

Work Zone Dos and Don'ts

Types of Inspection

- Daytime Work Zone Inspection
- Nighttime Work Zone Inspection
- Pedestrian Considerations
- Daily traffic Control Plan
- Drive Thru Inspection

WORKZONE INSPECTION
TRAFFIC OPERATIONS SECTION

Project Name: _____
Project Number: _____
Project Resident: _____
Date Inspected: _____
Inspection Report by: _____

Temporary Traffic Control

Question: Is the work location set up per the contract, as far as hours of the day, number of lanes?
Is the traffic control correct according to the approved TDCP?
Are all advance signs and arrow panels clear, in good condition and do the sign sizes, amounts, orientations meet the TDCP control device signs as appearing in plan?

Question	Yes	No	NA	Comments
Is the work location set up per the contract, as far as hours of the day, number of lanes?				
Is the traffic control correct according to the approved TDCP?				
Are all advance signs and arrow panels clear, in good condition and do the sign sizes, amounts, orientations meet the TDCP control device signs as appearing in plan?				

WORKZONE NIGHT INSPECTION
TRAFFIC OPERATIONS SECTION

Project Name: _____
Project Number: _____
Project Resident: _____
Date Inspected: _____
Inspection Report by: _____

Signs

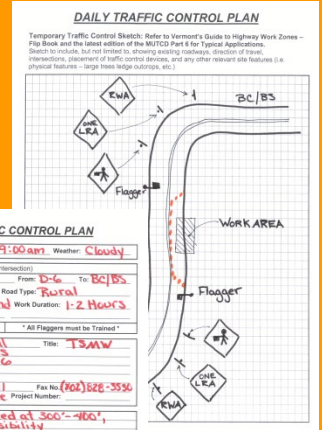
Question: Are the signs clearly visible to drivers?
Is the retro-reflective sheeting uniform on the sign faces?
Are all TDCP control devices clearly at night to avoid glare problems for drivers?

Question	Yes	No	NA	Comments
Are the signs clearly visible to drivers?				
Is the retro-reflective sheeting uniform on the sign faces?				
Are all TDCP control devices clearly at night to avoid glare problems for drivers?				

Cones, Drums and Barricades

Question: Do obstructive devices display appropriate retro-reflectivity?
Is the traffic flow clearly apparent to drivers?
Are hazards delineated and protected?

Question	Yes	No	NA	Comments
Do obstructive devices display appropriate retro-reflectivity?				
Is the traffic flow clearly apparent to drivers?				
Are hazards delineated and protected?				



DAILY TRAFFIC CONTROL PLAN

Date: April 23, 2007 Time: 9:00 am Weather: Cloudy

Route: I-93 Town Berlin From D-6 To BC/BS

Planned Speed Limit (mph): 35 Post Type: Rural

Author: Clear Cut/Veriflow Work Duration: 1-2 Hours

Flaggers required? YES NO *All Flaggers must be Trained*

Prepared By: S. Sherrill Title: TSMW

Address: Entry Performance Wares VTTRANS District #6

Telephone No: (802) 888-2641 Fax No: (802) 888-3556

Project Name: Maintenance Project Number:

Comments: Signs Spaced at 300'-400', for optimum visibility

WORK DURATION (MUTCD, Part 6, Section 6G.02)

- Long term (stationary) work that occupies a location more than 30 days.
- Intermittent term (stationary) work that occupies a location more than one day but less than 30 days, or repetitive work that occupies a location more than 1 hour within a single daylight period.
- Short-term stationary work that occupies a location for more than 1 hour within a single daylight period.
- Short duration work that occupies a location up to 1 hour.
- Mobile work that moves intermittently or continuously.

ROAD TYPE	Distance Between Signs (Feet)	A	B	C
Urban (low speed)	500	100	100	100
Urban (high speed)	300	100	100	100
Rural	500	100	100	100
Expressway / Freeway	1,000	100	100	100

Pedestrians Checklist and Considerations for Temporary Traffic Control Zones

Pedestrian Considerations While in the Field

Construction Management Safety

- Provide adequate pedestrian safety on physical separation from work area and adequate safety signage.
- Provide adequate and safe egress wherever sidewalks are closed or bypassed.
- Designate appropriate and safe egress collection or bypass areas, and provide adequate signage.
- Provide adequate signage for pedestrians with visual disabilities.
- Provide adequate signage for pedestrians with hearing disabilities.

Construction Management Safety

Provide adequate pedestrian safety on physical separation from work area and adequate safety signage.

Provide adequate and safe egress wherever sidewalks are closed or bypassed.

Designate appropriate and safe egress collection or bypass areas, and provide adequate signage.

Provide adequate signage for pedestrians with visual disabilities.

Provide adequate signage for pedestrians with hearing disabilities.

Pedestrians Checklist and Considerations for Temporary Traffic Control Zones

Pedestrian Considerations during Planning and Design

Planning

- Identify all potential pedestrian routes that require any form of modification to the existing condition of the existing condition of the project.
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- Identify all potential pedestrian routes that require any form of modification to the existing condition of the project.

Design

- Provide pedestrian information through the TDCP.
- Provide adequate signage to inform pedestrians of the work area, the location of the work area, and the location of the work area.
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For those who plan, design, and construct temporary traffic control (TTC) zones, the Manual on Uniform Traffic Control Devices (MUTCD) provides guidance regarding pedestrian considerations, accessibility, and worker safety. The document provides a checklist and overview of pedestrian-related considerations during planning, design, and construction phases for a project and is designed to enhance pedestrian safety and accessibility, maintain pedestrian and wheelchair use, and provide adequate signage to ensure pedestrian safety throughout each phase. This set of documents provides pedestrian considerations for use during the planning and design phases, with the other set providing detailed guidance on implementation in the field.

