

# Work Zone Safety Inspection Checklist

## Basic Requirements

All traffic control devices should:

- ?? Fulfill a need;
- ?? Command attention;
- ?? Convey a clear, simple message;
- ?? Command respect from road users; *and*
- ?? Give adequate time for proper response.

The work zone is easy to navigate in a safe manner for someone unfamiliar with the roadway and with some typically reduced visual, mental, and physical capabilities.

- ?? Roadway changes that will require rapid maneuvers, such as lane narrowing, dropped lanes, changes in geometrics, etc., are avoided where possible.
- ?? Temporary traffic control devices are used with the assumption in mind that drivers will only reduce their speeds if they see a need to.

If temporary traffic control zone requires regulatory measures that differ from existing devices (e.g. Speed Limits), existing devices have either been covered or removed.

## Conventional Signing

Sign Visibility

- ?? Appropriate sign sheeting designated by project documents.
- ?? Signs are clean, legible and are positioned properly.
- ?? Retroreflective material used displays approximately the same color in day or night conditions.
- ?? All signs meet the acceptable category in the *ATSSA Quality Standards for Work Zone Traffic Control Devices* guide.

Appropriate signing for all activities/hazardous conditions

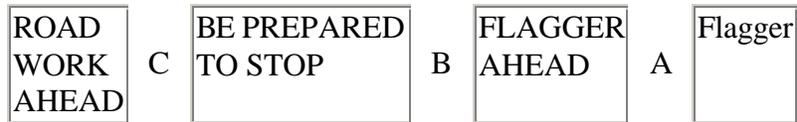
- ?? Signs are spaced so that drivers are able to read each sign and take appropriate actions.

### Suggested Advance Sign Spacing

Road Type	Distance Between Signs (meters (feet))		
	A	B	C
Urban (low speed)*	30 (100)	30 (100)	30 (100)
Urban (high speed)*	100 (350)	100 (350)	100 (350)
Rural	150 (500)	150 (500)	150 (500)
Freeway	300 (1,000)	450 (1,500)	800 (2,640)

\* Speed determined by road authority

### EXAMPLE



- ?? Lane closures are properly marked.
- ?? Where there are drop-offs 2" or greater, and is not protected by portable barriers, appropriate sign(s) are in place (UNEVEN LANES or SHOULDER DROP-OFF.)

Proper placement and installation of signs

- ?? Signs should be on the right side of the road unless otherwise stated in MUTCD or contract.
- ?? Sign Height
  - o Rural Areas: Post-mounted signs should be mounted at least 1.5m (5ft.) from bottom of the sign to the near edge of

the road surface. If there is a secondary sign mounted below, the minimum height can be reduced by 0.3 m (1 ft.)

- Urban Areas or where parking or pedestrians are likely: Signs should be mounted at least 2.1m (7ft) from the bottom of the sign to the near edge of the road surface. If there is a secondary sign mounted below, the minimum height can be reduced by 0.3 m (1 ft.)
- Signs posted on barricades or other portable supports are no less than .3 m (1 ft.) above the traveled roadway.

?? Lateral Offset

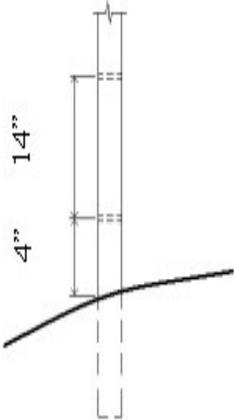
- Curbed Roads: Edges of signs are a minimum of 1.2m (4ft.) away from face of curbs.
- Non-curbed Roads: Edges of signs are a minimum of 1.8m (6ft.) and a maximum of 3.6m (12ft.) away from the shoulder edge.

?? Signs smaller than 0.9m x 0.9m (36" x 36") may be mounted on a single 100mm x 100mm (4" x 4") wooden post. Signs larger than 0.9m x 0.9m (36" x 36") or with a width greater than 920mm (36") must have two wooden posts.

?? Sign sizes are as designated by project documents. (See Exhibit 1 for minimums)

?? Temporary sign stands are ballasted safely (ballast is not suspended off ground.)

?? Signs with wooden posts have been drilled for proper breakaway performance.

Post size	Hole Diameter		<p>The first hole should be drilled a maximum of 100mm (4") from the ground and the second should be drilled 355mm (14") above the first hole.</p> <p>Holes are to be perpendicular to direction of traffic.</p>
100mm x 100mm (4" x 4")	No Holes Needed		
100mm x 150mm (4" x 6")	40mm (1.5")		
150mmx150mm (6" x 6")	50mm (2")		

## Electronic Signing

## Portable Changeable Message Systems (PCMS)

- ?? PCMS is in a safe location and delineated with retroreflective temporary traffic control devices. When within the "Clear Zone" the PCMS should be shielded with a crash cushion or barrier.
- ?? PCMS is visible from 0.8km (0.5mi) under night and day conditions.
- ?? PCMS is legible from a minimum distance of 200m (650ft) and can be read at least twice at posted speed limit.
- ?? Bottom of the panel is at least 2.1m (7ft) above the roadway.
- ?? The message will not scroll or travel horizontally or vertically.
- ?? PCMS will automatically adjust brightness under varying light conditions.
- ?? PCMS is used as a supplement to and not as a substitute for conventional signs and pavement markings.
- ?? PCMS is equipped with a power source and a back-up battery.
- ?? Standard abbreviations are used, per MUTCD Part 1 Section 1A.14.

