

MassDOT's Approach to Work Zone Safety

- Construction/Maintenance Work Zone SOPs
- Use of Construction Standard Drawings
- MassDOT Policy on Temporary Traffic Control Devices
- Work Zone Speed Limits
- Enhanced Work Zone Layout
- Connected Work Zones
- Temporary Portable Rumble Strips
- Speed Safety Cameras

Specification
Subsection 7.10 TMP

Subsection 1.03: Defined Terms

Add the following definitions in alphabetical order

Traffic Officer

.....a uniformed law enforcement officer currently employed by a state, county, municipal or district law enforcement agency and is authorized to act as a law enforcement officer as defined in MGL Chapter 6E, Section 1.

Roadway Flagger

.....a person who actively controls the flow of vehicular, bicycle, and pedestrian traffic into and/or through a temporary traffic control zone as authorized in 701 CMR 7.00. Requirements for Roadway Flagger training, certification, apparel, and equipment are defined in Subsection 850: Traffic Controls for Construction and Maintenance Operations.

Subsection 7.10: Traffic Management Plan

The Contractor shall submit a Traffic Management Plan to the Department. This Plan shall include:

Contact information for the person(s) responsible for the implementation, oversight, and quality control of the Traffic Management Plan.

Temporary Traffic Control Plans for all phases of construction.

Detour Plans (if applicable).

Public Involvement and Communication Plan (if required by Special Provision).

No work impacting traffic shall commence until the Traffic Management Plan has been approved by the Department.

Temporary Traffic Control Plans (TTCP)

The TTCP shall consist of plans depicting the location of all temporary traffic control devices, including but not limited to: channelization devices, barricades, signs, pavement markings, lighting, traffic signals, flashing lights, temporary barrier, temporary attenuators, truck or trailer mounted attenuators, flashing arrow boards, portable changeable message signs, work zone ITS equipment, temporary portable rumble strips, Roadway Flaggers, and Traffic Officers. Specialized short-term conditions such as rolling roadblocks or road/ramp closures lasting for less than 24 hours will also require individual TTCPs.

The TTCP shall also include, as needed, a description or plan of Contractor access and egress to and from the work zones, staging areas and material stockpile and equipment laydown areas. See Subsection 6.03 for material stockpile requirements.

For each phase of construction, the Contractor may choose to use:

the TTCPs found in the Contract Documents (if provided),

MassDOT Construction Standards,

a separate TTCP design from the Contractor,

or a combination thereof.

SOP
Traffic Management Plan

COMMONWEALTH OF MASSACHUSETTS MASSACHUSETTS DEPARTMENT OF TRANSPORTATION STANDARD OPERATING PROCEDURES		S.O.P. CSD 23-17-1-000
SUBJECT: Traffic Management Plans - Submission, Review, and Approval		PAGE 1 of 7 DISTRIBUTION Construction
EFFECTIVE 4/xx/23	ISSUED 4/xx/23	APPROVED

PURPOSE

To establish the standard procedure regarding the submission, review, and approval of Traffic Management Plans (TMP) submitted by Contractors on MassDOT projects.

GENERAL

This SOP supplements the general language contained in Subsection 7.10 of the Standard Specifications for Highways and Bridges and provides direction on who is required to submit, review and approve TMPs. Additionally, attached for reference is a general flowchart for the review process.

The work hours identified in the contract must be followed. Any proposed changes to Contract work hours must be separately submitted to the District and approved prior to the proposal of a Contractor TMP that requires working hours different from those identified in the Contract. The TMP specifies the required traffic control devices and where they will be placed and is not intended for approval of work hour changes.

For design-build projects, also refer to the contract documents for additional requirements for the submission and review of Traffic Management Plans.

DEFINITIONS

Traffic Management Plan (TMP) – A plan with multiple components that lays out a set of strategies for managing the work zone impacts of a project. The TMP mitigates work zone impacts beyond traffic safety and control, such as increased delays and longer travel times which might require public outreach. These components include a temporary traffic control plan (TTCP), detour plans (if applicable), a Public Involvement and Communication Plan (if required by Special Provision), and the contact information for the person(s) responsible for the implementation, oversight, and quality control of the Plan.

Temporary Traffic Control Plan (TTCP) - Plans depicting the location of all temporary traffic control devices, including but not limited to: channelization devices, barricades, signs, pavement markings, lighting, traffic signals, flashing lights, temporary barrier, temporary attenuators, truck or trailer mounted attenuators, flashing arrow boards, portable changeable message signs, work zone ITS equipment, quick portable rumble strips, Roadway Flaggers, and Traffic Officers. The TTCP will address the management of vehicle, bicycle, and/or pedestrian traffic. Specialized short-term conditions may require individual TTCPs.

Traffic Officer - a uniformed law enforcement officer currently employed by a state, county, municipal, or district law enforcement agency and is authorized to act as a law enforcement officer as defined in MGL Chapter 6E, Section 1.

Contractor TMP
Submission Form

Traffic Management Plan Submission Form

District: 4

Location (City / Town): Andover/Methuen

Project Description: I-93 Interstate Resurfacing Project

Contract Number: 100201

Contractor's Name: Brox Industries

Project Number: 607561

Submittal Date: 03/09/2023

Revision No.: 00

Submitted By: John Jones

Title/Company: Project Manager, Brox Industries

TMP Components in Submissions:

Confirmation of Using Contract Documents

Contact Information

Temporary Traffic Control Plan

Work Zone Speed Limit

Work Zone ITS/SWZ

Temporary Lighting

Detour Plans

Public Involvement & Communication

Other:

00

00

00

Section 1: Key TMP / Safety Personnel and Project Staff

List key personnel responsible for implementation of Traffic Control. Include a full emergency contact list in Appendix A.

Name/Company	Role/Title	Cell Phone	Email Address
John Jones	Project Manager	617-555-6767	Jones@BIndustries.com
Steven O'Malley	Superintendent	617-666-6767	OMalley@BIndustries.com

INSTRUCTION ON FILING / SUBMITTING THIS FORM: Please fill out each section with as much information as can be provided. If printing this form, ensure that the first five pages are included in the submittal to the MassDOT Resident Engineer. Incomplete submissions will be rejected.



Massachusetts Department of Transportation
Highway Division

TTCP Details

Construction standard details

Standard construction drawings and details for work performed by MassDOT.