VTTRANS

Construction Management Safety

Provide adequate pedestrian safety on physical separation from work area and adequate safety signage.

Provide adequate and safe egress wherever sidewalks are closed or bypassed.

Designate appropriate and safe egress collection or bypass areas, and provide adequate signage.

Provide adequate signage for pedestrians with visual disabilities.

Provide adequate signage for pedestrians with hearing disabilities.

Taper Lengths & Buffer Spaces

Types of Tapers & Buffer Spaces

Table 6C-3. Taper Length Criteria for Temporary Traffic Control Zones

Type of Taper	Taper Length
Merging Taper	at least L
Shifting Taper	at least 0.5 L
Shoulder Taper	at least 0.33 L
One-Lane, Two-Way Traffic Taper	50 feet minimum, 100 feet maximum
Downstream Taper	50 feet minimum, 100 feet maximum

Note: Use Table 6C-4 to calculate L

Table 6C-4. Formulas for Determining Taper Length

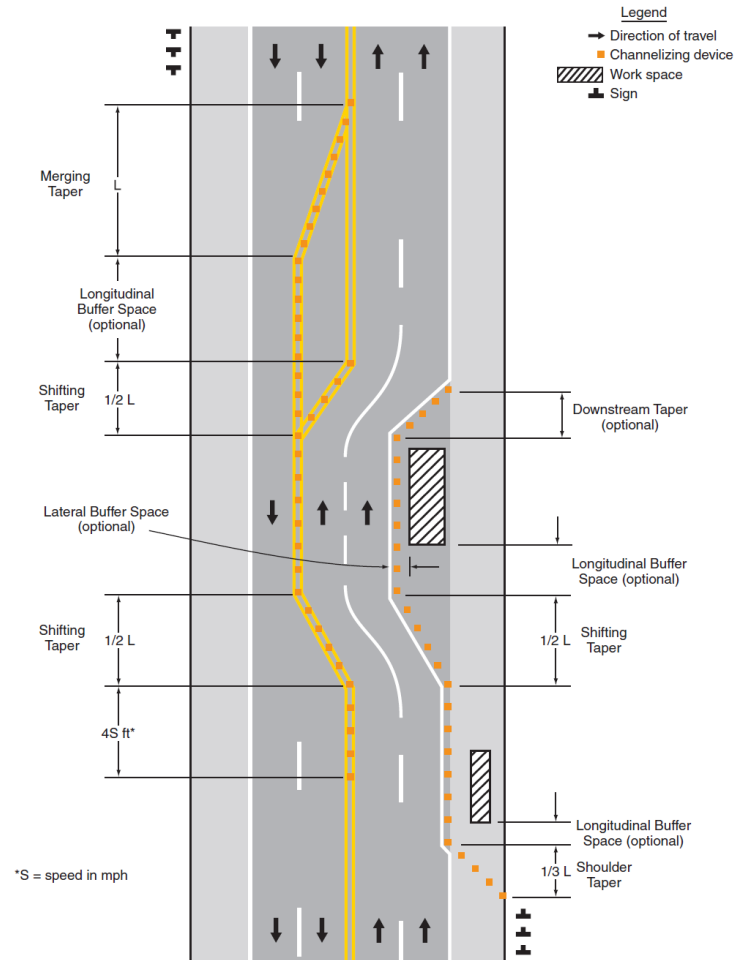
Speed (S)	Taper Length (L) in feet
40 mph or less	$L = \frac{WS^2}{60}$
45 mph or more	$L = WS$

Where: L = taper length in feet
 W = width of offset in feet
 S = posted speed limit, or off-peak 85th-percentile speed prior to work starting, or the anticipated operating speed in mph

Longitudinal Buffer Space		Longitudinal Buffer Space	
Speed* (mph)	Length (feet)	Speed* (km/h)	Length (meters)
20	115	30	35
25	155	35	50
30	200	40	65
35	250	45	85
40	305	50	105
45	360	55	130
50	425	60	160
55	495	65	185
60	570	70	220
65	645	75	250
70	730		
75	820		

* Posted speed limit, off-peak 85th-percentile speed prior to work starting, or the anticipated operating speed

Figure 6C-2. Types of Tapers and Buffer Spaces



Merging Taper

Speed Limit	Minimum Taper Length (L) in Feet Lane Width (W) in Feet				Minimum Number of Devices Lane Width in Feet				Maximum Device Spacing in Feet		Speed Limit (S) MPH
	9	10	11	12	9	10	11	12	Along Taper	Along Tangent	
25 or below	95	105	115	125	5	6	6	6	25	50	25 or below
30	135	150	165	180	6	6	7	7	30	60	30
35	185	205	225	245	7	7	8	8	35	70	35
40	240	270	295	320	7	8	9	9	40	80	40
45	405	450	495	540	10	11	12	13	45	90	45
50	450	500	550	600	10	11	12	13	50	100	50
55	495	550	605	660	10	11	12	13	55	110	55
60	540	600	660	720	10	11	12	13	60	120	60
65	585	650	715	780	10	11	12	13	65	130	65
70	630	700	770	840	10	11	12	13	70	140	70
75	675	750	825	900	10	11	12	13	75	150	75
80	720	800	880	960	10	11	12	13	80	160	80

Spacing of channelizing devices should not exceed a distance in feet equal to the speed when used for the taper in spacing of devices and a distance in feet of twice the speed when used for tangent in spacing of devices.