## Arrow Boards

- ?? Arrow Board is in a safe location and delineated with retroreflective temporary traffic control devices. When within the "Clear Zone" the PCMS should be shielded with a crash cushion or barrier.
- ?? Arrow Board is visible from 0.8km (0.5mi) under night and day conditions.
- ?? Arrow Board is capable of at least 50% dimming from full brilliance.
- ?? Full brilliance is used for daytime operation and 50% dim mode is used for night.
- ?? Bottom of the panel is at least 2.1m (7ft) above the roadway.
- ?? Proper display is used for type of operation (see Exhibit 1).
- ?? Arrow Board is equipped with a power source and a back-up battery.

## Delineation devices

### Visibility

- ?? Delineation devices are clean and legible.

- ?? Retroreflective material used displays approximately the same color in day or night conditions.
- ?? All delineation devices meet the acceptable category in the *ATSSA Quality Standards for Work Zone Traffic Control Devices* guide.

## Proper Use of Channelizing Devices

### ?? **General**

- Warning lights should be added to channelizing devices in areas with frequent fog, snow, severe roadway curvature, or where visual distractions are present.
- Temporary delineation devices are ballasted safely (not suspended off the ground.)
- The spacing of channelizing devices should not exceed a distance in meters (feet) equal to 1.0 times the speed limit in mph when used for taper channelization, and a distance in meters (feet) of 2.0 times the speed limit in mph when used for tangent channelization.
- If warning lights are used they should be put on the side of the device where the traffic is intended to travel.

### ?? **Cones**

- Cones shall be predominantly orange in color and are made out of a material that can be struck without causing damage to the impacting vehicle.
- Cones are proper height for their use and are retroreflectorized for nighttime use.
- Steps are taken to make sure that the cones will not be blown over or displaced by wind or moving traffic, with ballast kept to minimum needed.

### ?? **Tubular Markers**

- Tubular markers shall be predominantly orange in color and are made out of a material that can be struck without causing damage to the impacting vehicle.
- Tubular Markers are proper height for their use and retroreflectorized for nighttime use.
- Markers are affixed to the pavement with ballast kept to minimum needed. If non-cylindrical tubular markers are used they are attached to the pavement ensuring that the width facing road users meet the minimum requirements (2 in).

- Tubular markers are only used when there is a limited space.

?? **Vertical Panels**

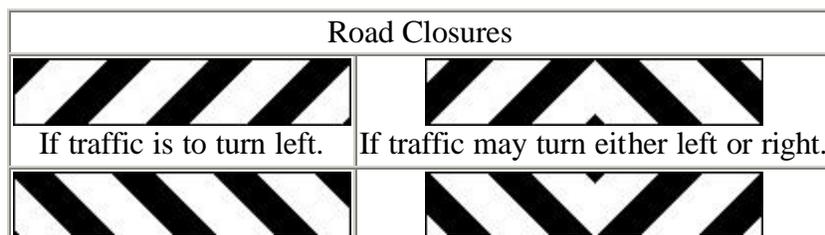
- Vertical panels have alternating orange and white diagonal strips.
- Diagonal stripes slant downward to the direction where the traffic is intended to travel.
- If panels are used at night they are retroreflectorized.

?? **Drums**

- Drums are a minimum of 900mm (36in) in height and have at least 450mm (18in) in width regardless of orientation.
- Metal drums shall not be used.
- Markings on the drums are horizontal, circumferential, alternating orange and white retroreflective stripes 100 to 150mm (4 to 6in) wide.
- Drums have closed tops to prevent construction and other debris from collecting in them.
- Sand or any other type of ballast is not placed on top of the drum.
- Drums are not weighed down with ballast to the extent that would make them hazardous to road users or construction personnel.
- If drums are placed in regions susceptible to freezing there are hole drilled in the bottom of the drum.

?? **Type I, II, or III Barricades**

- Diagonal stripes slant downward to the direction where the traffic is intended to travel.
- When a highway is legally closed but access is still allowed for local road users barricades are not extended completely across the road. And appropriate striping is used:



If traffic is to turn right.	If no turns are intended.
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- Stripes are retroreflective.
- Minimum length for type I and II barricades is 600mm (24in), minimum for type III is 1,200mm (48in.), and rails are 200 to 300mm (8 to 12in) wide.
- Barricades are supported in a way that allow road users to see them, and in a manner that provides a stable support that is not easily blown over or displaced.
- Ballast is not placed on the upper rails of the barricade and no nondeformable objects such as rocks or chunks of concrete are used as ballast.
- Signs may be placed on type III barricades, but can only be placed on top two rails. The sign may only cover 50% of the top two rails and only 33% of the entire barricade.