TABLE OF CONTENTS

Section 100: Earthwork, Grading, Demolition, Rodent Control and Borings

Section 200: Drainage

Section 400: Sub-Base, Base Courses, Shoulders, Pavements and Berms

Section 500: Curb and Edging

Section 600: Highway Guard, Fences and Walls

Section 700: Incidental Work

Section 800: Traffic Control Devices

Section 900: Structures

Change Log for Construction Standard Detail Drawings

Superseded construction standard detail versions

Subsection 850: Traffic Controls for Construction and Maintenance Operations

Drawing number	Title	Current version	Previous versions
850.1.1	Temporary Curb Ramp (1 of 2)	Jan 2025	
850.1.2	Temporary Curb Ramp (2 of 2)	Jan 2025	
851.1.1	Cones & Drums	Jan 2025	
851.2.1	Type III Barricade	Jan 2025	
851.2.2	Type III Barricade with Sign	Jan 2025	
851.3.1	Pedestrian Channelizing Device	Jan 2025	
852.1.1	Sidewalk Detour	Jan 2025	
852.1.2	Sidewalk Diversion	Jan 2025	
852.1.3	Pedestrian Detour for Crosswalk Closure	Jan 2025	
852.2.1	Off-Road Shared Use Path Detour	Jan 2025	
852.2.2	On-Road Shared Use Path Diversion	Jan 2025	
852.3.1	Bicycle Lane Closure	Jan 2025	
852.3.2	Bicycle Lane Closure with On-Road Detour	Jan 2025	
852.3.3	Bicycle Lane Closure with Off-Road Detour	Jan 2025	

Construction Projects

- Required to use construction plan set/details from bid documents
- Contractor changes – Use MassDOT’s Construction Standard Details

Maintenance Projects

- Use MassDOT’s Construction Standard Details

MassDOT Construction Standard Details

www.mass.gov/info-details/construction-standard-details

MassDOT Directive P-26-001

- New Policy Directive focused documenting compliance with the Federal Highway Administration's Final Rule for 23 CFR part 630, Subpart K – Temporary Traffic Control Devices
- Geared towards addressing Positive Protection:
 - Escape Routes
 - No Means of Escape
 - Exposure Control Measures
 - Positive Protection Devices
 - Other Traffic Control Measures
- Maintenance of Temporary Traffic Control Devices
 - Requirement for quality control on Temporary Traffic Control Devices used in the work zone
 - MassDOT adopted ATSSA's "Quality Guidelines for Temporary Traffic Control Devices and Features"



Number: P-26-001
 Date: 01/16/26

POLICY DIRECTIVE


 HIGHWAY ADMINISTRATOR

MassDOT Highway Division Compliance with 23 CFR Part 630, Subpart K – Temporary Traffic Control Devices

Purpose

The Massachusetts Department of Transportation (MassDOT) demonstrates compliance with the Federal Highway Administration's Final Rule for 23 CFR part 630, Subpart K – Temporary Traffic Control Devices, through the following standards that establish official guidelines, procedures and details for the safe management of traffic and protection of the work zone.

Definitions

Crashworthy: The ability of a roadside safety hardware device or appurtenance to minimize risks to vehicle occupants by allowing a vehicle impacting the appurtenance to be slowed before stopping, redirected, or to continue without significant resistance. Roadside appurtenances include permanent and portable sign supports, other permanent or temporary traffic control devices, and other roadside fixtures that are not traffic control devices, such as longitudinal barriers, bridge railings, and crash cushions, within the clear zone. Crashworthiness of a device or appurtenance is determined by nationally established standards such as AASHTO's *Manual for Assessing Safety Hardware (MASH)*.