Note: This rule does not translate directly in the metric system. This method may be used if speed in kph is converted first to mph, and the rule in feet is then converted back to meters.



Signs





Improper sign spacing.

Post extends above top of sign.

Decimal distance and improper font for Road Work sign.

BUMP sign in poor condition.

BUMP sign is not fluorescent orange sheeting.



**Sheeting types
do not match.**



Non-retroreflective sign sheeting.

Sheeting on the bottom is the proper fluorescent orange.

The Type III sheeting used in the middle is no longer acceptable.



Poor condition, not fluorescent orange.



Ya really should pay attention to what you're doing.



**Sign visibility
obscured by guardrail.**



Sign visibility obscured by guardrail.

Place signs on shoulder or use stands that can raise bottom of sign above guardrail.



Construction sign obscures visibility of existing traffic control device.



Signs spaced too closely.

**Proper sign spacing
(generally 200 feet) should
be maintained whenever
possible.**



Sign stacking should be avoided.

Select highest priority message in tight spaces.



Sign clutter.

Improperly covered sign.

Existing signs which contradict the temporary traffic control package must be completely covered with solid material (signs will reflect through burlap.)



Improperly covered sign.

Posts extend above top of sign.





Appropriate sign cover



Appropriate sign cover

Post extending above top of sign.



Illegal sign stand.



Improper ballast.

Non-reflective sign sheeting.

NCHRP-350 sign stand?



Regulatory signs should be black on white.

Warning signs should be diamond shaped black on orange.

Illegal sign stand.



Improper sign stand

All portable sign stands should have an NCHRP-350 label, which will specify what type of sign can be mounted on the stand.

**NCHRP-350
COMPLIANT**

For use with noted
Eastern Metal/USA-SIGN®
& other NCHRP-350
Accepted Sign Materials

Accepted Materials

- Reflexite® 15mm Endurance™ & Stabler Plastic
- Reg./Rigid Roll-up Signs
- .080 and .100 Aluminum
- 5/8 Plywood
- 2 mm AL/LDPE Laminate
- Dibond, Alpollic, Reynolite
- 10 mm Corrugated Plastic

Eastern Metal
USA-SIGN

X-550B
Interstate™ Stand



Sign with interchangeable text inserts.



**Example of
corrugated
solid substrate
sign.**



**Gate-posted signs
required when
multiple lanes in one
direction.**

Sign Posts





**Sign illegally mounted
on utility pole.**



**Stub Height
exceeds 4
inches.**



**BUTT-WELD
SPLICE**



Proper installation of nested flanged channel posts with stub height less than 4 inches.

A close-up photograph of a square steel sign post. The post is made of galvanized steel and has several circular holes spaced vertically. A metal collar is attached to the post with a nut and bolt. The post is set in a field of dry, yellowish-brown grass. The background is a solid orange color.

Proper installation of square steel sign posts with stub height less than 4 inches.

Delineation





Bracing shall not be added to stands. This will invalidate tested crashworthiness.



SANDBAG ON TOP OF DRUM



Pavement
markings painted
black



Improper cones.
Cones shall be 28" tall (min) and have two retroreflective bands. The top one shall be 6 inches and the bottom one shall be 4 inches.



**Cone in unacceptably
poor condition.**



Barrel in unacceptably poor condition.

17 11:44AM

Temporary Barriers





Improper joint connection.



Improperly protected barrier end.

