



Work Zone Management Guidebook

March 2021

WORK
ZONE

SPEED

Contents

- Challenges and Purpose
- Advanced Work Zone Strategies
 - Priority Areas
 - Strategy Selection
 - Strategy Descriptions
- Law Enforcement Participation
- Contractor Performance Rating and Expectations
- Work Zone Quality
- Work Zone Inspection Application
- Work Zone Management Teams, Meetings, and Resources

The Challenge

- Missouri Work Zone Crash Deaths
 - 2019: 18
 - 2015 to 2019: 64
 - Since 2000: 13 MoDOT Employees
- Missouri Work Zone Crash Injuries
 - 2015 to 2019: 3,685

<https://www.modot.org/work-zone-awareness>



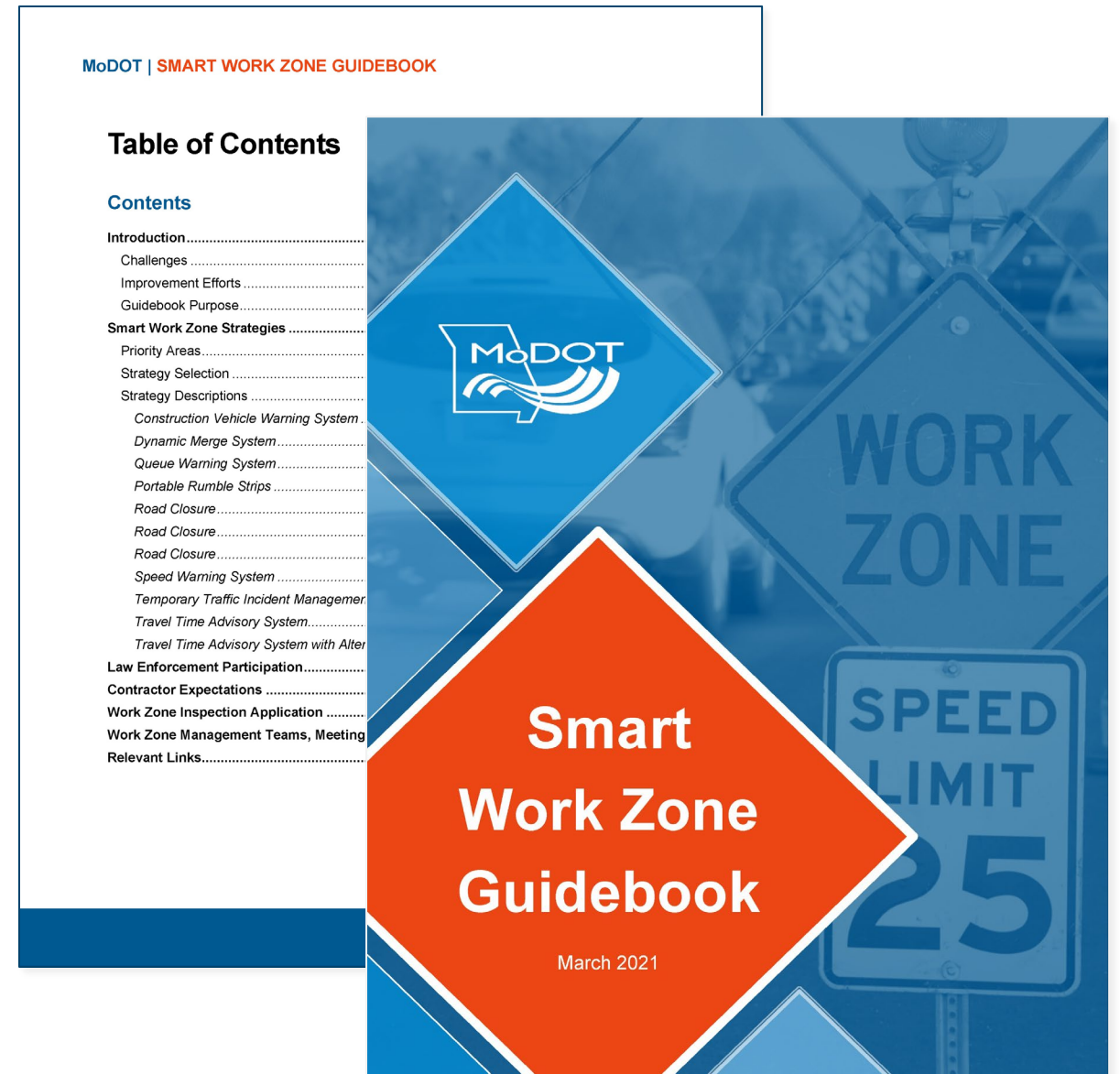


MoDOT's Continual Improvement Efforts

- Driver Education
- Standards
- Specifications
- Processes
- Materials
- Research
- Methods
- Technology

Guidebook Purpose

- Describe Work Zone Management and Other Strategies
- Provide Links to More Information
- Supplement Standards and Documents in the EPG





Work Zone Management Strategies




Work Zone Strategies

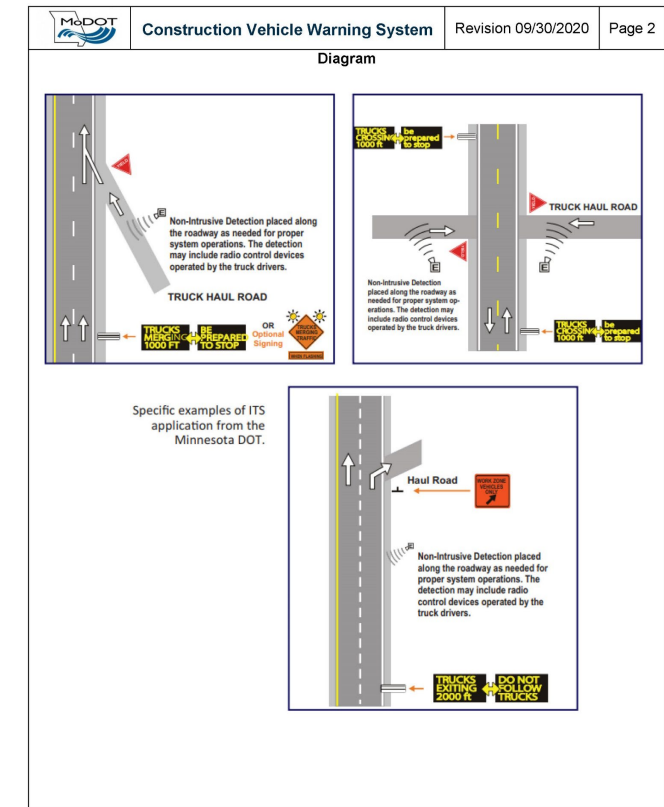
1. Construction Vehicle Warning System
2. Dynamic Late Merge (Zipper Merge) System
3. Queue Warning System
4. Road Closure
5. Speed Warning System
6. Temporary Rumble Strips
7. Temporary Traffic Incident Management and ITS System
8. Travel Time Advisory System
9. Travel Time Advisory System with Alternate Routes

Work Zone Strategy Descriptions

Strategy Details

 Construction Vehicle Warning System		Revision 09/30/2020	Page 1
Description One of the crucial aspects of the establishment and maintenance of a work zone is safe access and egress points for construction vehicles. These points are key determinants when it comes to ensuring the safety of both the traveling public and construction workers on a project. The safety challenges include travelers following construction vehicles which are slower than usual traffic, acceleration, and deceleration of work vehicles while entering or exiting work zones, the proximity of work vehicles to passing motorists.			
The use of ITS in work zones provides a variety of innovative ways where technologies can be exploited for the improvement of work vehicles access to and egress from work zones. The usage of detectors and CMS helps in notifying the motorists when a construction vehicle is planning to enter or exit from work zones. This display of messages can prepare travelers for a slowdown or potential merging conflicts due to construction vehicles. These warnings also reduce the frequency of incidents where motorists following work vehicles.			
Applications <ul style="list-style-type: none"> At least one construction vehicle access point. Work zones where a truck acceleration/merge lane is not provided. Work zone speed limit is greater than 25 mph Traffic Volumes \geq 1500 vehicles per lane per hour ADT is above the level where a truck can easily find a gap in traffic to accelerate within the traffic lane without causing traffic to have to adjust speed or change lanes. 	Benefits <ul style="list-style-type: none"> The system should alert drivers of a slowly accelerating construction vehicle crossing into the traffic lane. The system should provide drivers sufficient time to react appropriately, such as slowing down. 		
Costs <ul style="list-style-type: none"> Sensors and CMS: \$15,000 per access/egress points. (\$13k. High Level MnDOT Cost Estimate.) 	Reference https://www.workzonesafety.org/files/documents/training/courses_programs/rsa_program/RSP_Guidance_Documents_Download/RSP_Access_Egress_Download.pdf		

Typical Diagrams





Description

One of the crucial aspects of the establishment and maintenance of a work zone is safe access and egress points for construction vehicles. These points are key determinants when it comes to ensuring the safety of both the traveling public and construction workers on a project. The safety challenges include travelers following construction vehicles which are slower than usual traffic, acceleration, and deceleration of work vehicles while entering or exiting work zones, the proximity of work vehicles to passing motorists.

The use of ITS in work zones provides a variety of innovative ways where technologies can be exploited for the improvement of work vehicles access to and egress from work zones. The usage of detectors and CMS helps in notifying the motorists when a construction vehicle is planning to enter or exit from work zones. This display of messages can prepare travelers for a slowdown or potential merging conflicts due to construction vehicles. These warnings also reduce the frequency of incidents where motorists following work vehicles.

Applications

- At least one construction vehicle access point.
- Work zones where a truck acceleration/merge lane is not provided.
- Work zone speed limit is greater than 25 mph
- Traffic Volumes ≥ 1500 vehicles per lane per hour
- ADT is above the level where a truck can easily find a gap in traffic to accelerate within the traffic lane without causing traffic to have to adjust speed or change lanes.

Benefits

- The system should alert drivers of a slowly accelerating construction vehicle crossing into the traffic lane.
- The system should provide drivers sufficient time to react appropriately, such as slowing down.

Costs

- Sensors and CMS: \$15,000 per access/egress points.
- (\$13k. High Level MnDOT Cost Estimate.)

Reference

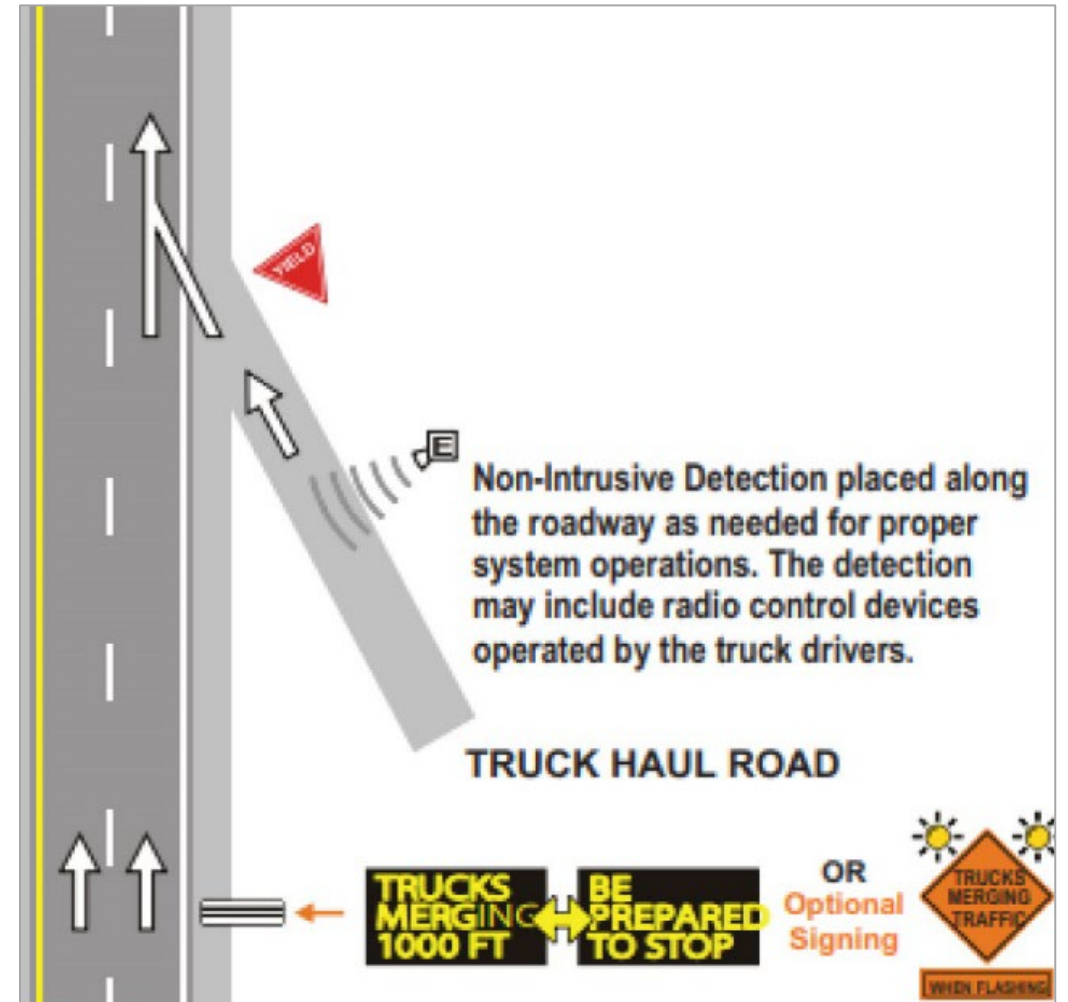
https://www.workzonesafety.org/files/documents/training/courses_programs/rsa_program/RSP_Guidance_Documents_Download/RSP_Access_Egress_Download.pdf