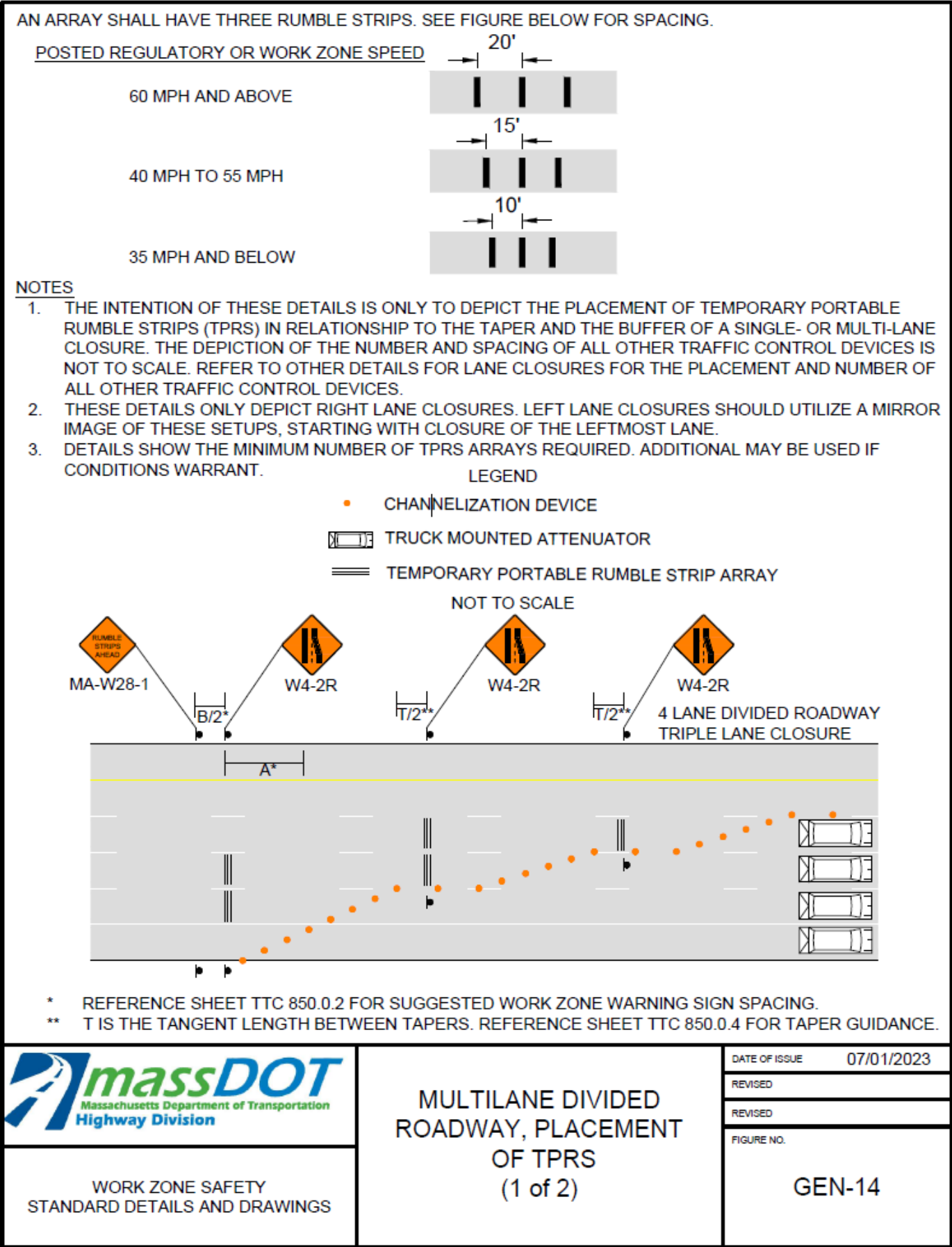
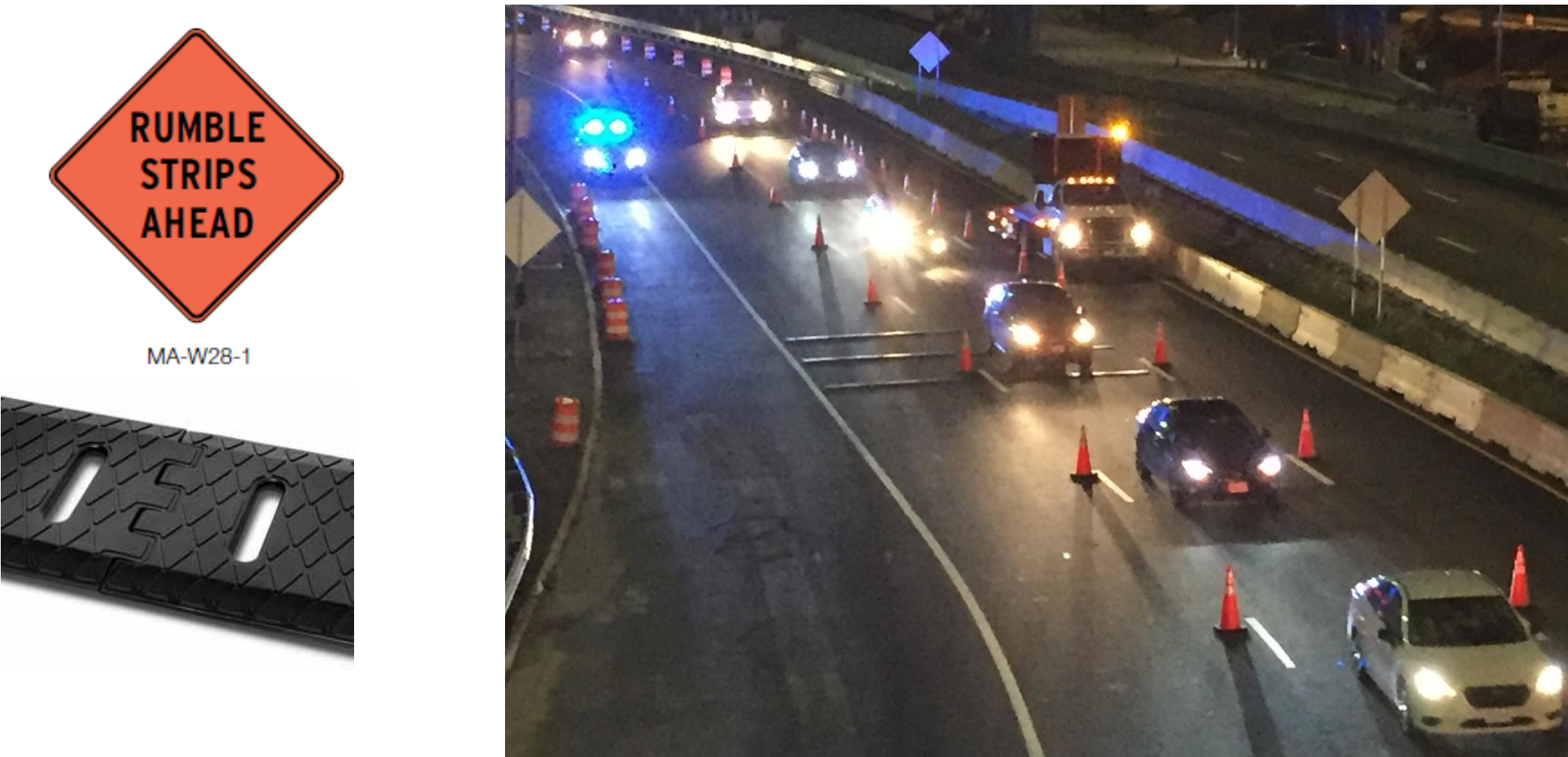
Engineering Judgement: The evaluation of available pertinent information including, but not limited to, the safety and operational efficiency of all road users, and the application of appropriate principles, provisions, and practices as contained in the latest edition of the MUTCD and other sources, for the purpose of deciding upon the design, use, installation, or operation of a traffic control device. Engineering judgment shall be exercised by a professional engineer with appropriate traffic engineering expertise, or by an individual working under the supervision of such an engineer, through the application of procedures and criteria established by the engineer. Documentation of engineering judgment is not required.

Engineering Study: The analysis and evaluation of available pertinent information including, but not limited to, the safety and operational efficiency of all road users, and the application of appropriate principles, provisions, and practices as contained in the latest edition of the MUTCD and other sources, for the purpose of determining the choice and application of work zone positive protection devices, exposure control measures, or other traffic control measures

Page 1 of 8

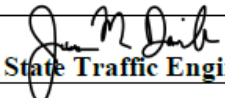
Temporary Portable Rumble Strips

- MassDOT’s experience with Temporary Portable Rumble Strips (TPRS) show that they can be effective in helping reduce vehicle speeds in work zones and alerting drivers they are approaching a work zone
- TPRS are required on all Interstate/Freeway projects
- MassDOT will move to require Automated Deployment



Incorporation of Variable WZ Speed Limits

- In January 2021, the Massachusetts Legislature passed a bill that provides MassDOT with the authority to utilize variable speed limits in an “*active construction zone*”
- An “*active construction zone*” was defined as: an area on a public highway or on the adjacent right of way where construction, repair, maintenance or survey work is being performed by the department, a utility company or a private contractor under contract with the department
- **OBJECTIVES**
 - Increase compliance and credibility of the posted speed limit
 - Improve work zone safety through reduced crash frequency and severity
 - Responsive to dynamic conditions

Massachusetts Department of Transportation Highway Division Standard Operating Procedures		S.O.P. No. TS-2023-002 Page 1 of 3	
Subject: Work Zone Speed Limits			
Effective 2/3/2023	Issued 2/3/2023	Supersedes No. n/a	 State Traffic Engineer

I. PURPOSE
This Standard Operating Procedure (SOP) establishes procedures for establishing Work Zone Speed Limits.
This SOP’s scope is limited to State Highways and on any project advertised by MassDOT.