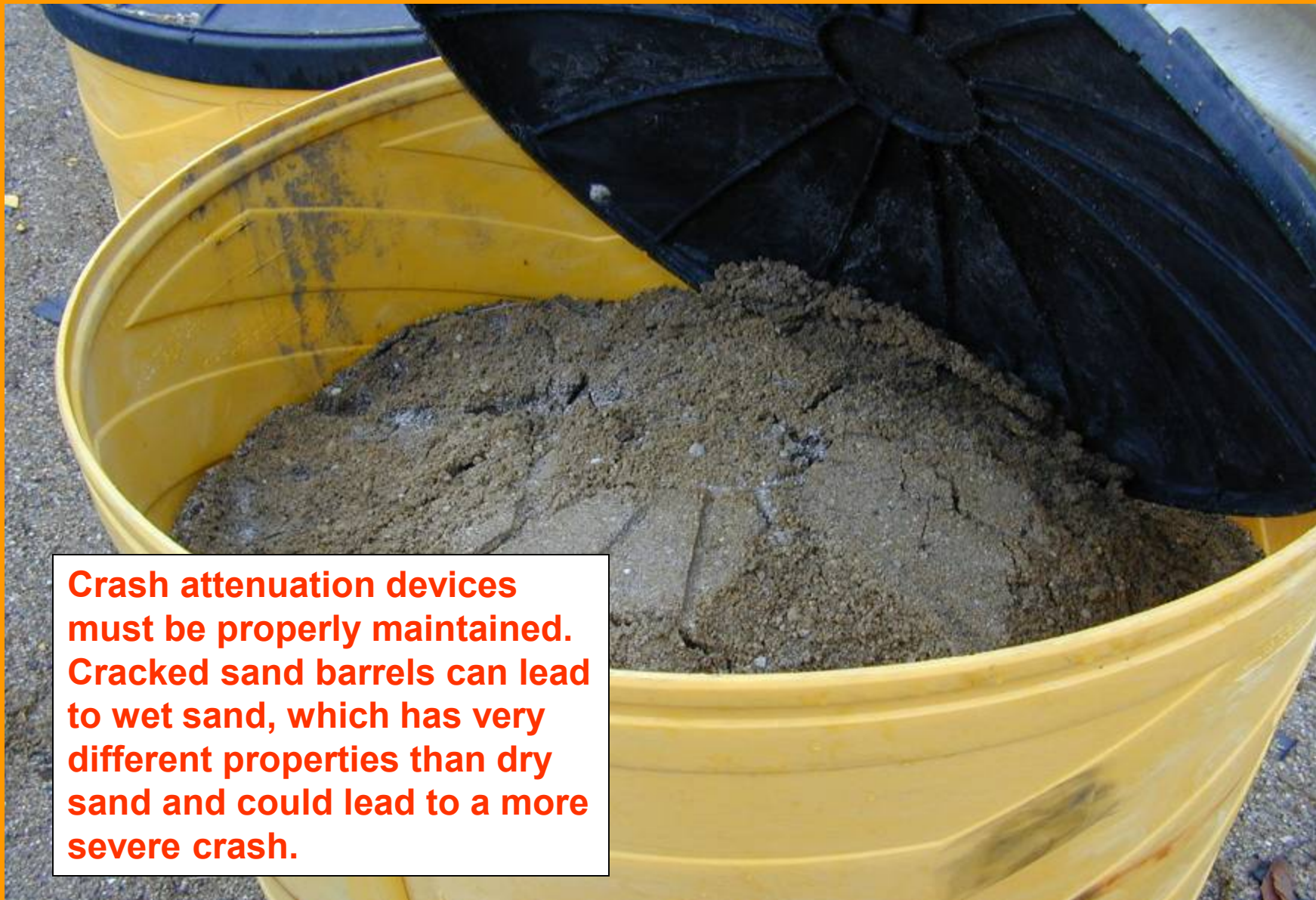


**There isn't much right
about this set-up.**

**It's a fatality and
lawsuit waiting to
happen.**

A photograph taken from the perspective of a driver on a road. The road is paved and has a double yellow line in the center. On the right side of the road, there is a line of orange and white traffic barrels. In the distance, a large orange truck is visible, along with a smaller vehicle. The road is flanked by green trees and a utility pole with power lines. The sky is overcast. A white text box with red text is overlaid on the bottom right of the image.

**Barrels are not crash
attenuation devices.**



Crash attenuation devices must be properly maintained. Cracked sand barrels can lead to wet sand, which has very different properties than dry sand and could lead to a more severe crash.

PCMS

Portable Changeable Message Boards





**Improperly
displayed
message**

**Brightness
improperly
displaying**





**Poorly sited
PCMS blocked by
existing traffic
control sign.**

Improperly
displayed
message.

USE
BLIND HORN AVE





**Properly sited PCMS with
unobstructed sight distance.**



Properly located PCMS.

Guardrail protected.

5-7 feet above roadway.

Properly located PCMS.



Flaggers



The flagger ahead symbol should be 500 feet in advance of the flagger.