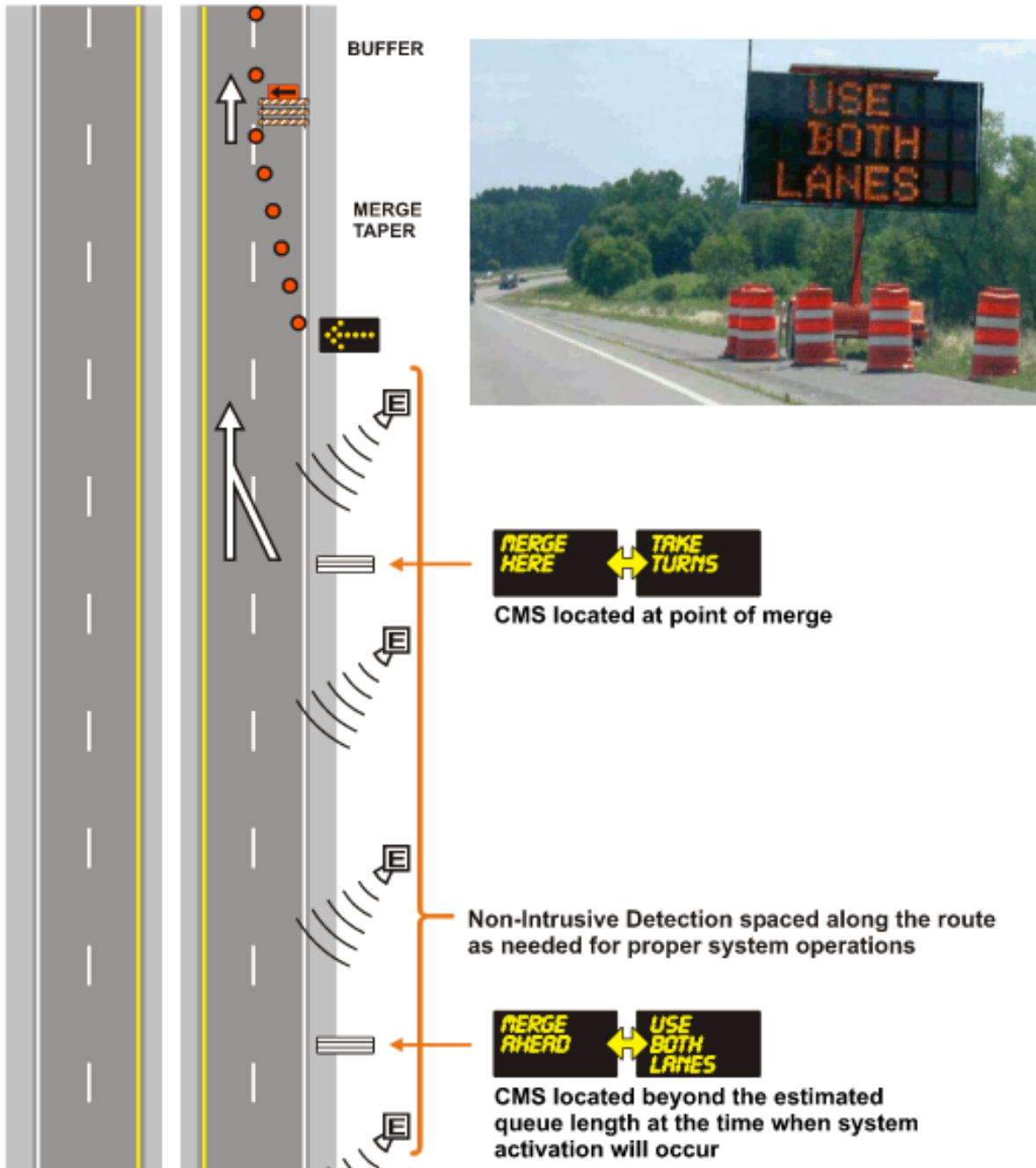
Strategy Details

- Description
- Applications
- Benefits
- Costs
- References

1. Construction Vehicle Warning System

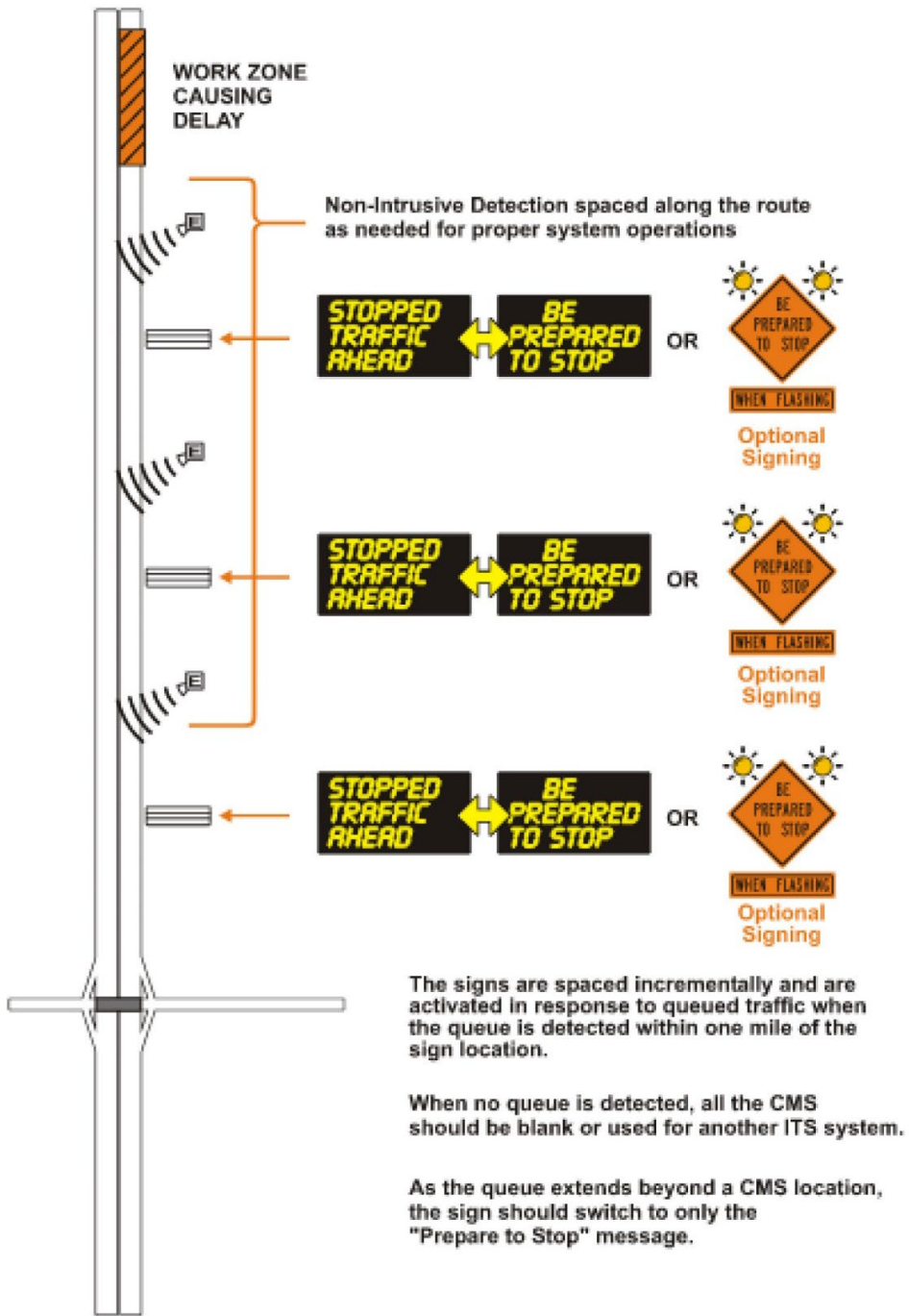
- Warns drivers of low-speed construction vehicles entering or exiting a high-speed roadway





2. Dynamic Late Merge (Zipper Merge) System

- Provides positive guidance on where and when to merge
- Reduces merging conflicts
- Maximizes queue storage