II. AUTHORITY
MassDOT is granted authority to establish Speed Regulations by MGL c. 90 § 18 and the authority to establish speed limits in construction zones by MGL c. 90 § 17D.

III. SUPPORTING REFERENCES
Manual on Uniform Traffic Control Devices for Streets and Highways (MUTCD), 2009 Edition:

- Chapter 2B, Regulatory Signs, Barricades, and Gates
- Chapter 6F, Temporary Traffic Control Zone Devices

MassDOT’s Procedures for Speed Zoning on State Highways and Municipal Roads, 2021 Edition.

IV. DESCRIPTION
There are two types of Work Zone Speed Limits (WZSL):

- A **Static WZSL** is needed due to one or more geometric conditions created by the temporary traffic control setup that necessitates a reduction in the posted speed limit throughout that entire phase of construction, regardless of whether construction work is active. A Static WZSL is in effect 24 hours a day while the regulatory signs are posted.
- A **Dynamic WZSL** is needed due to one or more geometric conditions created by the temporary traffic control setup that exists only while construction, repair, maintenance, or survey workers are present and necessitates a temporary reduction in the posted speed limit but returns to a condition where the existing speed limit is adequate when the construction or maintenance work is not active. A Dynamic WZSL is only in effect when workers are present and the speed limit signs have been activated as described below.

Work Zone Speed Limits may not be appropriate for all temporary traffic control setups and are not intended to be used as an alternative to properly designed and deployed temporary traffic control devices. As with most traffic control devices, the overuse of WZSLs may ultimately decrease the effectiveness of all WZSLs.

Work Zone Speed Limits may be proposed by the Designer of Record, the Department, or a 3rd Party contracted by the Department and/or permitted to work within the Layout but



Work Zone Speed Limit – SOP No. TS-2023-002

Two types of Work Zone Speed Limits (WZSL)

- Static WZSL
 - Used during a long-term construction activity behind barriers (interstate bridge replacement)
 - Reduction in the posted speed limit throughout some or all phases of construction
 - In effect 24 hours a day
- Dynamic WZSL
 - Used during nightly or maintenance activity with daily setups (nightly resurfacing)
 - Only in effect when workers are present