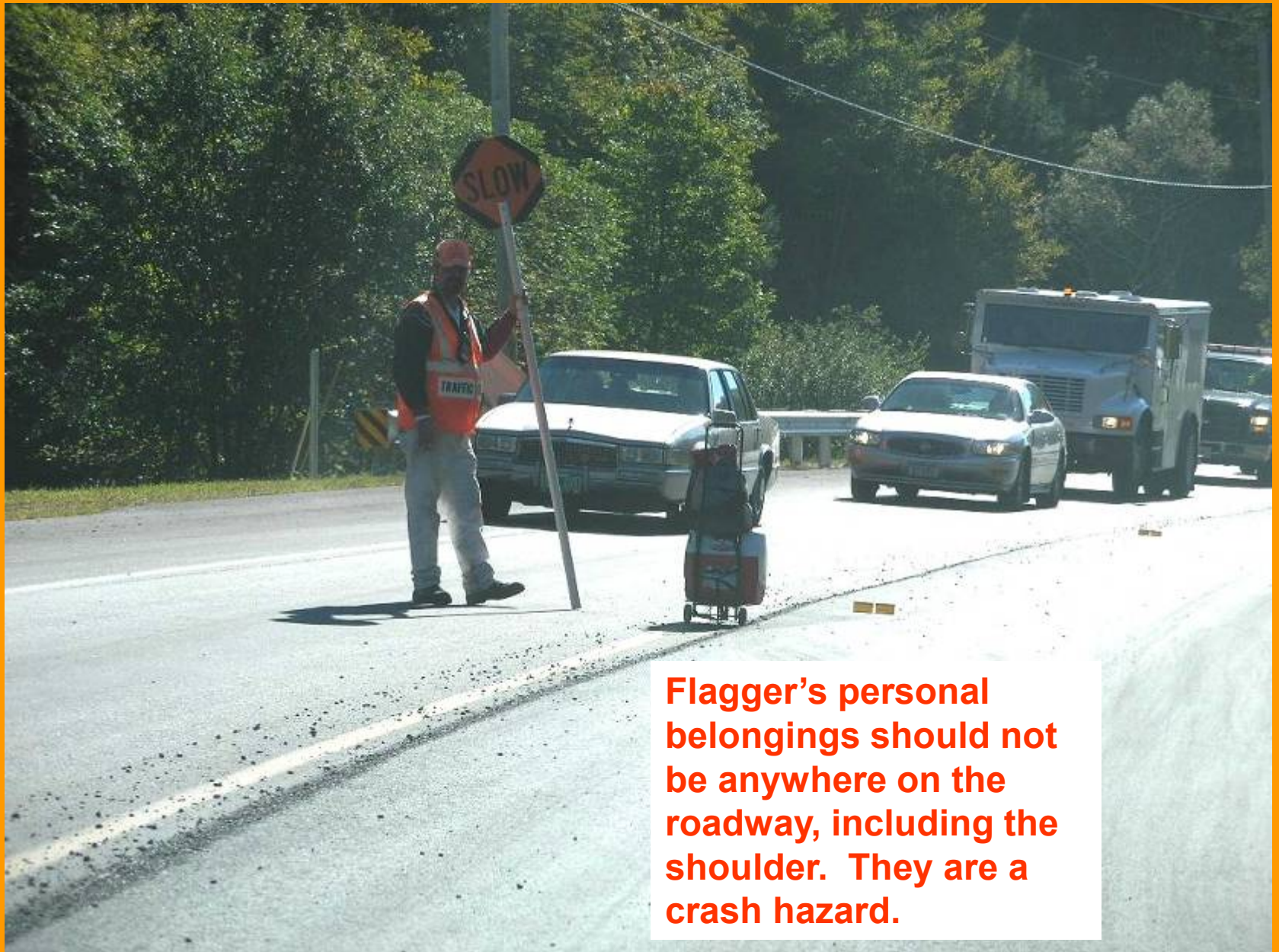


08/02/2006



**Flaggers must have
“Traffic Control”
retroreflective panel on
vests.**

**Flagger should never
turn back on traffic.**



Flagger's personal belongings should not be anywhere on the roadway, including the shoulder. They are a crash hazard.

Pedestrian Accommodations





457 V011 WB 2 SPRINGFIELD

SECT ROUTE DR D TOWN

4.975

2008-09-18



Sign obstructing sidewalk



454 V011 EB 2 SPRINGFIELD

SECT ROUTE DR D TOWN

4.585

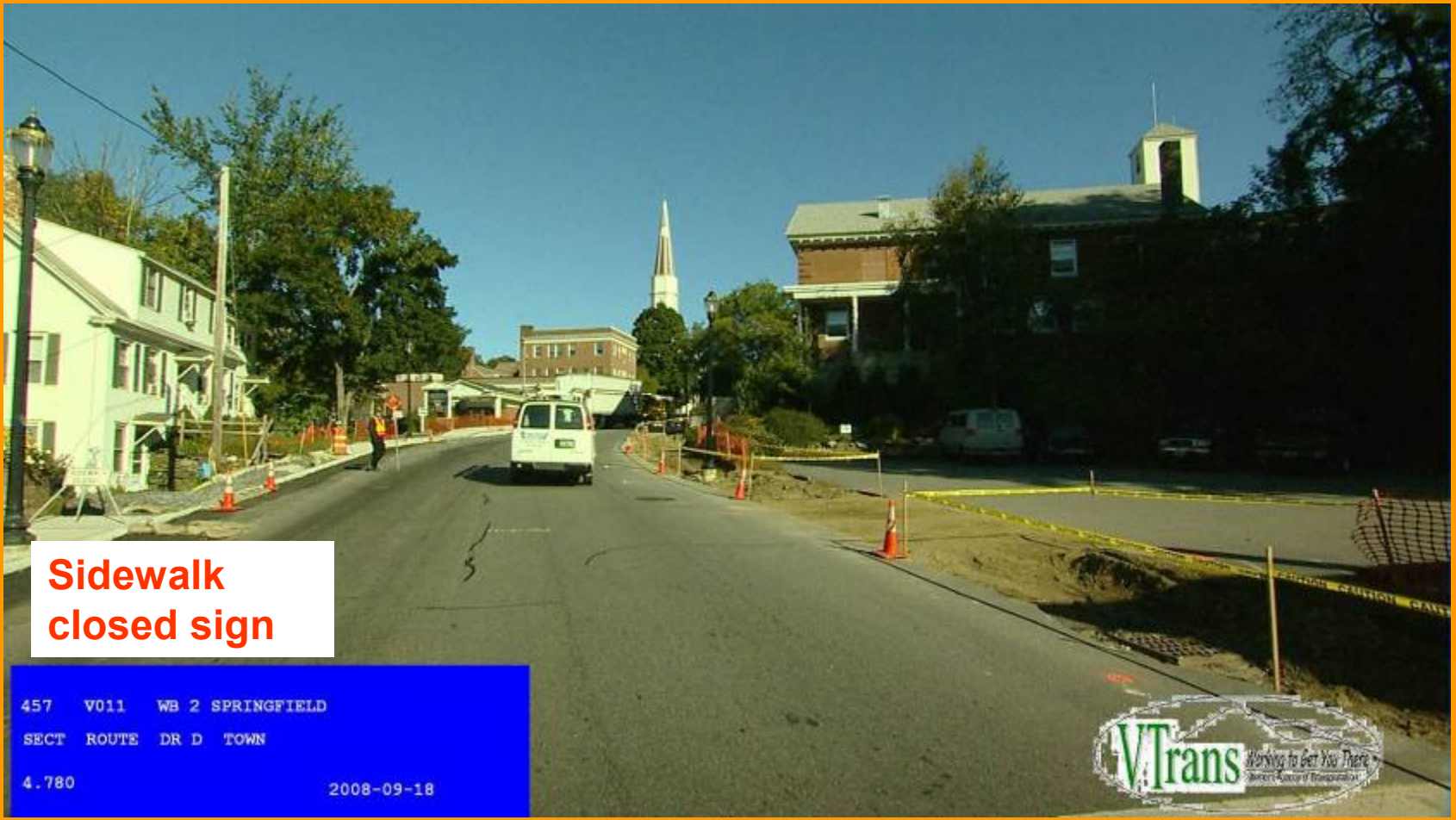
2008-09-18



**No pedestrian
accommodation**



It's a start. Alternate ped path must be ADA compliant – cone bases touching or board that can be followed with cane.