3. Queue Warning System

- Dynamically Warns Drivers of Slow and Stopped Traffic

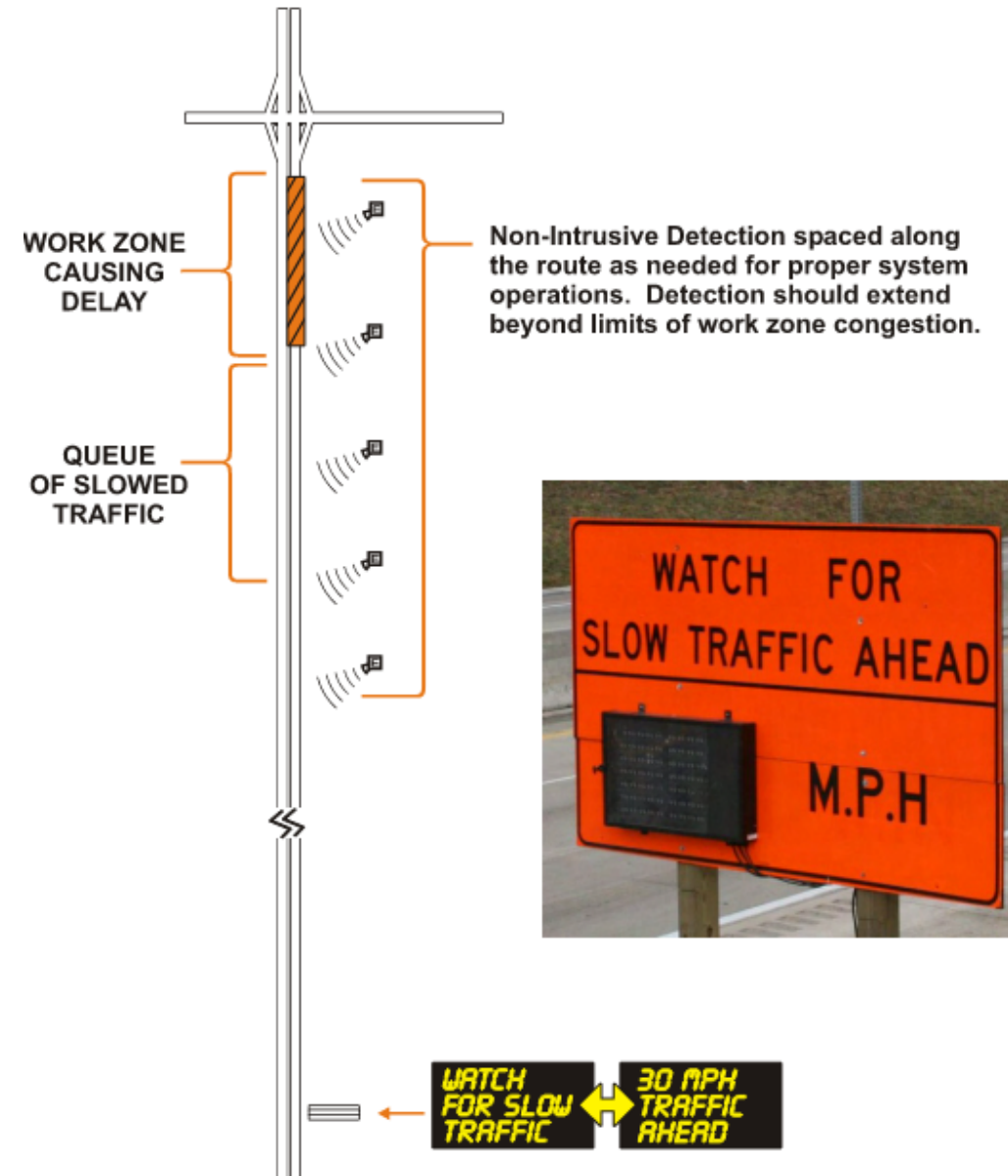
4. Road Closure

- Consider for very high or very low impact work zones



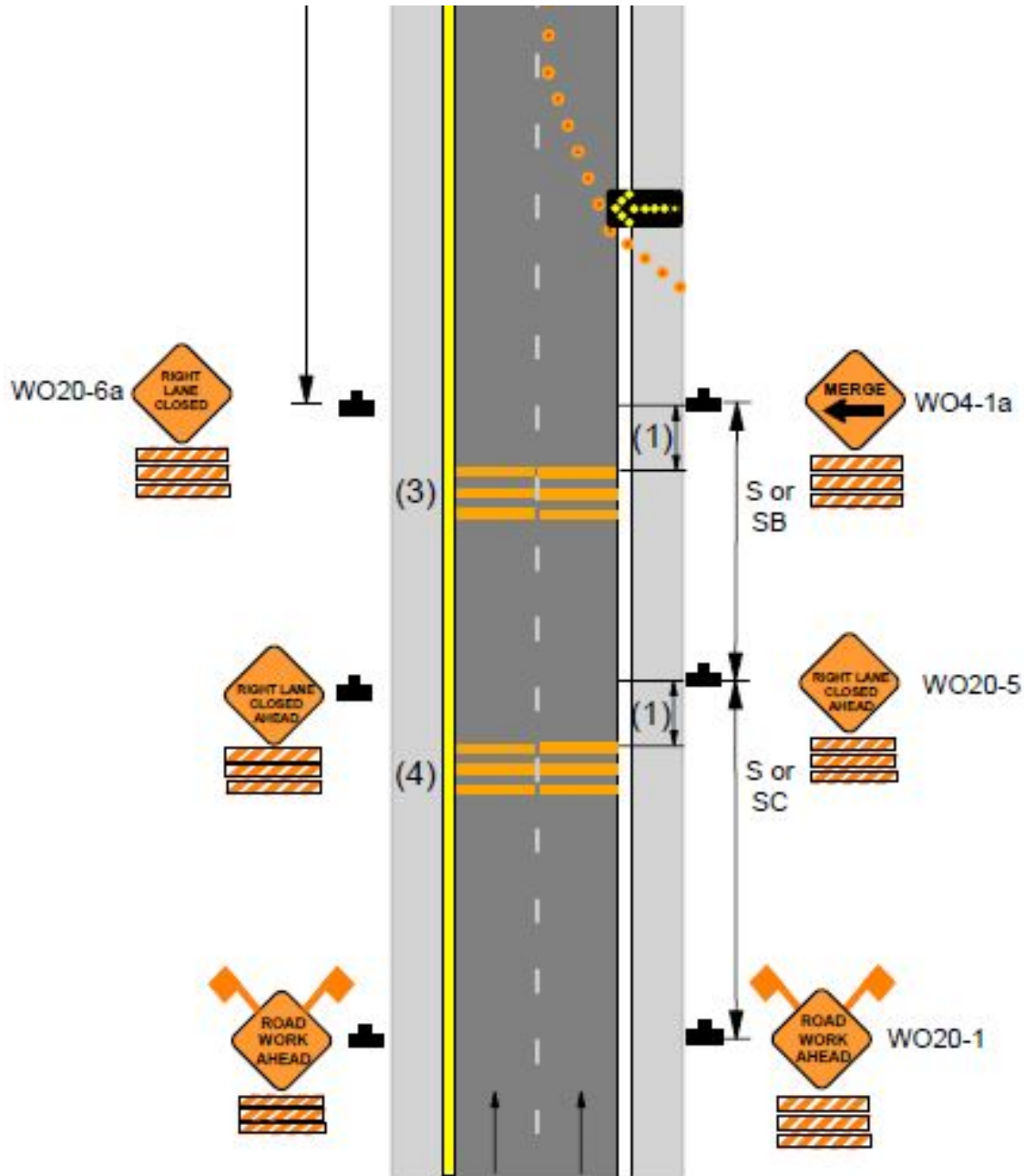
5. Speed Warning System

- Dynamically advises drivers of current work zone speeds



6. Temporary Rumble Strips

- Physically alerts traffic entering work zone



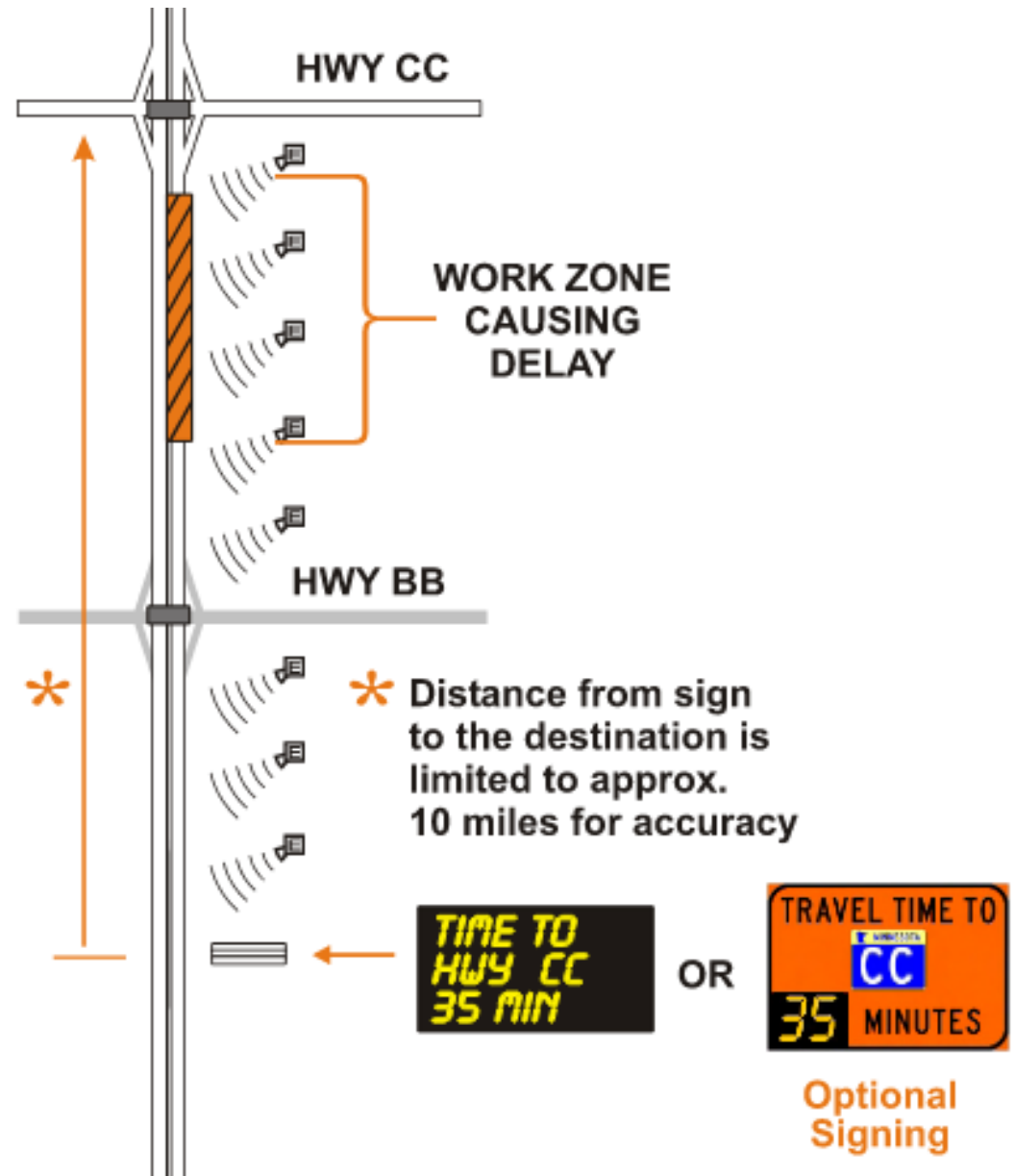
7. Temporary Traffic Incident Management and ITS System

- For very high-impact work zones
- Include traffic incident management plan
- Increased surveillance
- Emergency responder plan



8. Travel Time Advisory

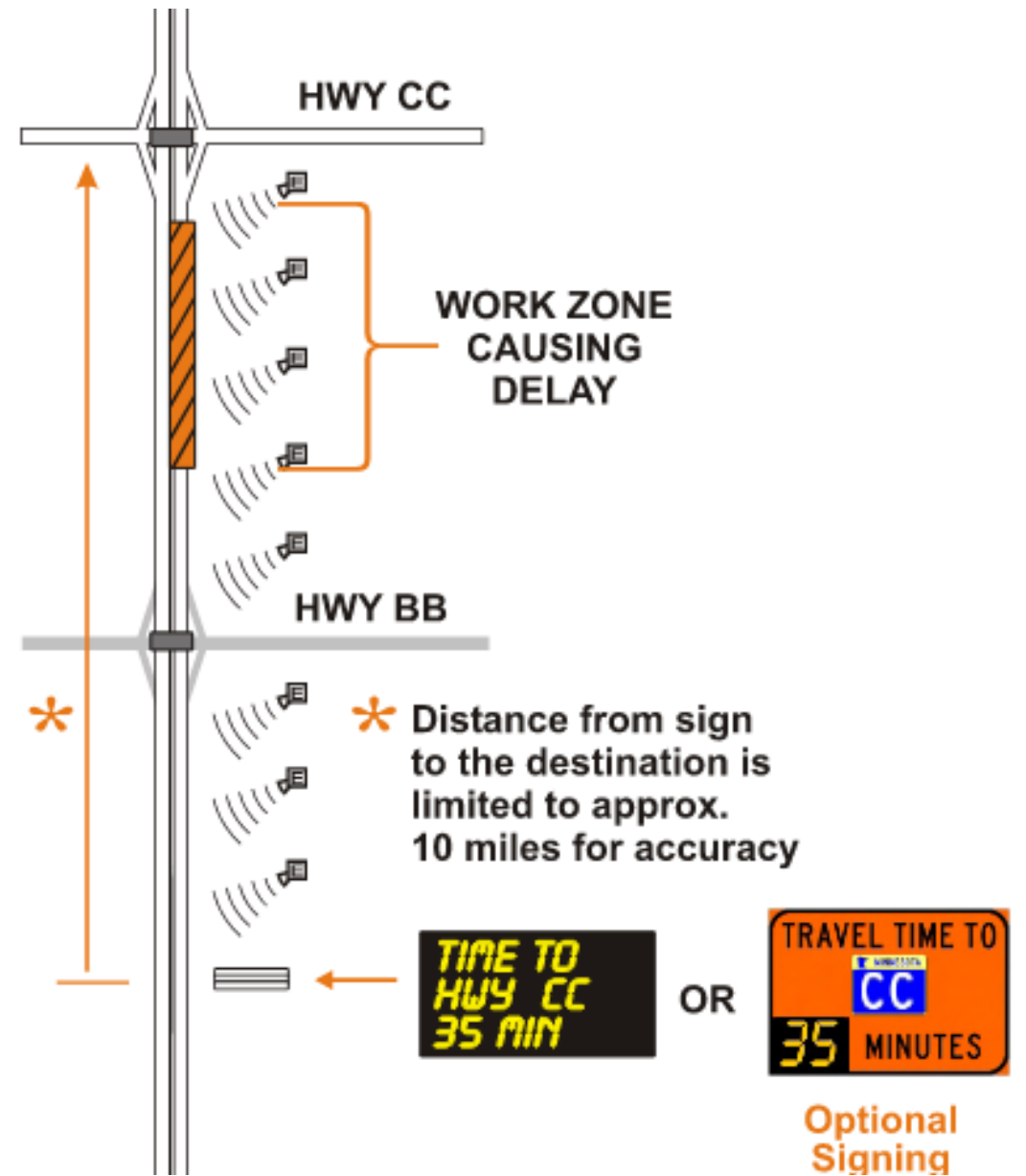
- Dynamic travel time estimate through the end of the work zone



9. Travel Time Advisory with Alternate Route

Both:

- Dynamic travel time estimate through the end of the work zone
- Dynamic travel time via alternate route to same location





