck volumes 	<ul style="list-style-type: none"> • Alert a driver that their vehicle is over-dimension • Help prevent road or structure damage 	<ul style="list-style-type: none"> • Site location • Merging tapers 	<ul style="list-style-type: none"> • When project construction phases require pavement work that decreases bridge clearance heights or significantly reduces lane width

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	Mobility	Motorist Safety	Worker Safety					
Construction vehicles entering and exiting the roadway (WZ ITS)		✓			<ul style="list-style-type: none"> When trucks must utilize the mainline roadway to accelerate A truck merge lane cannot be provided on the project The haul road entrance is visibly obscured to drivers 	<ul style="list-style-type: none"> Alerts drivers of accelerating and decelerating vehicles Provides real-time information to drivers when to slow down Decreases tailgating Reduces crashes with hauling vehicles 		<ul style="list-style-type: none"> The ADT on the roadway is above the level when truck drivers can easily find a gap in traffic and accelerate within the traffic lane without causing traffic to suddenly adjust speed or change lanes On work zones where site distance is limited, especially for high speed, rural roadways In areas where there is an increase in the potential conflicts between construction vehicles and the motoring public
Work space intrusion (WZ ITS)		✓	✓		<ul style="list-style-type: none"> Truck exit is difficult to identify High roadway volume causing tailgating Vehicles inadvertently follow a truck off the roadway Rural areas 	<ul style="list-style-type: none"> Detects vehicles and warns drivers before they can be seen by workers Allows workers an opportunity to avoid errand vehicles 	<ul style="list-style-type: none"> Extended buffer space may not be available 	<ul style="list-style-type: none"> When the work activity area is near the edge of the traveled way When the work activity area is near an exit or entrance ramps Often, drivers are focused on the task of entering or exiting the roadway and they errantly enter the work activity area When work is performed at night
Stopped or slowing traffic warning (WZ ITS)		✓			<ul style="list-style-type: none"> Stopped traffic is not expected Visibility is restricted Transitioning from a rural to urban environment When lane closures are required on high volume roadways during peak hours 	<ul style="list-style-type: none"> Reduces rear-end and secondary crashes Alerts drivers Reduces driver anxiety and unnecessary braking 	<ul style="list-style-type: none"> Signs placed more than a mile ahead of confirmation are typically forgotten by the motorist 	<ul style="list-style-type: none"> Work is being performed near high volume entrance or exit ramps When work is performed at night on a high volume roadway Where stopped or slowing traffic occurs daily, especially during peak hours
Excessive speed warning system (WZ ITS)		✓	✓		<ul style="list-style-type: none"> When changes in roadway alignment require temporary sharp curves Limited sight distance When an individual driver needs to take immediate action to reduce their speed to avoid a severe consequence 	<ul style="list-style-type: none"> Real time warning to individual driver Helps reduce crashes or intrusion 		<ul style="list-style-type: none"> When other ITS is used e.g "water over pavement detection" or "stopped or slowing traffic"
Steel median barrier gate		✓	✓		<ul style="list-style-type: none"> When traffic needs to be rerouted for emergency access When access is needed for construction vehicles 	<ul style="list-style-type: none"> Can be deployed on gradients up to 8% Robust transition design Easily installed on bridge decks and viaducts Available as a 26', 39' or 52' system Performance tested to open and close in under 2 minutes 		
Movable steel barrier		✓	✓		<ul style="list-style-type: none"> Short term work zones and bridge repair projects where barrier deployments and lane closures are frequent 	<ul style="list-style-type: none"> Quick and easy deployment Can be moved laterally or longitudinally to optimize traffic flow and work zone space High mobility provides flexibility Low deflection premium mobile steel barrier 		
Expected delay (WZ ITS)	✓				<ul style="list-style-type: none"> Queue lengths may encroach upstream beyond a motorist's reasonable expectations for stopped traffic and there is probability that the geometrics (terrain) may cause poor visibility of end of traffic queues, causing short reaction times and panic stopping 	<ul style="list-style-type: none"> Informs drivers of expected delay Provides drivers with information about whether to change their route 		<ul style="list-style-type: none"> Queue initiated on crossroads are estimated to cause traffic conflicts and/or delays on the mainline road such as backups beyond the length of ramps through or around turns in intersections, or other hazardous congestion situations

Transportation Management Plan (TMP) Strategy Matrix

TMP Management Strategy	Improvements			Current WisDOT Use	When to Consider	Potential Benefits	Potential Challenges	Other Considerations
	Mobility	Motorist Safety	Worker Safety					
Oversize/Overweight								
This category include strategies such as: Alternate routes, Corridor level planning, Restricted lane signing, Coordination with freight operators, Public outreach, Advance freight notification, WZ ITS -queue, speed, warning system, Partnership, In cab communication, Detour passenger vehicles	✓	✓	✓	✓	<ul style="list-style-type: none"> • When height or width restrictions occur in construction projects • When incidents restricts OSOW freight from travelling through the route • When delays occur on major OSOW route • When congestion occur on mainline • When high or lane width restrictions occur in construction projects 	<ul style="list-style-type: none"> • Provides freight operators information for planning OSOW freight routes • Provides incident responder ability to clear incidents quickly 	<ul style="list-style-type: none"> • Inadequate structural capacity on alternate routes • Turning movements at intersection • May be longer and cause delays • More expensive • Reduced pavement life on alternate route 	<ul style="list-style-type: none"> • Signal retiming • Effect on local towns • Increased traffic

Transportation Management Plan (TMP) Strategy Matrix

TMP Management Strategy	Improvements			Current WisDOT Use	When to Consider	Potential Benefits	Potential Challenges	Other Considerations
	Mobility	Motorist Safety	Worker Safety					
Identifying and Managing Utility Conflicts								
Identification, management, and Resolution of utility conflict during projects development and delivery	✓	✓	✓	✓	<ul style="list-style-type: none"> • When Utility information is not accurate or complete and there exists the potential for conflict • May be beneficial for any project 	<ul style="list-style-type: none"> • Significant cost saving • Reduce and manage traffic disruptions from road work • Reduce project delays • Better quality road surfaces • Project can be "win-win" for WisDOT, road users, and citizens • Reduce construction congestion and keep traffic and freight moving • Provides incident responder ability to clear incidents quickly 	<ul style="list-style-type: none"> • Utility relocation may be required resulting in more expensive R/W • Utility construction activities may affect project phasing • Utility construction may occur during project construction • Utility work may not be completed prior to start of construction • May be difficult to identify potential projects to coordinate with 	<ul style="list-style-type: none"> • Development of training, education, and auditing standards for utility work can further minimize traffic impacts • Failure to identify all stakeholders • Discovery of old barrier abandoned hazardous material • Weather