**Sidewalk
closed sign**

457 V011 WB 2 SPRINGFIELD

SECT ROUTE DR D TOWN

4.780

2008-09-18



**So you've got a sign...but
where is the ped
supposed to go?**



457 V011 WB 2 SPRINGFIELD

SECT ROUTE DR D TOWN

4.935

2008-09-18

**Sidewalk closed
ahead, cross here**

Work Zone Temporary Traffic Control Notes

- All Solid Substrate Work Zone Signs shall have ASTM Type VIII or higher Fluorescent Orange retro- reflective sheeting.
- All Roll-up work zone signs shall have ASTM Type VI Fluorescent Orange retro-reflective sheeting
- Portable sign stands shall be NCHRP 350 compliant.
- All Flaggers are required to be certified by attending an approved 4 hour Training Course.
- All Flaggers shall have a Class 2 vest with “Traffic Control” on front and back. Other workers in the work zone shall use a Class 2 vest.
- Flagger symbol signs should be at least 500 feet in advance of flagger (rural applications) and not more than 1000 feet in advance. Signs shall be moved when flagger station moves.
- Reduced Speed Zones if used, normally will go to 55 MPH on Interstates and 10 miles below existing posted speeds on other requested routes A temporary speed limit certificate signed by Director Tetreault is required.