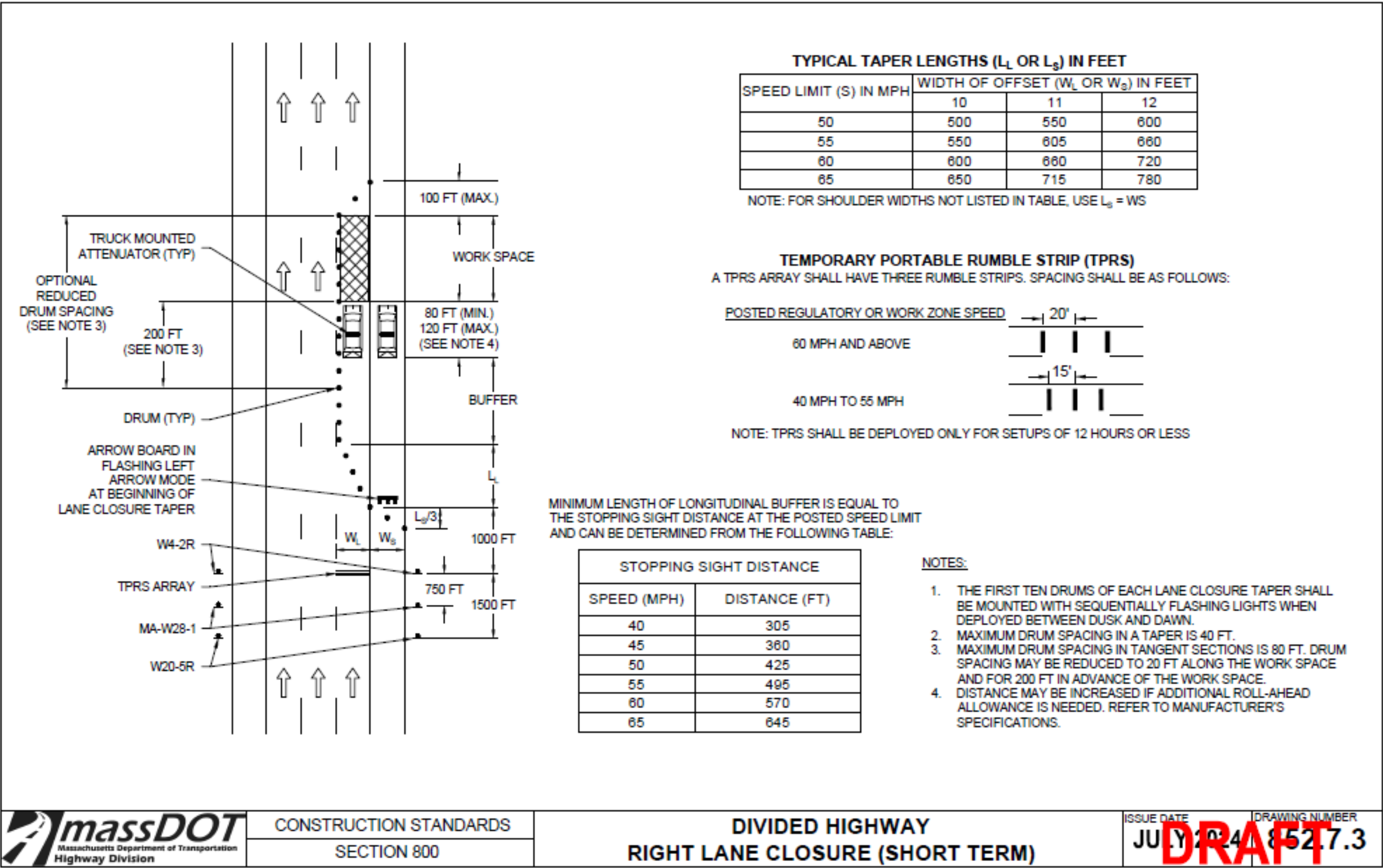
Static WZSL



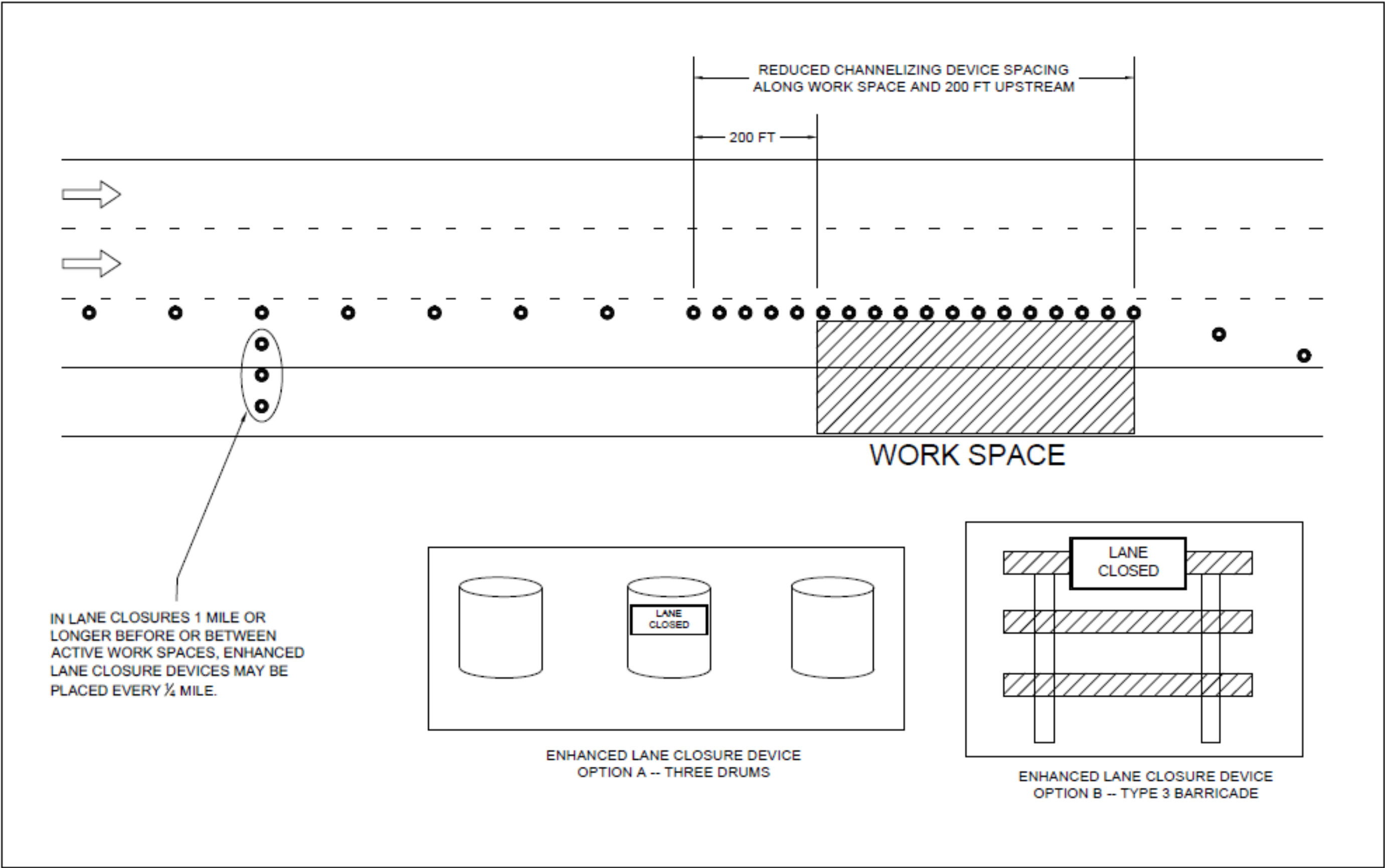
Dynamic WZSL

Enhanced Work Zone Traffic Control Device Layout

- MassDOT is working on an update to our “Divided Highway – Right Lane Closure” (Short Term) Standard that will provide:
- Tighter spacing of channelizing devices in work area
- Use of Type III barricade or drums inside closed lane(s)
- Plan will be to update additional drawings for other lane closures