Advanced Work Zone Strategy Selection



Priority Areas

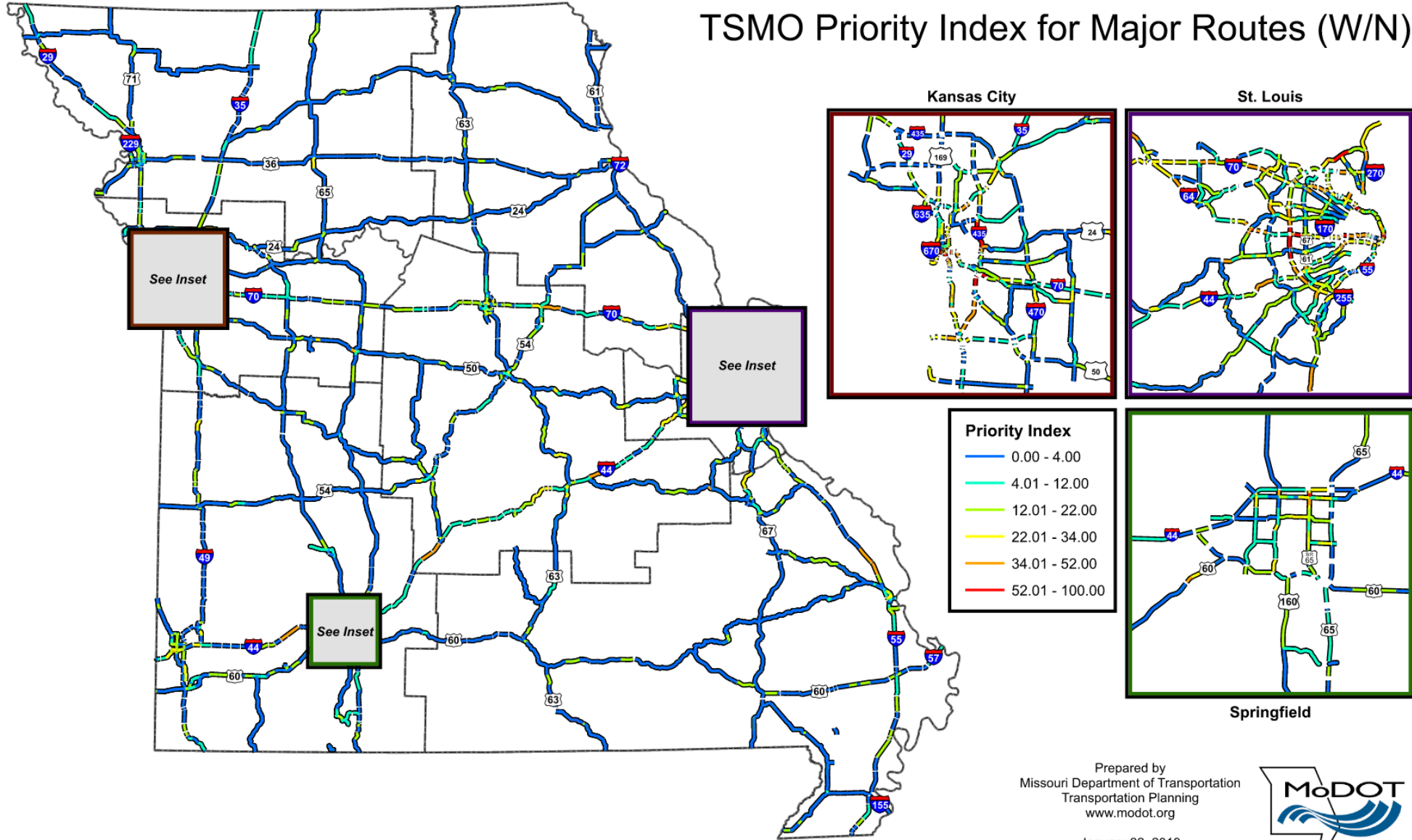
Priority Index = Crash History + Congestion Data

- Index values range from 1 to 100

Purpose

- Identify Critical Roadway Segments
- Candidates for Advanced WZ Strategies

TSMO Priority Index for Major Routes (W/N)

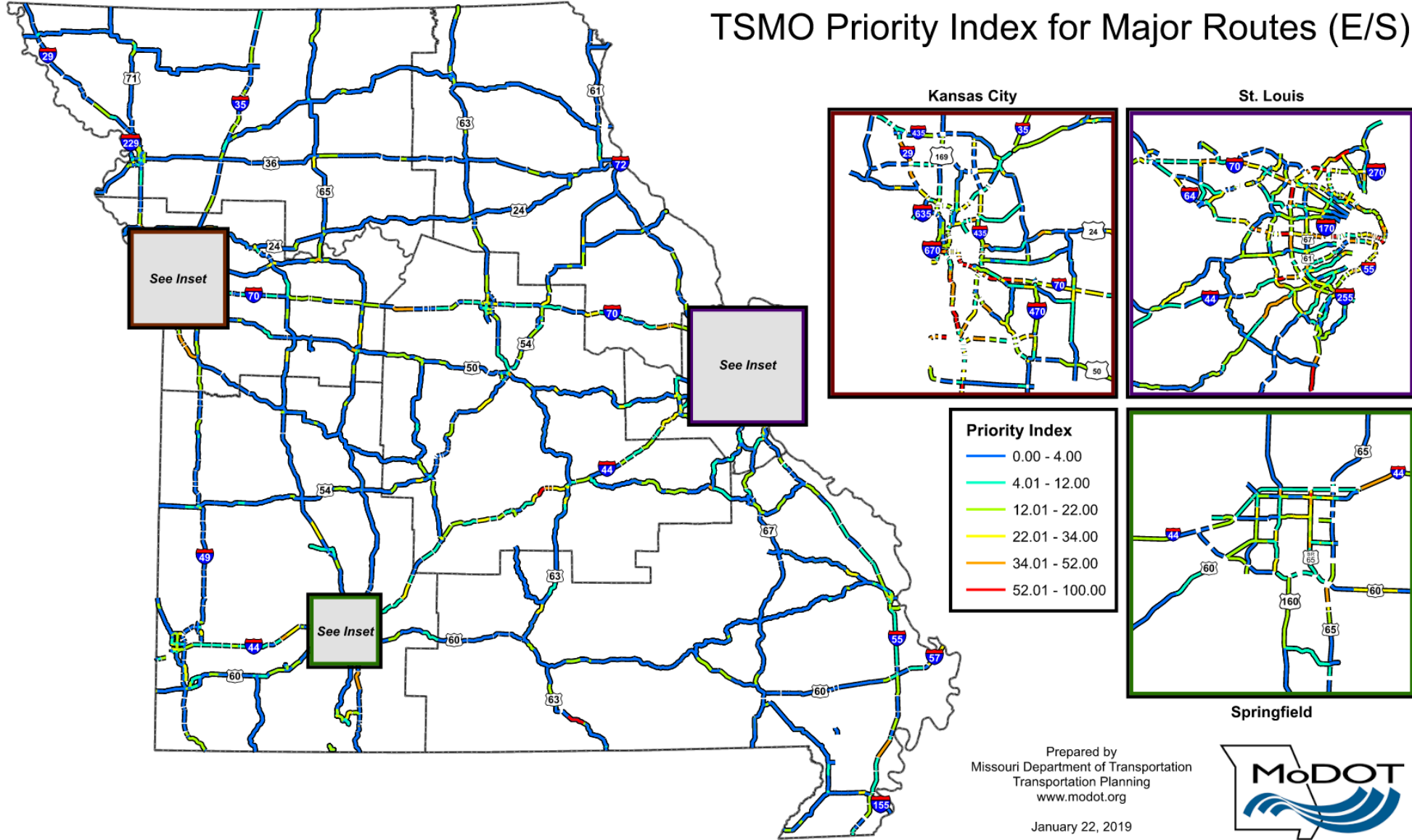


Prepared by
Missouri Department of Transportation
Transportation Planning
www.modot.org

January 22, 2019



TSMO Priority Index for Major Routes (E/S)

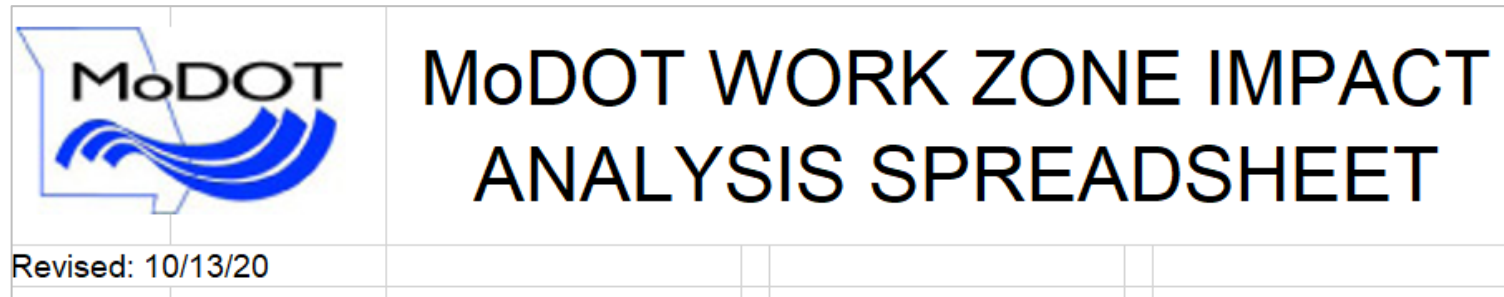


Prepared by
Missouri Department of Transportation
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www.modot.org

January 22, 2019




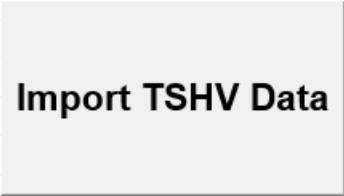

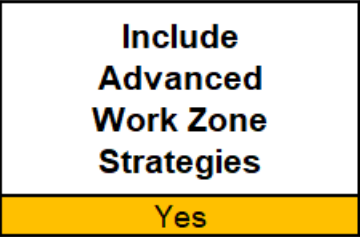

Work Zone Impact and Advanced Work Zone Strategy Selection



https://epg.modot.org/files/0/04/616.13_WZ_Impact_Dec_2016.xlsm


- Estimates
 - Impact to traffic
 - Road user costs
- Provides guidance for
 - Lane closure allowance times
 - SWZ strategies
 - Contract time acceleration strategies

Step 1a: Select Data Source

	<h2>MoDOT WORK ZONE IMPACT ANALYSIS SPREADSHEET</h2>		
Revised: 10/13/20			
Remember to ENABLE CONTENT so the macros inside the excel sheet can run.			
Select Volume Input Method using the BUTTONS below.			
C:\Users\bghansen\Desktop\04. US 63 W Hourly Volumes Cole County.xlsx			
			
		Yes	Yes

Two red arrows point to the 'Import TSHV Data' and 'Enter Volume Data Manually' buttons.

Step 1b: Select Strategy Inclusion

		MoDOT WORK ZONE IMPACT ANALYSIS SPREADSHEET	
Revised: 10/13/20			
Remember to ENABLE CONTENT so the macros inside the excel sheet can run.			
Select Volume Input Method using the BUTTONS below.			
C:\Users\bghansen\Desktop\04. US 63 W Hourly Volumes Cole County.xlsx			
Import TSHV Data	Enter Volume Data Manually	Include Advanced Work Zone Strategies	Include Contract Time Acceleration Strategies
		Yes	Yes



Step 2: Facility Data

ANALYST:		DATE OF ANALYSIS:			JOB NUMBER:		
		3/20/2021					
BACKGROUND INFORMATION							
DISTRICT:		ROUTE (DIRECTION):		LOCATION SEGMENT (LOGS):			
		US 54 W		(Logs: 103.072 to 103.355 Display Vol: Selected Dir) CST W I			
EXISTING ROADWAY DATA							
NUMBER OF LANES:		DAILY TRUCK PERCENTAGE (%):		CLIMBING GRADE (%):		LENGTH OF INCLINE GRADE (mi):	
2		5%		< 2		1.00	
TRAFFIC VOLUME DATA: Obtained from TMS Traffic Segment Hourly Volume (TSHV) Application						USER COST (\$ / hr)	
Link to Transportation Management System (TMS)						TRUCKS \$22.70	
Link to Directions on how to use the TSHV table.						CARS \$10.30	
DEMAND (veh/hr)							
Day of Week		Thursday	Thursday	Thursday	Thursday	Thursday	Thursday
Date of Count		10/22/2020	10/22/2020	10/22/2020	10/22/2020	10/22/2020	10/22/2020
M	12:00 MIDNIGHT - 1 AM	91	91	91	91	91	91
	1:00 - 2:00 AM	63	63	63	63	63	63
	2:00 - 3:00 AM	59	59	59	59	59	59
	3:00 - 4:00 AM	91	91	91	91	91	91
	4:00 - 5:00 AM	203	203	203	203	203	203
	5:00 - 6:00 AM	592	592	592	592	592	592

Step 3: Work Zone Data



WORK ZONE IMPACT ANALYSIS SPREADSHEET

Copy
Top Work Zone Details
to All Scenarios

Restore
Defaults

District: Route: US 54 W ((Logs: 103.072 to 103.355 Display Vol: Selected Dir) CST W MAIN ST E) J

Sunday(10/22/20)

BASE CONDITIONS

Open Lane Capacity (veh/h/lane):	2300	Base Conditions Capacity (Total for ALL Lanes): 4600 veh/h
----------------------------------	------	--