Figure 6C-2. Types of Tapers and Buffer Spaces

Figure 6C-2 Types of Tapers and Buffer Spaces

Guidance on lengths of short tapers and downstream tapers

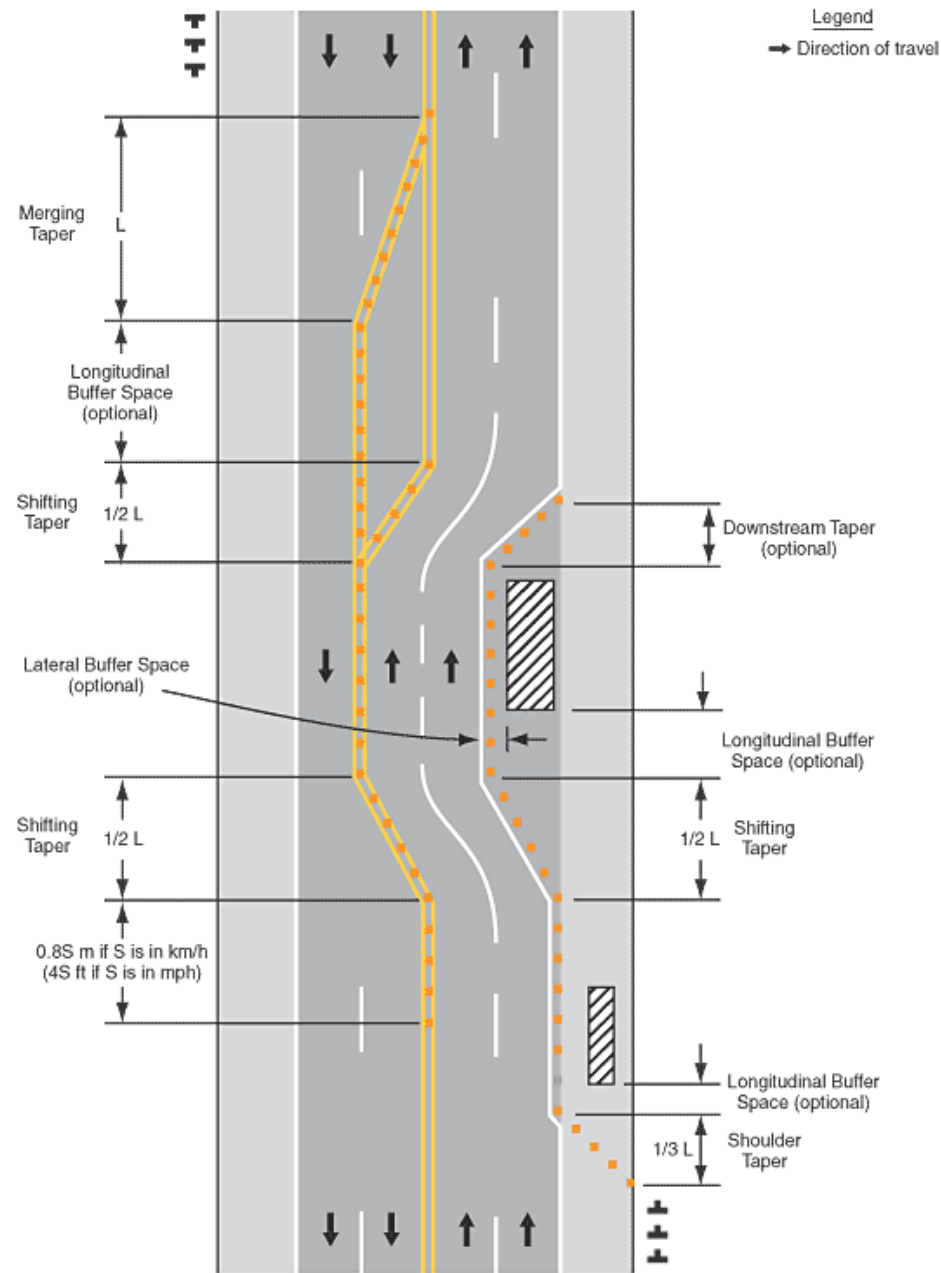


Table 6C-3 Taper Length Criteria for Temporary Traffic Control Zones

Minimum length for one-lane, two-way traffic taper added

Type of Taper	Taper Length
Merging Taper	at least L
Shifting Taper	at least 0.5 L
Shoulder Taper	at least 0.33 L
One-Lane, Two-Way Traffic Taper	50 feet minimum, 100 feet maximum
Downstream Taper	100 feet per lane

Section 6C.10

One-Lane, Two-Way

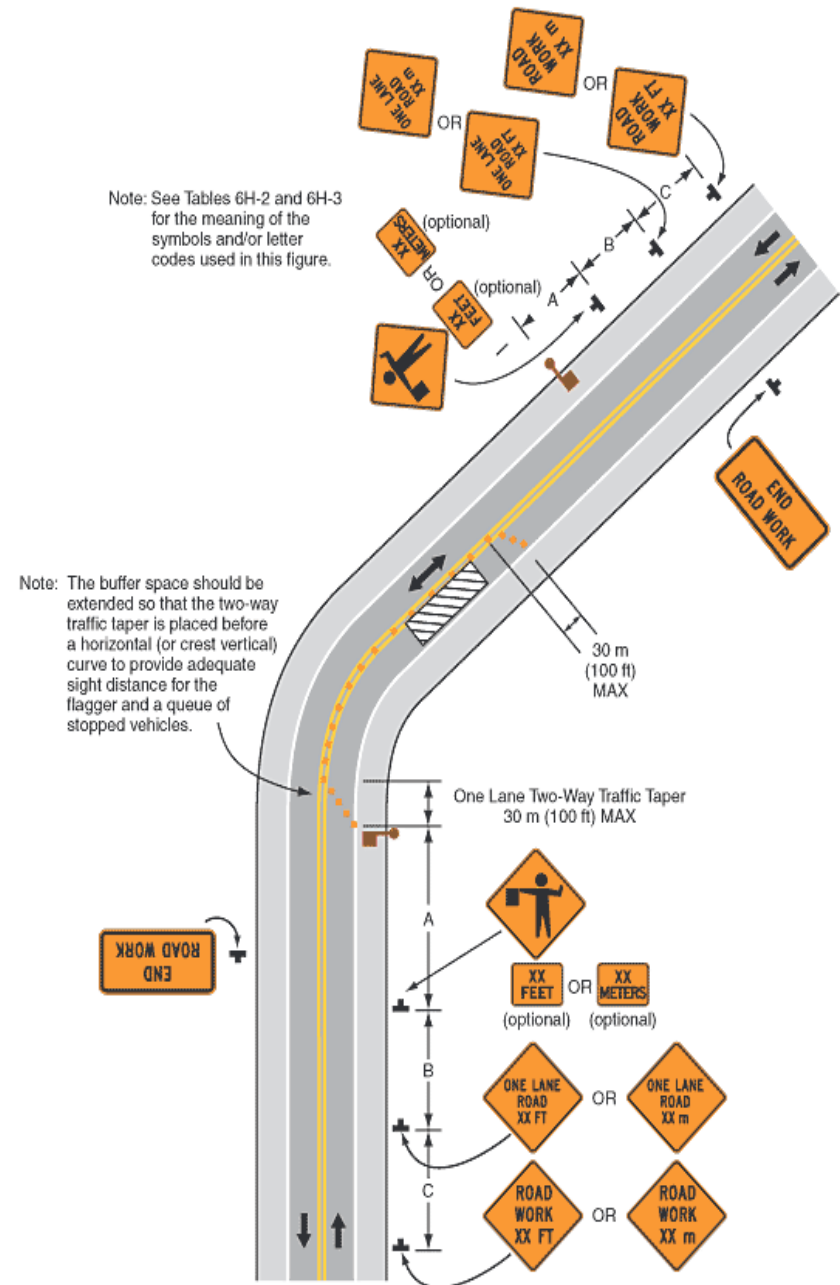
Traffic Control

Figure 6H-10

Clarified OPTION for self-regulating traffic movement through a one-lane, 2-way constriction

- If work space is short (adequate sight distance)
- If on a low-volume street

Figure 6H-10. Lane Closure on Two-Lane Road Using Flaggers (TA-10)



Typical Application 10

Section 6E.02

High-Visibility Safety Apparel



- Required for **ALL WORKERS** within the public right of way
- Class 2 or 3 of ANSI/ISEA 107-2004
- Applies to all roads, not just those on the Federal-aid system
- Option for law enforcement and first responders to use new ANSI “public safety vests”
- Firefighters and law enforcement are exempted from the requirement under certain conditions
- **December 31, 2011 compliance date**