Enhanced Work Zone Traffic Control Device Layout



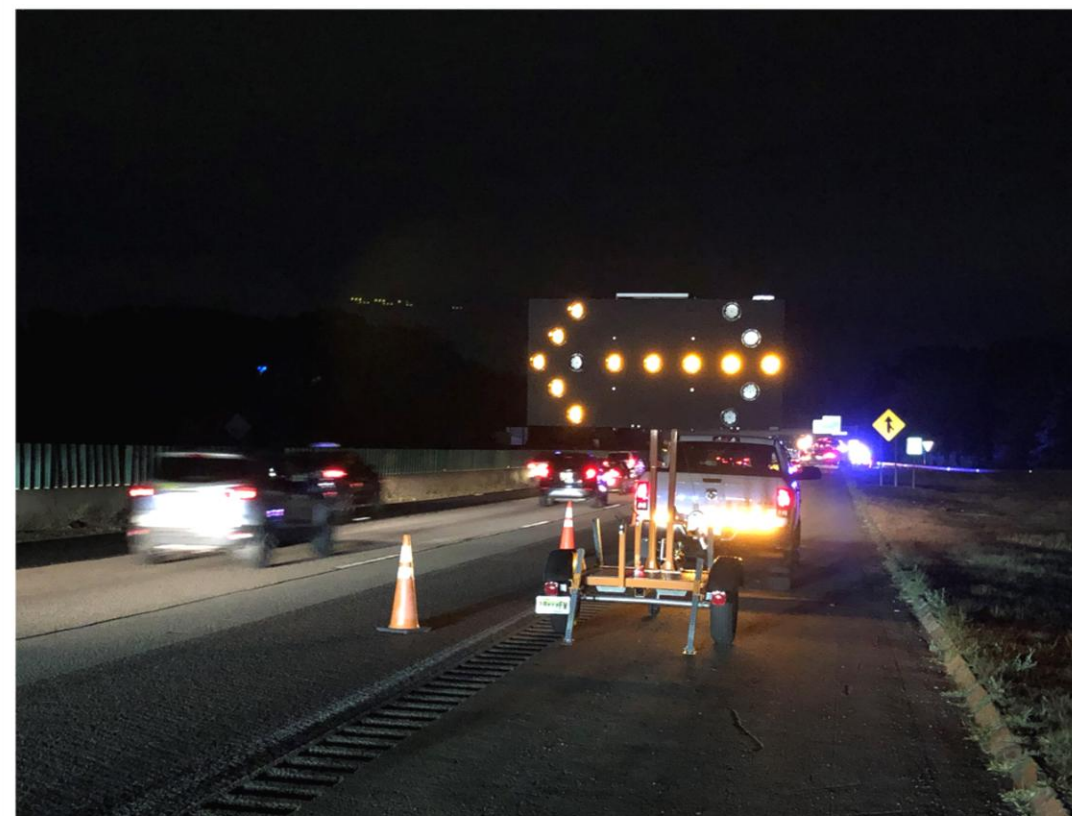
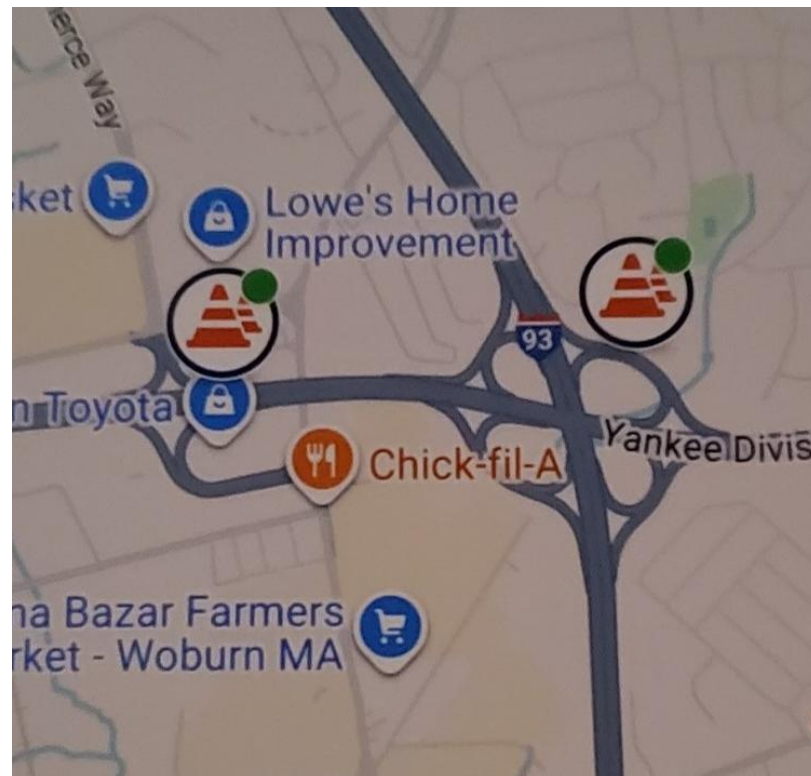
Connected Work Zones

Establishes a digital picture of when the work zone is active

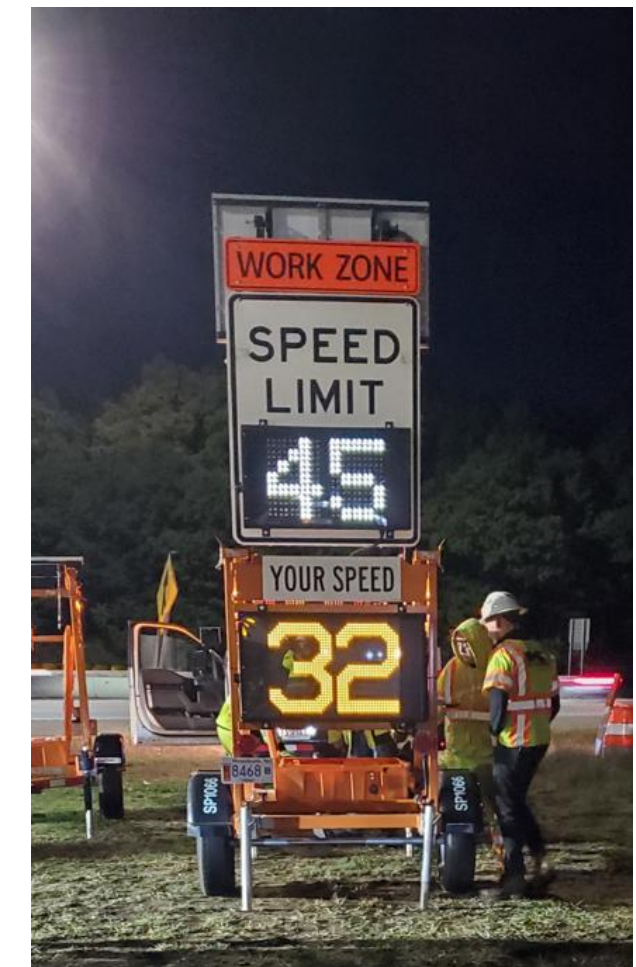
- Combine the planned event with real-time information from the device to verify the event status and location
- Follows the Connected Work Zone Standard Version 1.0