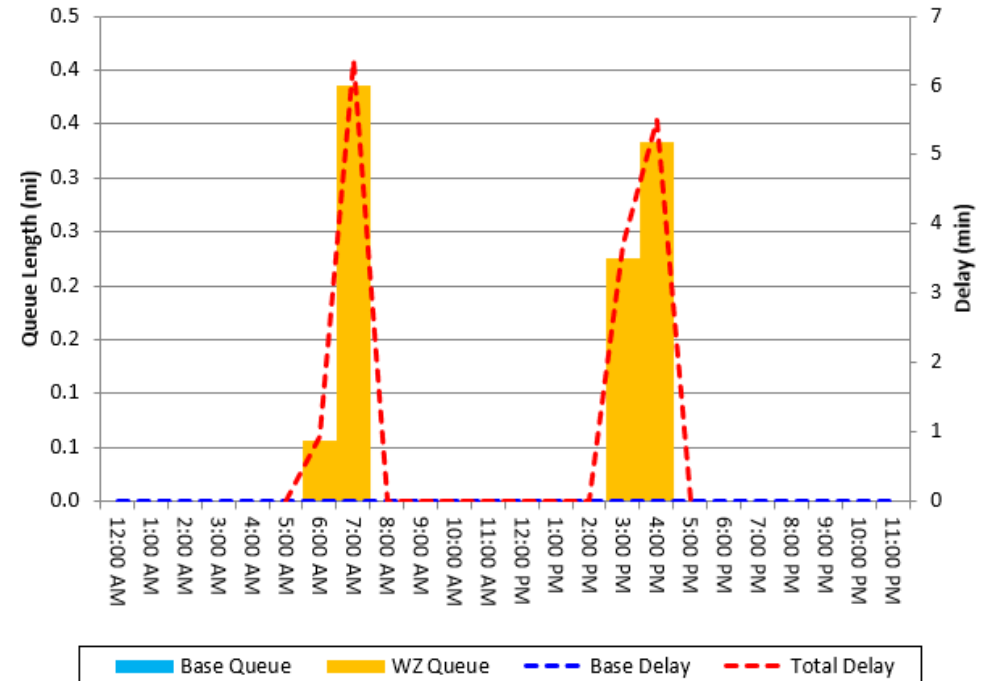
WORKZONE DETAILS

Work Description:	(Example: Pothole Patching - Close One Lane OR Joint Repair - Two Lanes Closed)
Work Location:	Barrier located less than 2 feet from travel lane
Travel Lane Width (ft):	> 11.5
Number of Lanes Open:	1
ESTIMATED Work Zone Capacity (veh/h):	1463
USER DEFINED Work Zone Capacity (veh/h):	
Start Time:	12:00 AM
End Time:	12:00 AM
Duration of Closure (hrs):	24

RESULTS

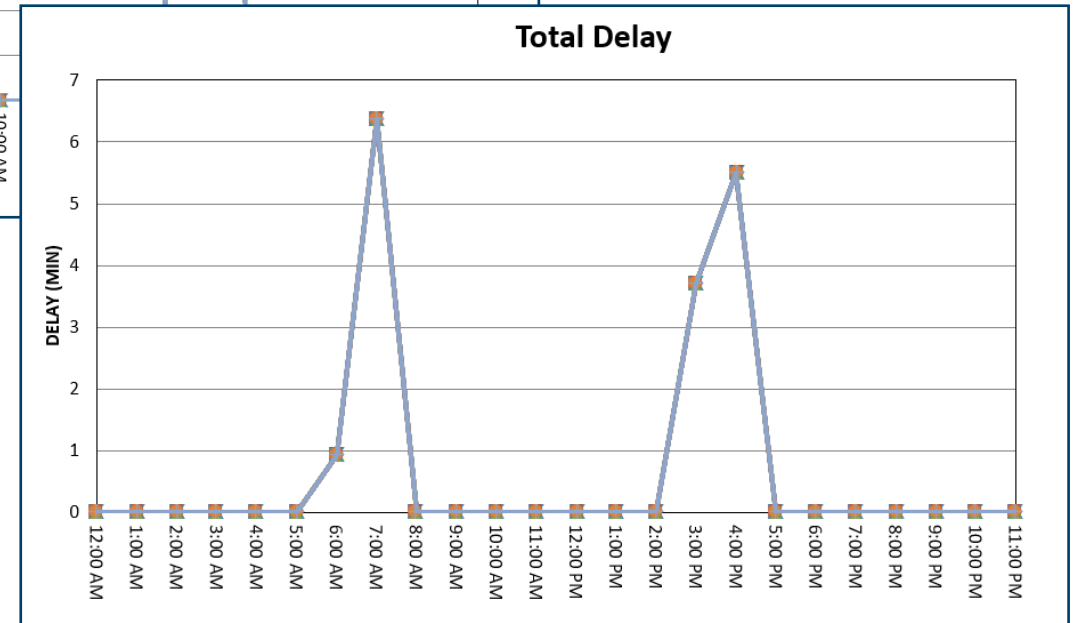
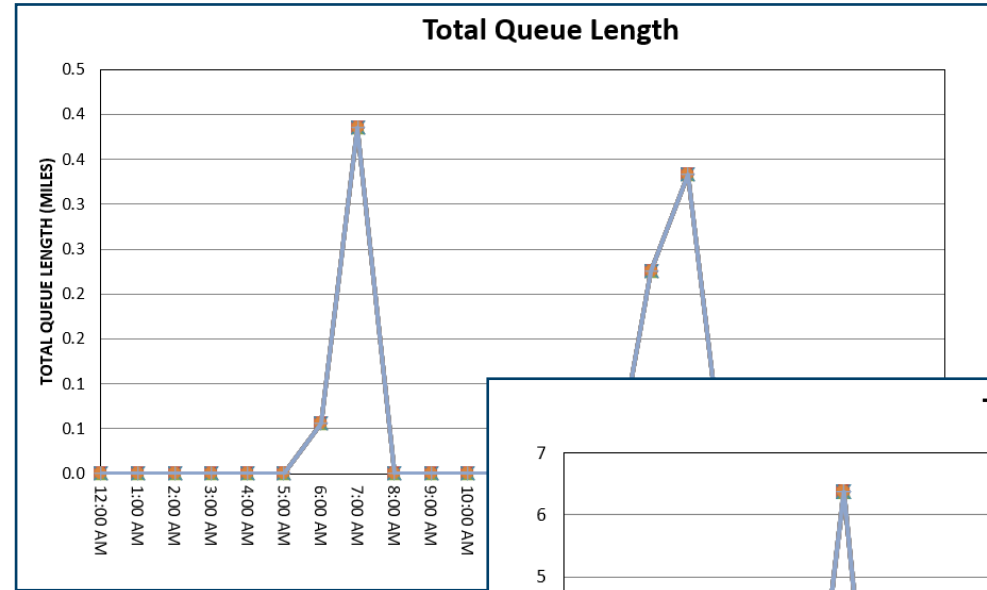
Measure of Effectiveness	Base Conditions	Work Zone	Total
Max Queue Length (mi):	0.0	0.4	0.4
Max Delay (minutes):	0	6	6
Cost (\$):	\$0	\$380	\$380

Estimated Work Zone Operations



Step 4: Impact Synopsis

Sunday (10/22/20)	Barrier located less than 2 feet from travel lane	
	Max Queue Length (mi):	0.4
	Max Delay (minutes):	6
	Total User Costs - Work Zone (\$)	\$380
	Start Time:	12:00 AM
	Duration of Closure (hrs):	24
Monday (10/23/20)	Barrier located less than 2 feet from travel lane	
	Max Queue Length (mi):	0.4
	Max Delay (minutes):	6
	Total User Costs - Work Zone (\$)	\$380
	Start Time:	12:00 AM
	Duration of Closure (hrs):	24
Tuesday (10/24/20)	Barrier located less than 2 feet from travel lane	
	Max Queue Length (mi):	0.4
	Max Delay (minutes):	6
	Total User Costs - Work Zone (\$)	\$380
	Start Time:	12:00 AM
	Duration of Closure (hrs):	24
Wednesday (10/25/20)	Barrier located less than 2 feet from travel lane	
	Max Queue Length (mi):	0.4
	Max Delay (minutes):	6
	Total User Costs - Work Zone (\$)	\$380
	Start Time:	12:00 AM
	Duration of Closure (hrs):	24



Advanced Work Zone Strategy Selection Questions (1 of 2)

Additional Existing Facility Information	
Facility Speed Limit (mph)	60
Are traffic patterns inconsistent from day to day? (e.g. unpredictable with substantial variability or impacts from random local traffic generators)	No
Is the work zone on a route with an existing ITS Travel Time System?	No
Are one or more alternative routes with capacity available?	No
If yes, what is the approximate length of the existing alternative routes (mi)?	
If yes, do the alternative routes have existing ITS Travel Time capability?	

Advanced Work Zone Strategy Selection Questions (2 of 2)

Additional Work Zone and Project Inputs	
Work Zone Speed Limit (mph)	45
Total approximate work zone length (mi)	2
Total approximate taper length leading up to work zone (mi)	0.11
Number of days the work zone will be in place	180
Will proposed lane closures persist (e.g. not be set up and taken down frequently)?	Yes
Number of access points where low speed construction vehicles will enter the work zone without an adequate dedicated acceleration lane	2
Will sight distance be limited on the approach to the work zone?	No
Are queue lengths anticipated to extend past an upstream intersection or interchange?	Yes
Are there external merging conflicts or hazards on the approach to or within the work zone?	Yes
Will the work zone have navigating constraints that inhibit emergency responder access?	No
Total estimate project cost without smart workzone strategies (\$)	\$3,000,000

Advanced Work Zone Strategy Recommendations

Advanced Work Zone Strategy	Score*	Rank	Recommendation	Budgetary Estimate
1. Construction Vehicle Warning System	80	3	Strongly Recommended	\$40,000
2. Dynamic Late Merge (Zipper Merge) System	72	4	Strongly Recommended	\$50,000
3. Queue Warning System	48	5	Should be Considered	\$10,000
4. Road Closure	0	-	Not Applicable	\$0
5. Speed Warning System	88	2	Strongly Recommended	\$43,000
6. Temporary Rumble Strips	100	1	Strongly Recommended	\$2,000
7. Temporary Traffic Incident Management and ITS System	0	-	Not Applicable	\$0
8. Travel Time Advisory System	29	6	Not Recommended	\$48,000
9. Travel Time Advisory System with Alternative Route	0	-	Not Applicable	\$0

Contract Time Acceleration Questions

The following questions can apply to the project as a whole, or to specific features or phases*		
Is the project considered "routine?"		No
What is the anticipated number of construction seasons?		much less than one
Is there is a critical completion date (e.g. to enable future work, or other reasons)?		Yes
Does the work zone for the project or one of its features cause unusually high impacts to travelers?		Yes
Does the project include numerous or long detours?		Yes
Are there unusually high safety concerns for the public or workers?		No
Will the project cause significant impacts to the local community or business economies?		No
Is the project is substantially free of third party conflicts (e.g. right of way, utilities)?		No
Are more than two bidders anticipated?		No

Contract Time Acceleration Recommendations

Contract Time Acceleration Strategy	Score**	Rank	Recommendation
A+B Bidding	29	4	Not Recommended
Liquidated Damages Specified	85	1	Strongly Recommended
Liquidated Savings Specified	67	3	Should be Considered
Liquidated Savings / Liquidated Damages Specified	75	2	Strongly Recommended