Section 6E.04 Automated Flagger Assistance Devices

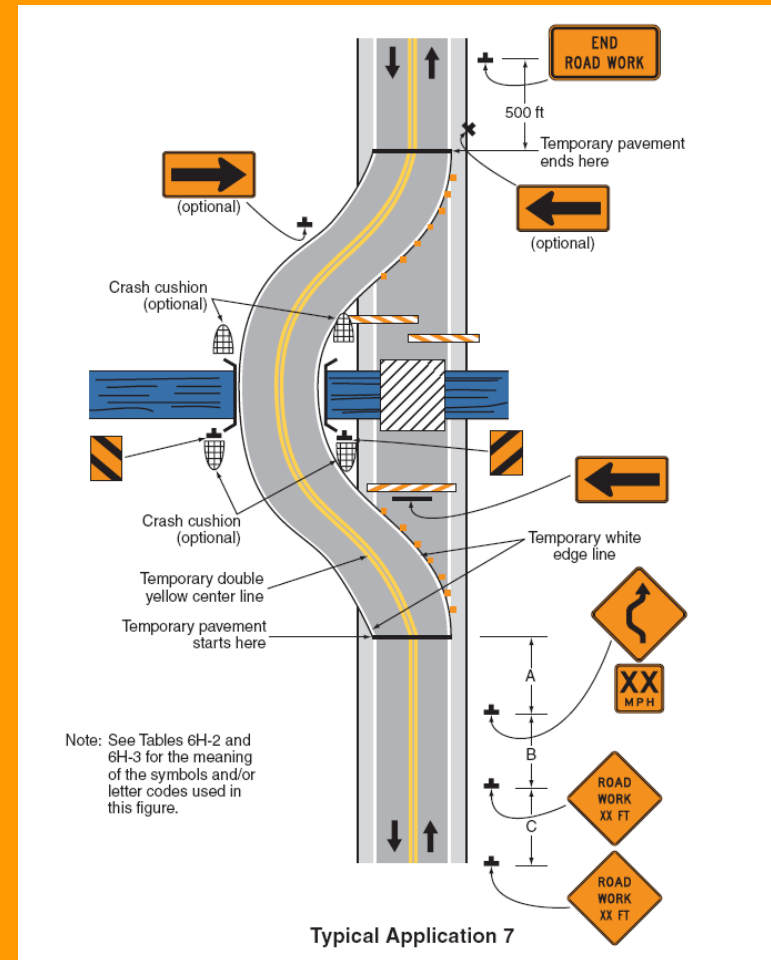
- Two Types
 - STOP/SLOW
 - Red/Yellow Lens



- AFADs shall only be used in situations where there is only one lane of approaching traffic in the direction to be controlled
- AFADs are not traffic control signals, they shall not be used as a substitute for or a replacement for a continuously operating temporary traffic control signal
- Great for short projects, such as bridge cleaning, not meant to be left there

Section 6F.08 Road (Street) Closed Sign (R11-2)

- The ROAD (STREET) CLOSED sign shall not be used where road user flow is maintained through the TTC zone with a reduced number of lanes on the existing roadway or where the actual closure is some distance beyond the sign.

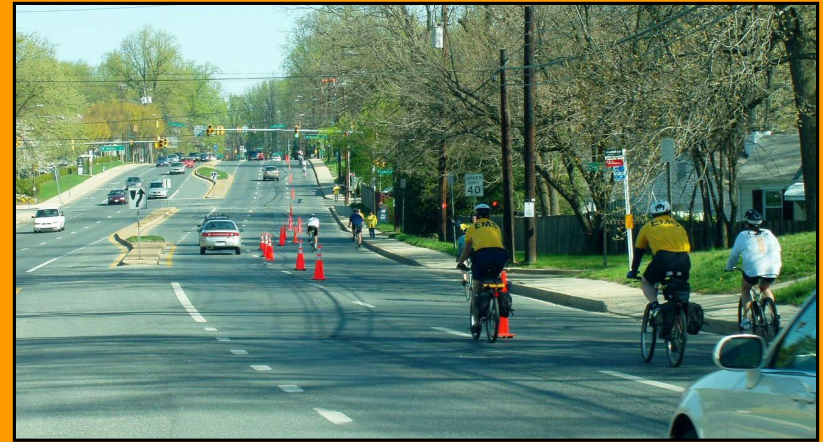


Section 6G.01

Typical Applications



Parade

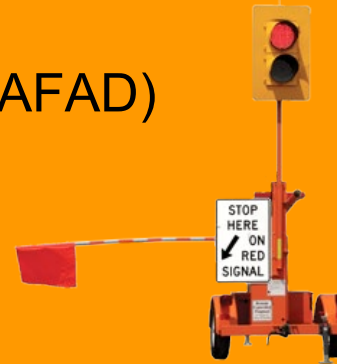


Bike Race

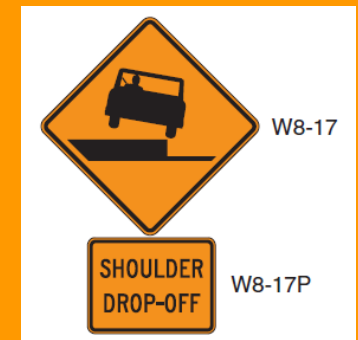
- A TTC plan should be developed for any planned special event that will have an impact on the traffic on any street or highway.

Other Topics in Part 6

- Automated Flagger Assistance Devices (AFAD)
See sections 6E.04 of the 2009 MUTCD



- New speed limit signs in TTC zone
- Signs for center lane closure, new traffic patterns, and shoulder drop-off



- Temporary delineators, RPM and their uses patterns, colors and spacing