Devices

- Connected Arrow Board
- End Location Marker
- Dynamic WZSL



Connected Arrow Board



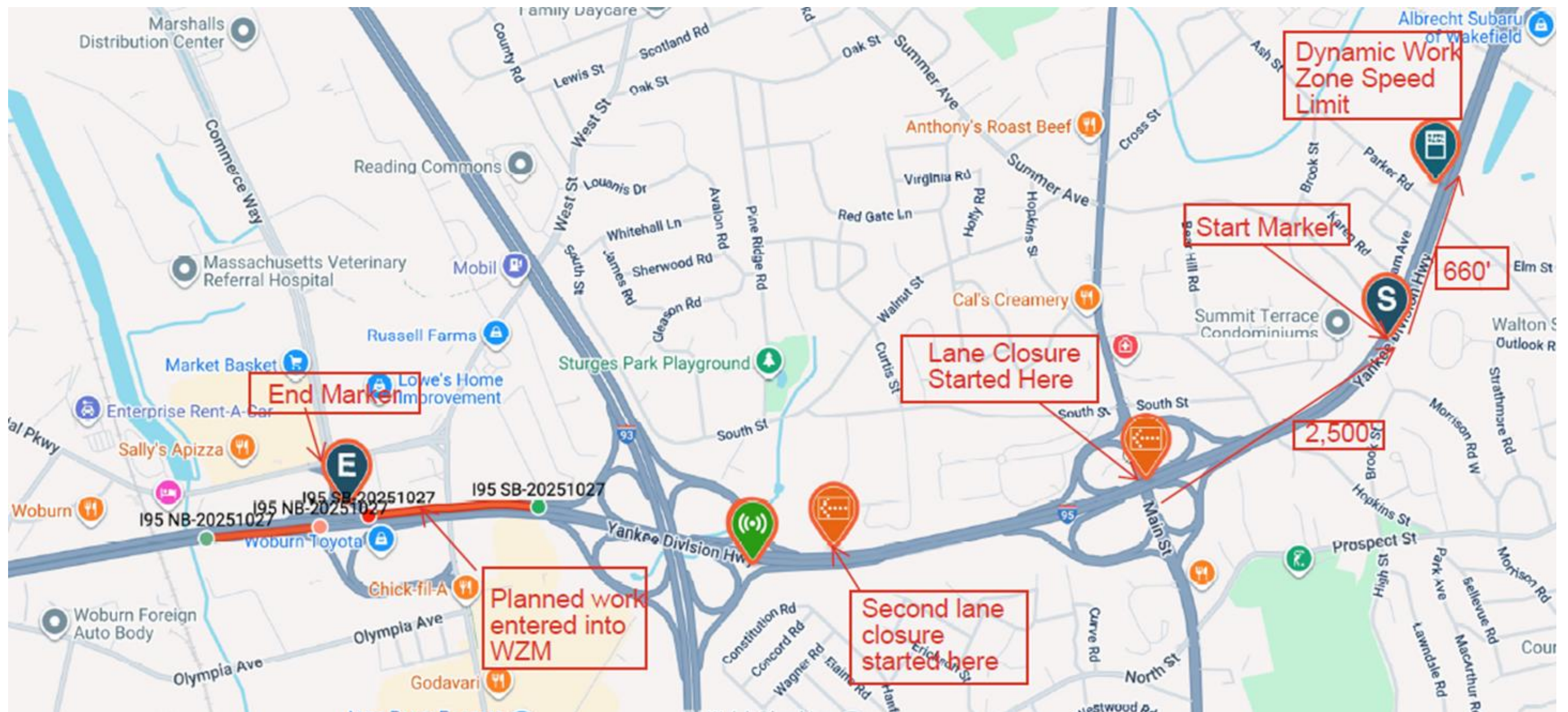
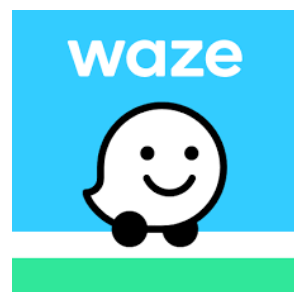
End Location Marker



End Location Marker

Providing Accurate 3rd Party Information

This “Connected” work zone provides detailed information that can get to the driver, either via OEM based in-dash equipment or via 3rd Party Mapping providers



Speed Safety Cameras

Work Zone Safety is a specific activity area identified within the **Safer Roads** element of the **Safe System Approach** strategy



Speed Safety Cameras

Safe Speeds is a core principle of the Safe System Approach since humans are less likely to survive high-speed crashes. Enforcing safe speeds has been challenging; however, with more information and tools communities can make progress in reducing speeds. Agencies can use speed safety cameras (SSCs) as an effective and reliable technology to supplement more traditional methods of enforcement, engineering measures, and education to alter the social norms of speeding. SSCs use speed measurement devices to detect speeding and capture photographic or video evidence of vehicles that are violating a set speed threshold.

Office of Safety
Proven Safety Countermeasures

Safety Benefits:
Fixed units can reduce crashes on urban principal arterials up to:

- 54%** for all crashes.⁴
- 48%** for injury crashes.⁴

P2P units can reduce crashes on urban expressways, freeways, and principal arterials up to:

- 37%** for fatal and injury crashes.²

Mobile units can reduce crashes on urban principal arterials up to:

- 20%** for fatal and injury crashes.⁵

In New York City, fixed units reduced speeding in school zones up to 63% during school hours.⁶

For more information on this and other FHWA Proven Safety Countermeasures, please reference the: [Speed Safety Camera Program Planning and Operations Guide](#).

The contents of this Fact Sheet do not have the force and effect of law and are not meant to bind the public in any way. This Fact Sheet is intended only to provide clarity regarding existing requirements under the law or agency policies.

FHWA-SA-21-070

Applications

Agencies should conduct a network analysis of speeding-related crashes to identify locations to implement SSCs. The analysis can include scope (e.g., widespread, localized), location types (e.g., urban/suburban/rural, work zones, residential, school zones), roadway types (e.g., expressways, arterials, local streets), times of day, and road users most affected by speed-related crashes (e.g., pedestrians, bicyclists).

SSCs can be deployed as:

- **Fixed units**—a single, stationary camera targeting one location.
- **Point-to-Point (P2P) units**—multiple cameras to capture average speed over a certain distance.
- **Mobile units**—a portable camera, generally in a vehicle or trailer.

The table below describes suitable circumstances for SSC deployment.¹

Considerations

- SSCs can produce a crash reduction upstream and downstream, thus generating a spillover effect.²