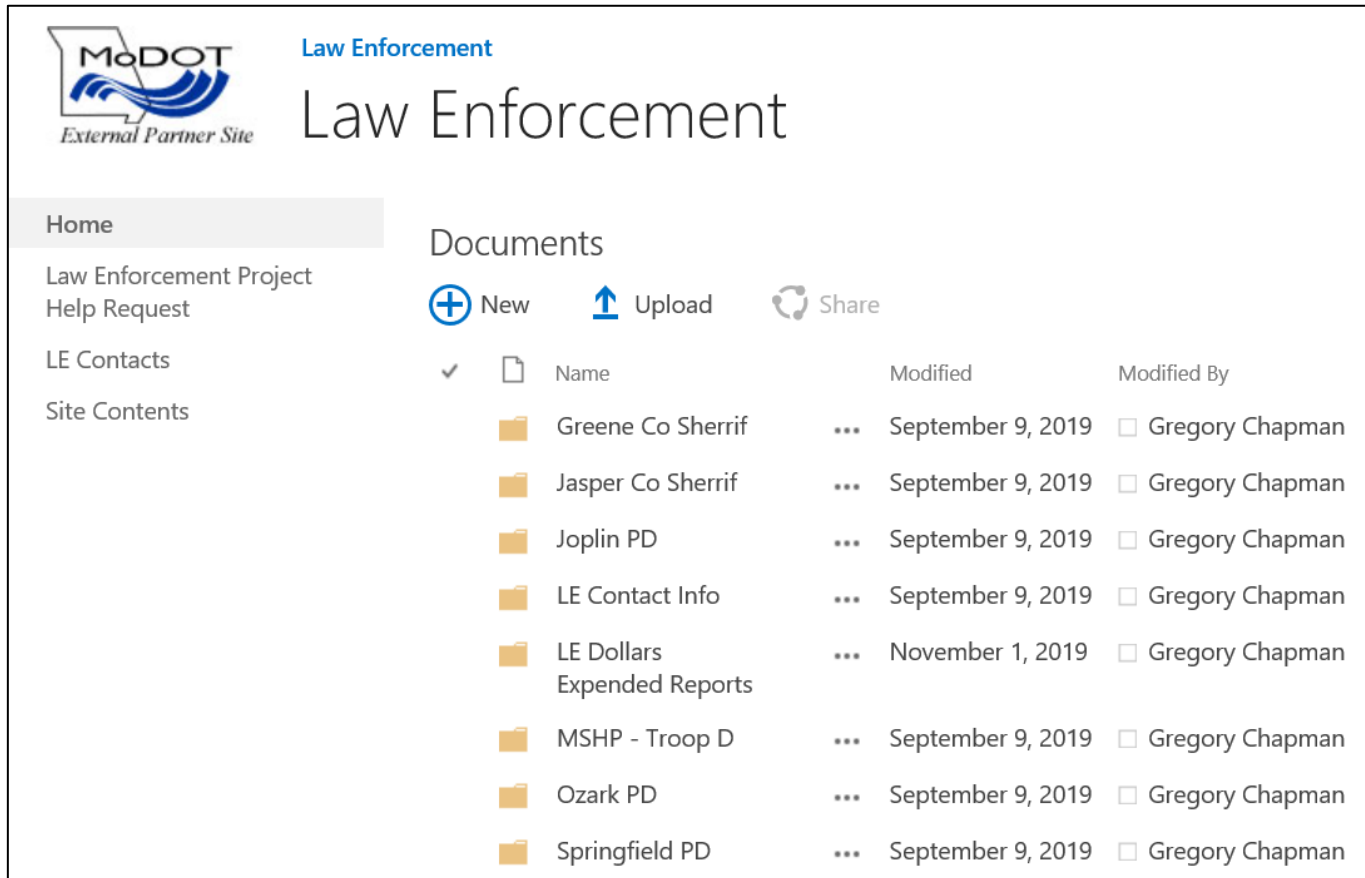
Law Enforcement Participation

Law Enforcement Participation

- Can be an effective tool to improve safety
- Must be executed correctly
- Full guidelines in EPG 616.16
- Handout



Law Enforcement Requests



The screenshot shows the MoDOT Law Enforcement External Partner Site. The page title is "Law Enforcement" and the MoDOT logo is in the top left. A navigation menu on the left includes "Home", "Law Enforcement Project Help Request", "LE Contacts", and "Site Contents". The main content area is titled "Documents" and features a table of files. The table has columns for "Name", "Modified", and "Modified By". There are icons for "New", "Upload", and "Share" above the table. The table lists several folders, all modified by Gregory Chapman.

✓	📁	Name	Modified	Modified By
		Greene Co Sherrif	September 9, 2019	Gregory Chapman
		Jasper Co Sherrif	September 9, 2019	Gregory Chapman
		Joplin PD	September 9, 2019	Gregory Chapman
		LE Contact Info	September 9, 2019	Gregory Chapman
		LE Dollars Expended Reports	November 1, 2019	Gregory Chapman
		MSHP - Troop D	September 9, 2019	Gregory Chapman
		Ozark PD	September 9, 2019	Gregory Chapman
		Springfield PD	September 9, 2019	Gregory Chapman

- New law enforcement participation requests: <https://partner.modot.mo.gov/sites/sw/Enforce/SitePages/Home.aspx>
- Set up by SW District

MoDOT Construction - Law Enforcement Help Request

Contract ID: 190206-G01

Project No: J713357

County, Route and Location: Lawrence, I-44 - EB and WB - MM's 43 - 52

Requested by (RE): Greg Chapman

MoDOT On-Site Contact and Phone Number: Will not have presence on site Saturday or Sunday - for questions, c...

Law Enforcement Specific Information

Law Enforcement Agency Requested: MSHP - Troop D

No. of Officers Requested: 1

Start Date & Time: 10/11/2019 12:00:00 AM

Finish Date & Time: 10/13/2019 12:00:00 AM

Specific Details for Request: Requesting LE assistance for Apple Butter Making Days event for I-44 WZ - Friday through Sunday - 8 hours/day to monitor peak traffic flow ti

Invoicing Information

Charge Account Based on LE & Location: MSHP Troop D (Rural - GWZEJ04Z)

Email Request to: todd.zacher@mshp.dps.mo.gov

LE Contact 2: Benjamin.Arnall@modot.mo.gov

Please select MoDOT Representative to Copy to the Email: Gregory Chapman

Law Enforcement Request Form

MoDOT's Strategy for Law Enforcement in Work Zones

MoDOT is on a mission to provide a work zone that is safe for both motorists and workers. Providing enough advanced warning of the work zone or queues forming is critical to this mission. Lack of awareness creates a high-risk situation for workers in the work zone and other motorists, especially if a queue is present. These high-risk situations can be minimized with the use of law enforcement.

Goals and Priorities

- Work Zone Awareness
- Minimize Queue
- Queue Protection (Minimize High-Speed Rear-End Crashes)
- Quality Traffic Control
- Speed Enforcement

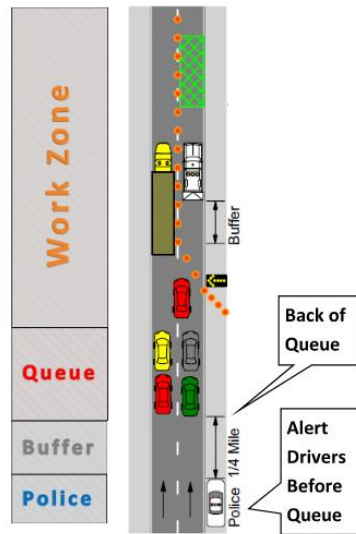
DO's:

- Monitor Queue Lengths
- Relocate Beyond the Work Zone if Creating Queue
- Protect From High-Speed Rear-End Crashes when Queue Exists

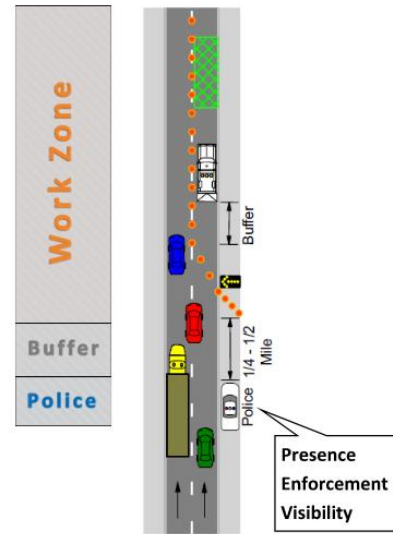
DON'Ts:

- Inadvertently Cause a Queue
- Park in Tapers or Lane Shifts
- Park in Buffer Spaces

Queue Present



No Queue Present

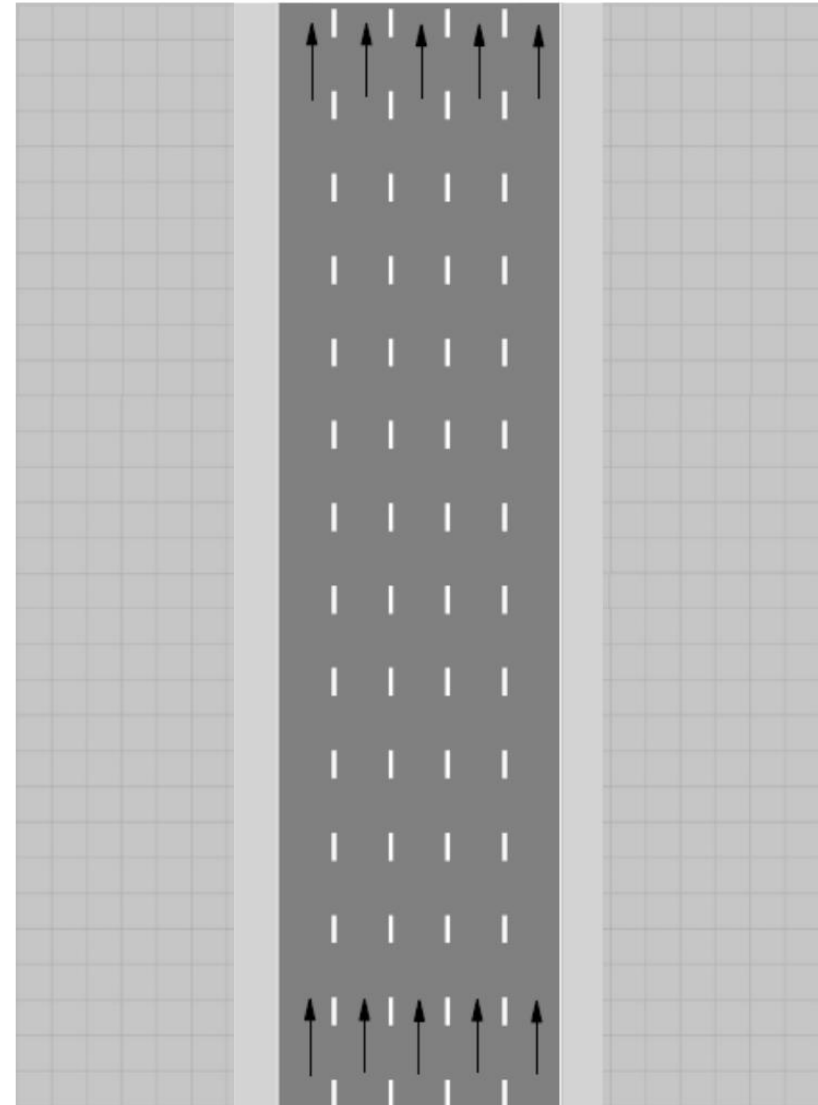


A critical component to promoting a safe work zone environment is the placement of the law enforcement vehicle in different road alignments. When a hill or curve is present, it is important that the officer is placed before the hill or curve, so drivers are aware and not caught off guard.



Blank Work Zone

The number of lanes for active work zones may vary and discussions on the best placement for law enforcement should be discussed between all participating parties.





Contractor Performance Rating and Expectations

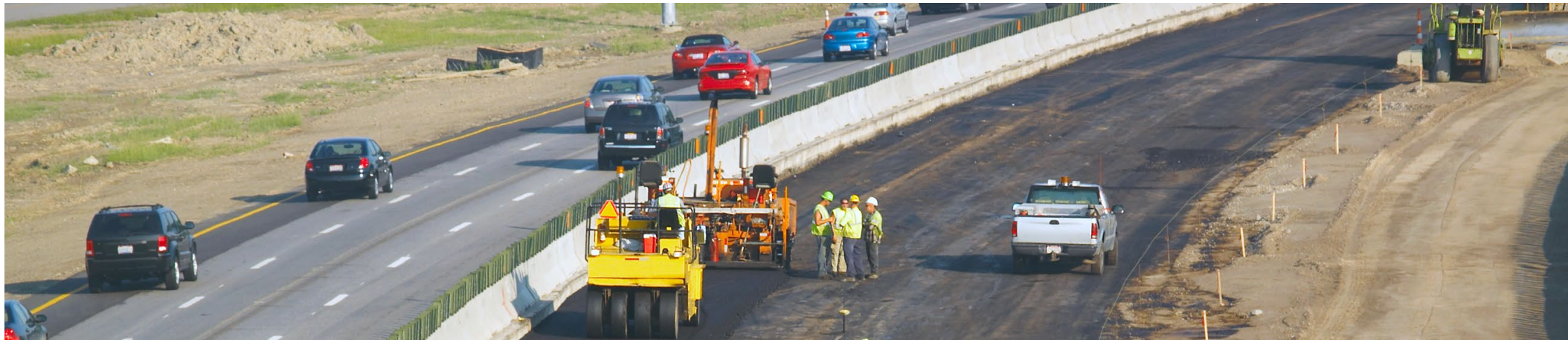
Contractor Expectations

What is it?

- Contractor Performance Rating
- Since 1991
- State Statute 7 CSR 10-10
- Joint Development with Industry

Rating Based on:

- Quality
- Contract Compliance
- Contract Administration
- Prosecution & Progress




New Safety-related Contractor Performance Questions

Rating system update:

- Removed outdated questions
- Added safety-related questions
- Contributes to overall score – it does NOT constitute a “safety” score

New Questions:

- How many occurrences of non-conforming PPE’s were cited?
- Did the contractor follow the provisions of their Safety Plan?
- Did the contractor experience worker injuries? (OSHA finding)
- Did the contractor experience worker fatalities? (OSHA Finding)
- Did the contractor have an active roll in monitoring subcontractor work and addressing issues?
- Did the contractor damage any utilities as a result of no locate services being requested?
- Did the contractor utilize worker protection technology? Was the work zone specialist readily available?