?? **Direction Indicator Barricade**

- Consists of a retroreflective horizontal arrow on the top panel and a striped retroreflective bottom panel.
- The arrow panel is a black on orange and is 600 x 300mm (24 x 12in.)
- The striped panel has 100mm (4in) stripes at a 45° angle, pointing down in the direction the arrow points. The panel is 600 x 200mm (24 x 8in.)

## Markings

Pavement markings match the markings on either end of the project, unless:

- ?? the road is unsurfaced,
- ?? it is not possible to provide markings and proper channelizing devices are in place.
- ?? the contract allows temporary markings, if so:
  - Tape or painted markings for broken lines are at least 2 ft long, every 40 ft

- Raised Pavement Markers (RPMs) for broken lines have at least 3 RPMs per line
- Raised Pavement Markers for no passing zones have 2 RPMs side by side at five foot spacing, unless otherwise allowed in the contract documents.
- All temporary markings are in place no longer than allowed by contract.

Markings that are no longer applicable are completely obliterated (painting over the markings is not acceptable).

Surfaced detours or temporary roadways should have normal pavement markings along the entire length.

## Flaggers

Flaggers are certified and have a sense of responsibility, adequate training, average intelligence, are in good physical condition, are mentally alert, courteous but firm and have a neat appearance.

High-visibility clothing (6E.02)

- ?? DAY- Vest, shirt or jackets should be orange, yellow, yellow/green or a fluorescent version of these colors.
- ?? NIGHT- Similar clothing as above but material should be retroreflective.

Proper devices (6E.03) and procedures (6E.04)

- ?? Flaggers should have STOP/SLOW Paddles made out of type III or IV retroreflective material.
- ?? STOP/SLOW paddles are a minimum of 18" with minimum 6" height of letters.
- ?? If STOP/SLOW or flags are used at night they should be made out of a retroreflective material.

- ?? Flaggers and pilot cars are provided with 2-way radios unless they are within sight of each other.
- ?? If railroad crossing exists the flagger will not be allowed to create conditions where vehicles can be stopped with no means of escape.
- ?? Flagger Stations is at an appropriate distance from the work zone (6E.05)

Flagger Station Location in Advance of Work Space

<b>Metric</b>	<b>Speed km/h (mph)</b>	30 (20)	40 (25)	50 (30)	60 (35)	70 (40)	80 (45)	90 (50)	100 (55)	110 (60)
	<b>Distance m (feet)</b>	10 (35)	15 (55)	30 (85)	45 (120)	65 (170)	85 (220)	110 (280)	135 (335)	170 (415)

## Construction Personnel/Equipment

- ?? High-visibility clothing (6E.02), use same standards that are used for flaggers.
- ?? Personal vehicles are parked off the traveled roadway (preferred) or at least outside the clear zone.
- ?? Construction equipment and supplies (including traffic control devices) that are not in use are stored off the traveled roadway and outside the clear zone.

## Miscellaneous

- ?? Traffic is not held back more than 30 minutes unless otherwise stated by contracts.
- ?? If railroad crossing exists no lane restrictions or temporary traffic control zone is allowed to create a condition where vehicles can be stopped with no means of escape.
- ?? Crash-tested devices  
([http://safety.fhwa.dot.gov/fourthlevel/pro\\_res\\_road\\_nchrp350.htm](http://safety.fhwa.dot.gov/fourthlevel/pro_res_road_nchrp350.htm))

Warning Signs Sizes											
Standard Size					36" x 36"						
Standard Size					48" x 48"						
Miscellaneous (in inches)											
48 x 24		18 x 24		36 x 48 x 48		42 x 36		42 x 36		36 x 18	
36 x 18		36 x 18		30 x 24		48 x 18		36 dia.			

### Other Temporary Traffic Control Devices

Cones		Vertical Panels		Tubular Markers	
<p>Night and/or Freeway High-Speed Roadway (<math>\geq 70</math> km/h) (<math>\geq 45</math> mph)</p>		<p>Day and Low-Speed Roadway (<math>\leq 60</math> km/h) (<math>\leq 40</math> mph)</p>		<p>Night and/or Freeway High-Speed Roadway (<math>\geq 70</math> km/h) (<math>\geq 45</math> mph)</p>	
<p>Day and Low-Speed Roadway (<math>\leq 60</math> km/h) (<math>\leq 40</math> mph)</p>				<p>Day and Low-Speed Roadway (<math>\leq 60</math> km/h) (<math>\leq 40</math> mph)</p>	

### Arrow Board Displays

Sequential Series			Flashing	
<p>Move/Merge Right</p>			<p>Move/Merge Right Move/Merge Right or Left</p>	