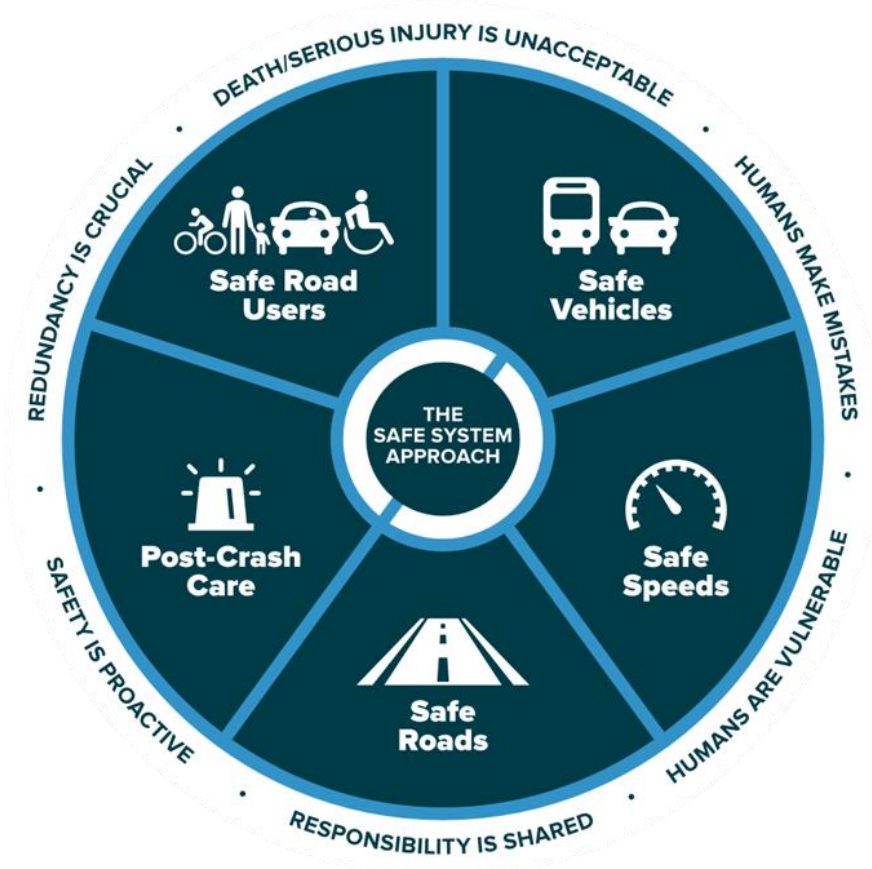
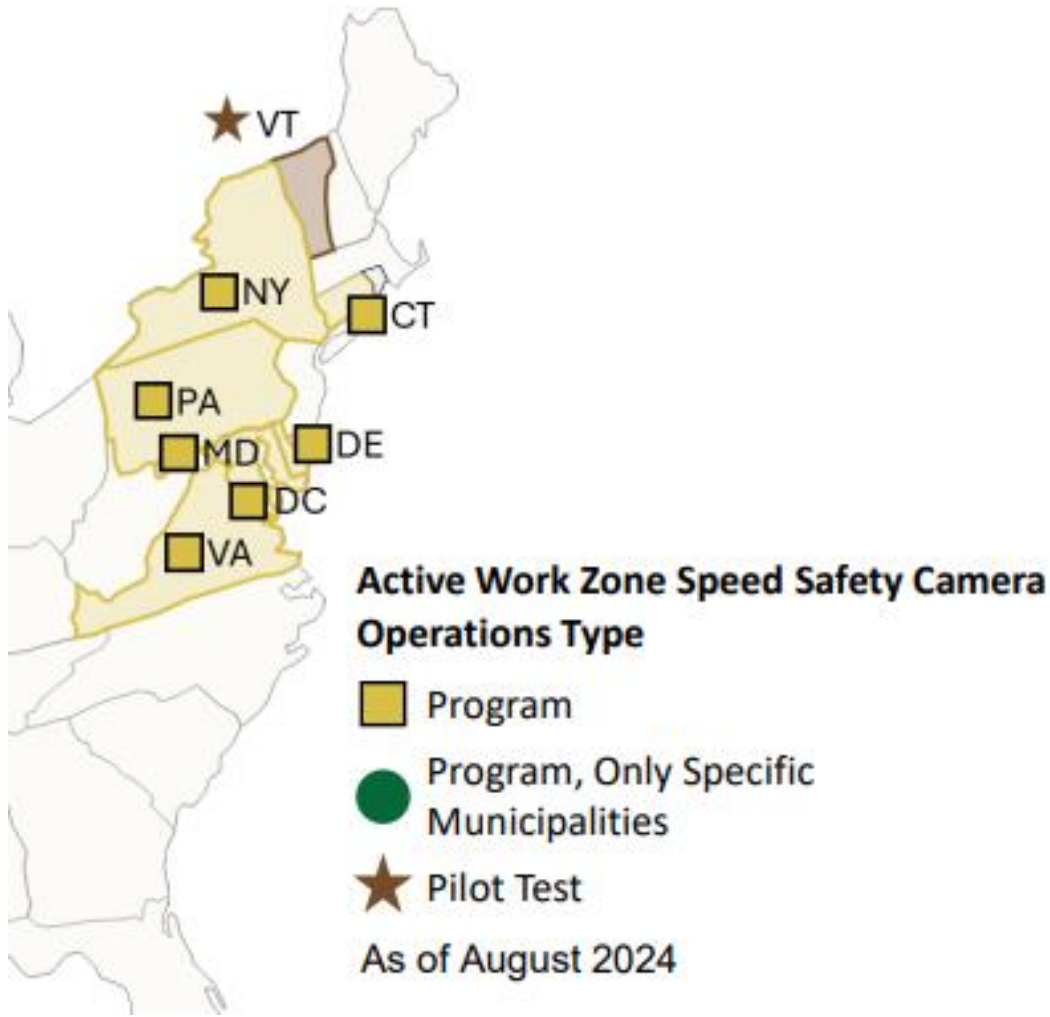
Public trust is essential for any type of enforcement. With proper controls in place, SSCs can offer fair and equitable enforcement of speeding, regardless of driver age, race, gender, or socio-economic status. SSCs should be planned with community input and equity impacts in mind.

- Using both overt (i.e., highly visible) and covert (i.e., hidden) enforcement may encourage drivers to comply with limits everywhere, not only at sites they are aware are enforced.
- Agencies should conduct evaluations regularly to determine if SSCs are accomplishing safety goals and whether changes in strategy, scheduling, communications, or public engagement are necessary.
- Agencies should conduct a legal and policy review to determine if SSCs are authorized within a jurisdiction and how the authorization and other traffic laws will affect a SSC program.
- Agencies should develop an SSC program plan with consideration of the USDOT SSC guidelines for planning, public involvement, stakeholder coordination, implementation, maintenance, evaluation, etc.³

Considerations for Selection	Fixed	P2P	Mobile
Problems are long-term and site-specific.	X	X	—
Problems are network-wide, and shift based on enforcement efforts.	—	—	X
Speeds at enforcement site vary largely from downstream sites.	—	X	X
Overt enforcement is legally required.	X	X	X
Sight distance for the enforcement unit is limited.	X	X	—
Enforcement sites are multilane facilities.	X	X	—

1 Speed Safety Camera Program Planning and Operations Guide, FHWA, (2023).
2 CMF ID: 7216 Montella et al. "Effects on speed and safety of point-to-point speed enforcement systems".
3 Speed Enforcement Camera Systems Operational Guidelines, NHTSA, (2008).
4 CMF ID: 2215, 2021 Shin et al. "Evaluation of the Scottsdale Loop 101 automated speed enforcement demonstration program." Accident Analysis and Prevention, Vol. 41, (2009).
5 CMF ID: 7887 Li et al. "A Before-and-After Empirical Bayes Evaluation of Automated Mobile Speed Enforcement on Urban Arterial Roads." Presented at the 94th Annual Meeting of the Transportation Research Board, Paper No. 15-1563, Washington, D.C., (2015).
6 Note that this is an international study.
6 Automated Speed Enforcement Program Report 2014-2017, New York City DOT, (2018).

MassDOT and our legal team drafted Language for Work Zone Speed Safety Cameras to follow the successful programs in other states





Questions?

Email: neil.Boudreau@dot.state.ma.us