Work Zone Quality



Work Zone Quality

- Sponsored Effort to Address Most Common Problems
- Does Not Replace Full Guidelines in EPG 616
- Developed a 2-page Handout For:
 - Contractors
 - Inspectors



Quality Standards for Temporary Traffic Control Devices

Device Condition

This field guide highlights a few of the commonly observed non-compliance items. Contractors are responsible to know and follow all standards as documented in the plans, specifications, MoDOT standards, industry standards, and the guidance from MoDOT staff. Unacceptable device placement/practices identified by MoDOT staff shall be corrected.

THE CONTRACTOR SHALL FOLLOW ALL MODOT STANDARDS AND SPECIFICATIONS. SEE SHEET 2 OF 2 FOR LIST OF MODOT STANDARDS AND GUIDELINES.

SIGNING
(Including sheeting on Barricade Panels/Paddles)

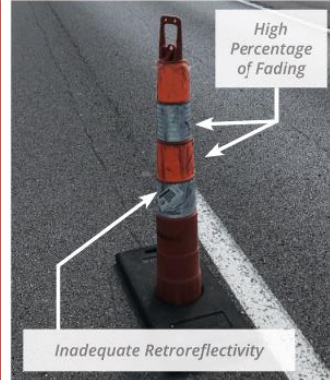


UNACCEPTABLE CONDITION

CONTAINS ANY OF THE FOLLOWING:

- Color fading or surface abrasions
- 25% or more deterioration of any letter/border/symbol day or night
- Bent/deformed from original size
- Debris/rust/residue
- Inadequate retroreflectivity per MUTCD

CHANNELIZERS




UNACCEPTABLE CONDITION

CONTAINS ANY OF THE FOLLOWING:

- Numerous scratches or tears
- 25% or more area with residue, fading, or inadequate/missing retroreflectivity
- Denting that affects overall dimensions or device stability

Any work zone device in unacceptable condition is subject to removal if directed by MoDOT staff.



Rejected devices must be removed and replaced as directed by MoDOT staff (see MoDOT Standard Specifications 616.4.2.5).

ARROW BOARDS, WARNING LIGHTS, & CHANGEABLE MESSAGE SIGNS (CMS)

DEVICE	UNACCEPTABLE CONTAINS ANY OF THE FOLLOWING NUMBER OF LIGHTS DIMMED, DAMAGED, OR FAILING:
Arrow Boards	<ul style="list-style-type: none"> • 2 or more lights shall be corrected within one hour (Category 1 Deficiency) • Up to one total light shall be corrected within 96 hours (Category 3 Deficiency)
A, B, C, and Sequential Warning Lights	<ul style="list-style-type: none"> • 10% or more shall be corrected within one hour (Category 1 Deficiency) • Two lights up to 10% shall be corrected within 24 hours (Category 2 Deficiency) • Up to one total light shall be corrected within 96 hours (Category 3 Deficiency)
Changeable Message Signs (CMS)	<ul style="list-style-type: none"> • 10% or more lights per character/symbol shall be corrected within one hour (Category 1 Deficiency) • Two lights up to 10% per character/symbol shall be corrected within 24 hours (Category 2 Deficiency) • Up to one total light shall be corrected within 96 hours (Category 3 Deficiency)

See Missouri Standard Specifications for Highway Construction for additional requirements.

CONCRETE BARRIERS



UNACCEPTABLE CONDITION

CONTAINS ANY OF THE FOLLOWING:

- Spalls, chips, or delamination between 1.5" and 2.5" that have not been adequately repaired
- Spalls, chips, or delamination greater than 2.5" or other defects that are deemed structurally unsound
- Damaged connection loops
- Contains snag points potentially causing vehicle damage



Quality Standards for Temporary Traffic Control Devices

Device Placement and Practices

This field guide highlights a few of the commonly observed non-compliance items. Contractors are responsible to know and follow all standards as documented in the plans, specifications, MoDOT standards, industry standards, and the guidance from MoDOT staff. Unacceptable device placement/practices identified by MoDOT staff shall be corrected.

The following general requirements apply to all devices:

- **Unobstructed** by vegetation or any other material.
- **Visible** from a safe approaching distance as defined by plans, standards, and MoDOT approval.
- **Placed** according to plans, standards, and MoDOT approval.

SIGNING

MODOT STANDARD

- Signs shall not obstruct adjacent lanes or pathways with motorized/non-motorized traffic.
- Unused signs shall be removed, covered, or otherwise not displayed.

MODOT STANDARDS AND SPECIFICATIONS:



Missouri Standard Specifications for Highway Construction
<https://www.modot.org/missouri-standard-specifications-highway-construction>

Missouri Standard Plans for Highway Construction
<https://www.modot.org/missouri-standard-plans-highway-construction>



End Terminals, Crash Cushions and Barrier Systems
<https://www.modot.org/end-terminals-crash-cushions-and-barrier-systems>

MoDOT EPG Section 616.19 - Quality Standards for Temporary Traffic Control Devices
https://epg.modot.org/index.php/616.19_Quality_Standards_for_Temporary_Traffic_Control_Devices



BARRICADES



ACCEPTABLE



UNACCEPTABLE

MODOT STANDARD

- One barricade for every eight feet of pavement
- Vehicles should not be parked in front of barricades or within the recommended buffer space (See Table 616.3.6 of the EPG)
- Openings shall only be allowed for trucks entering/leaving for a maximum of ten minutes

PERSONAL PROTECTIVE EQUIPMENT (PPE)



ACCEPTABLE



UNACCEPTABLE

MODOT STANDARD

- MoDOT safety policies must be practiced at all times, including wearing all MoDOT approved PPE
- If PPE has limited retroreflectivity, significant dirt or damage, significant fading or poor color contrast, it shall be replaced

END TREATMENTS



ACCEPTABLE

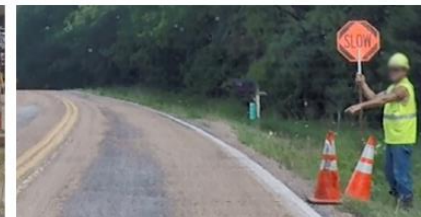


UNACCEPTABLE

MODOT STANDARD

- Shall be maintained throughout the duration of the work zone
- Shall be aligned correctly according to all manufacturer's recommendations considering speed and other contributing factors

FLAGGING



ACCEPTABLE



UNACCEPTABLE

MODOT STANDARD

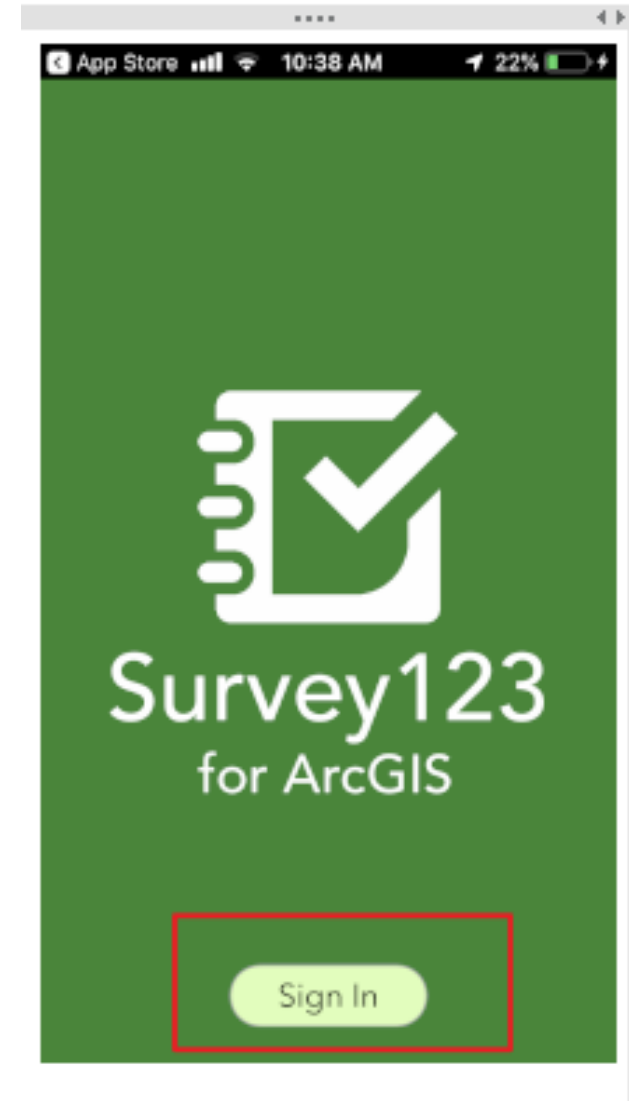
- MoDOT safety policies must be practiced at all times, including wearing all MoDOT approved PPE and using correct flagging procedures
- Flagging operators must be re-certified every four years

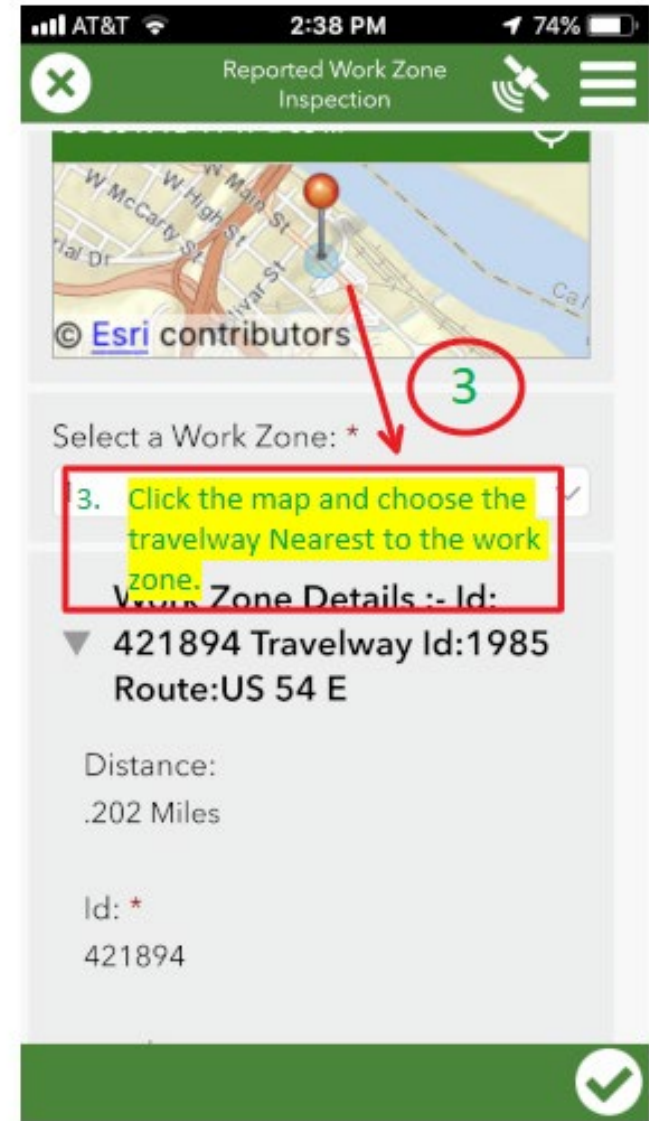
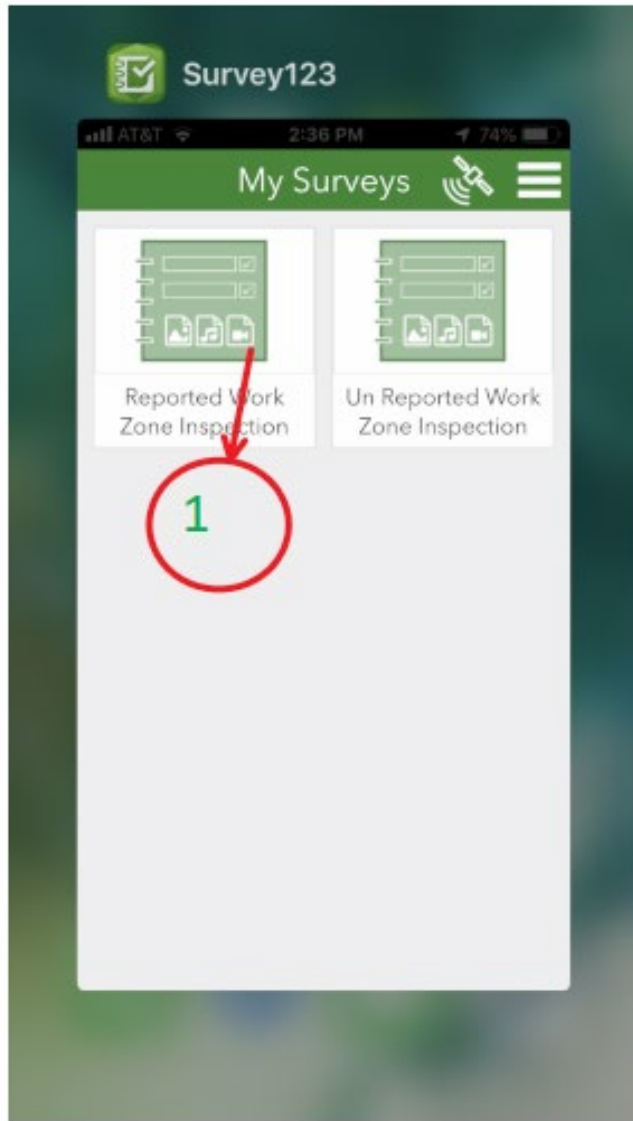


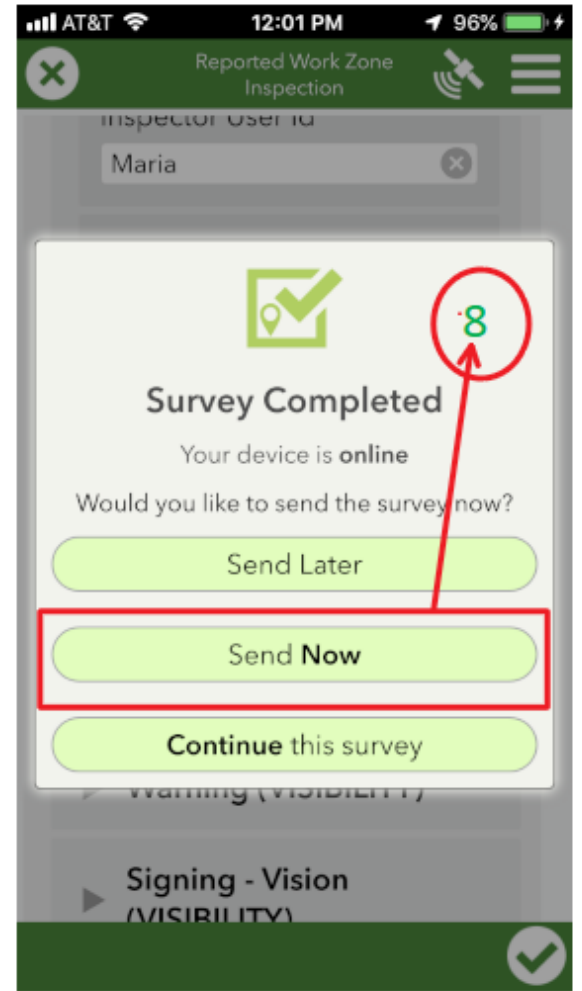
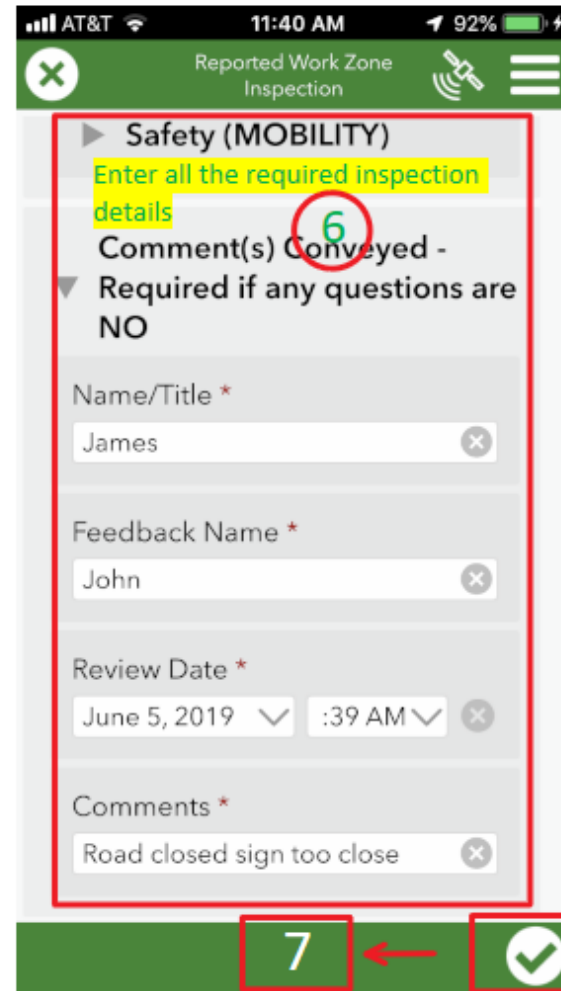
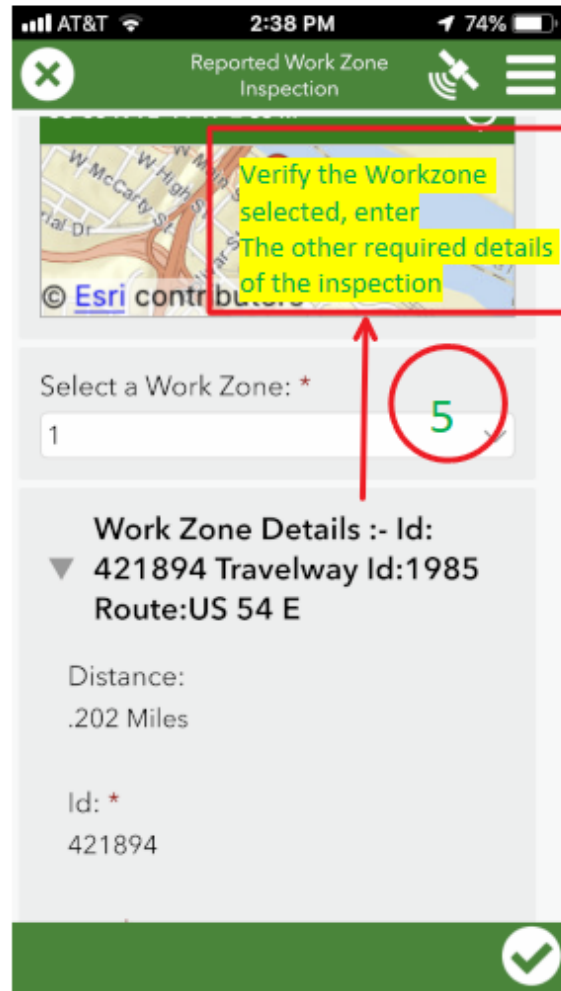
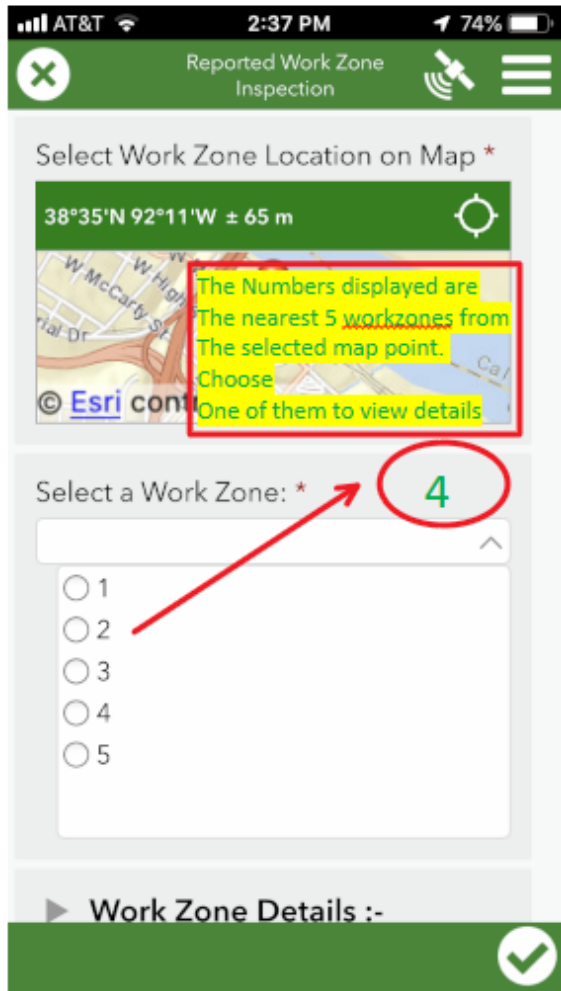
Work Zone Inspection Application

Work Zone Inspection Application

- Smart-phone app for work zone audits
- Replaces current paper audit form
- Easy to use, and reduces data entry errors







TMS Work Zone Reports




Total Records = 9

Missouri Department of Transportation
Transportation Planning
Lane Closures - Summary

July 16, 2012
10:46:51AM

WORK ZN ID	ORG CODE	ROUTE	BEG LOG	END LOG	BEGINNING REFERENCE POINT	ENDING REFERENCE POINT	JOB NO	OPER TYPE	WORK TYPE	#LNS CLSD	IMPACT	START DATE	END DATE	W/E WORK	DAYS ACTV	STATUS	MODOT USERID	ENTRY DATE	SPEED LIMIT
District: CD			County: COLE																
263444	7DCC	MO 179 N	1.129	2.842	LESS THAN .01 MILES AFTER RT C W	LESS THAN .01 MILES BEFORE CST W EDGEWOOD DR E	J580806 & J502221	CONSTRUCTION CONTRACT	NEW PAVEMENT CONSTRUCTION	01	MEDIUM	10/24/2011	08/01/2012	NONE	203	ACTIVE	OTTINM	08/17/2011	45
260886	7DCC	MO 179 N	1.119	2.850	AT CST W EDGEWOOD DR E	LESS THAN .01 MILES AFTER RT C W	J580806 & J502221	CONSTRUCTION CONTRACT	NEW PAVEMENT CONSTRUCTION	02	CLOSED	08/29/2011	10/31/2012	BOTH	308	ERROR CORRECTION	OTTINM	07/14/2011	NONE
263445	7DCC	MO 179 S	40.138	41.851	LESS THAN .01 MILES AFTER CST W EDGEWOOD DR W	LESS THAN .01 MILES BEFORE RT C E	J580806 & J502221	CONSTRUCTION CONTRACT	NEW PAVEMENT CONSTRUCTION	01	MEDIUM	10/24/2011	08/01/2012	NONE	203	ACTIVE	OTTINM	08/17/2011	45
282529	6NS2	MO 179 S	37.443	41.858	.31 MILES AFTER CST BOONVILLE RD S	AT RT C W	TESTING897	MAINTENANCE	PAVEMENT REPAIR	01	HIGH	07/10/2012	07/17/2012	NONE	6	ACTIVE	LEBEAJ1	07/10/2012	45
260887	7DCC	MO 179 S	40.131	41.861	AT CST W EDGEWOOD DR E	LESS THAN .01 MILES AFTER RT C W	J580806 & J502221	CONSTRUCTION CONTRACT	NEW PAVEMENT CONSTRUCTION	02	CLOSED	08/29/2011	10/31/2012	BOTH	308	ERROR CORRECTION	OTTINM	07/14/2011	NONE
282067	7DCA	RT D N	6.846	8.139	.21 MILES AFTER RT C W	1.5 MILES AFTER RT C W	J5B0800	CONSTRUCTION CONTRACT	BRIDGE MAINTENANCE	01	CLOSED	07/16/2012	08/24/2012	BOTH	30	ACTIVE	BALLS	06/26/2012	NONE
282066	7DCA	RT D S	5.202	6.495	1.5 MILES BEFORE RT C E	.21 MILES BEFORE RT C E	J5B0800	CONSTRUCTION CONTRACT	BRIDGE MAINTENANCE	01	CLOSED	07/16/2012	08/24/2012	BOTH	30	ACTIVE	BALLS	06/26/2012	NONE
278853	7DCC	US 54 E	159.637	162.918	1.71 MILES AFTER RT D N	.25 MILES BEFORE RT CC S	J5P2185	CONSTRUCTION CONTRACT	MEDIAN OR SHOULDER	01	HIGH	05/21/2012	09/04/2012	NONE	77	ACTIVE	OTTINM	05/15/2012	55



Work Zone Management Teams, Meetings, and Resources

Team/Group	Description	Meetings
<p>Work Zone Quality Circle</p>	<p>Members from Central Office, districts, FHWA. Responsibilities:</p> <ul style="list-style-type: none"> • Review statewide work zone trends • Recommend new devices, methods, guidelines • Facilitate annual work zone reviews. • Communicating pertinent work zone information 	<p>Meets quarterly</p> <p>More information here: http://sp/sites/ts/qcstteams/workzoneqc/default.aspx</p>
<p>Work Zone Review Team</p>	<p>Members from Work Zone Quality Circle, Central Office, districts, FHWA other non-state stakeholders. Responsibilities:</p> <ul style="list-style-type: none"> • Annual reviews of work zone planning, design, implementation, management, and operation in multiple districts • Identify strengths and weaknesses • Communicate findings and recommendations 	
<p>TSMO WZM Team</p>	<p>Focused on improving statewide work zone management through TSMO strategies.</p>	<p>Meets annually at each district More information here: https://partner.modot.mo.gov/sites/ts/tsmoimplntproj/SitePages/Home.aspx</p>
	<p>Focused on improving work zone management through TSMO strategies.</p>	<p>Meets Monthly</p>



Questions