

# QUALITY STANDARDS

For

## Temporary Traffic Control Devices



April 28, 2009

Prepared by Traffic Engineering Division

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Gary Evan  
Director of Operations  
Oklahoma Department of Transportation

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Robert Rodriguez  
Engineering & Operations Team Leader  
Federal Highway Administration

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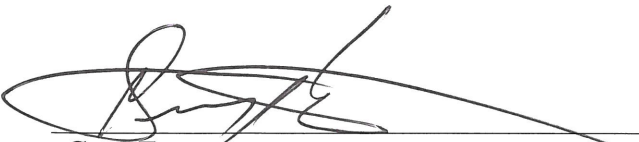
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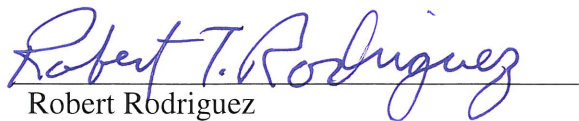
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## **Introduction**

Temporary traffic control devices (TCD) are a necessary part of highway work zones. These devices are used to warn motorists of hazards, advise them of the proper path through the work area, delineate areas where they may not operate, and to separate them from workers and opposing traffic.

There are many factors that ensure the success of these functions; the performance and condition of each temporary traffic control device are two such factors. Whenever worn or damaged devices appear in a work zone, the general quality of the work zone deteriorates. This situation may reduce the level of safety provided to the workers, pedestrians, and traveling public due to the road users' loss of confidence in and compliance with the devices.

It is with this possibility in mind and to provide the means for complying with the Federal regulations that ODOT established this quality standard. This quality standard is intended to address the day-to-day operations of traffic control within a construction zone and it is not meant to cover other incident or emergency issues. Federal Highway Administration (FHWA) policy requires that all road safety appurtenances such as traffic barriers, sign poles, attenuators, bridge rails, and all temporary traffic control devices meet the crashworthy performance criteria as specified in the National Cooperative Highway Research Program Report 350 (NCHRP-350)

The quality standards contained herein are applicable to all temporary traffic control devices (e.g., impact attenuators, truck mounted attenuators, signs, channelizers, barricades, warning lights, changeable message signs, flashing arrow panels, work zone traffic signals, lighting units, temporary pavement marking, temporary traffic barrier, etc.) deployed on the state highway system. The end result of its effective application is a benefit to the well being of those who work in or navigate through work zones located on state highway right of way.

## **Quality Requirements**

Temporary traffic control devices shall be installed and maintained in an acceptable condition. Unless specified otherwise, this requirement does not mandate the use of 'new' devices. However, it does necessitate the use of functional devices. Unacceptable devices shall be replaced or corrected in accordance with the contract documents or, in the absence of a contract, as directed by the department's Engineer.

## **Quality Standards**

The quality standards set forth in this publication should be used by those responsible for the installation, operation, maintenance, and inspection of temporary traffic control devices as a guide to determine if those devices are acceptable for use on the state highway system.

These standards should be applied at several stages: prior to delivery to the work zone, during initial setup, and routinely during the course of work. Such scrutiny will ensure the effectiveness of the temporary traffic control devices throughout the life of the work zone.

## **General**

All temporary traffic control devices shall be:

- In conformance with the requirements of the Manual on Uniform Traffic Control Devices (MUTCD) latest edition, FHWA's requirements, and ODOT Drawings.
- Installed and maintained at locations and in orientations that maximize safety and minimize disruption to traffic flow.
- Aligned with the road user's line of vision.
- Positioned as to not obstruct other applicable traffic control devices.
- Free of any appreciable dents, holes, deformations, abrasions, tears, marks, stains, residues, fading, or other deficiencies that affect the operational performance of a device; or, are cause for failure of a device to conform with the requirements of the MUTCD and ODOT drawings to be considered crashworthy.
- Properly covered, turned, stowed, or removed when not in use.

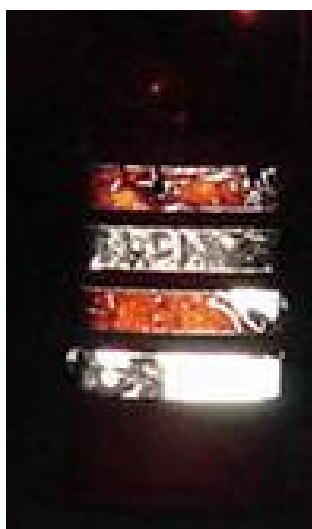
## **Barricades, Channelizing Devices, and Signs**

These devices shall be:

- Reasonably plumb to the pavement.
- Safely and neatly ballasted, as needed.
- Clearly visible and legible/distinguishable to approaching traffic during the day and, if applicable, at night.

*Below are examples of Barricades, Channelizing Devices, and Signs:*

**UNACCEPTABLE** Channelizing devices



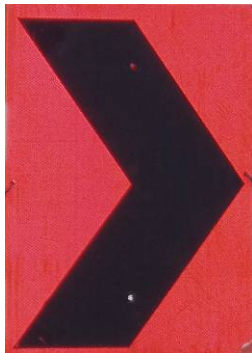
ACCEPTABLE Channelizing Devices



UNACCEPTABLE Signs



ACCEPTABLE Signs



*UNACCEPTABLE Barricades*



*ACCEPTABLE Barricades*





### **Flashing Arrow Panels**

These devices shall be/have:

- Functioning in the appropriate mode.
- No more than one lamp, of those to be energized, out in stem and no lamps out in the arrow head(s) when in the arrow (single- or double-headed) and no lamps out when in the caution (four corners) modes.
- Appropriately dimmed at night
- All light bulbs must have uniform brightness.
- No dead or stuck pixel.

*Note: Any lamp drawing less than 60% of its original power draw or producing less than 60% of its original output is considered out.*

### **Changeable Message Signs**

These devices shall be/have:

- Displaying the prescribed message at an appropriate cycle.
- Clearly legible to approaching traffic with minimal display abnormalities.
- Appropriately dimmed at night.
- All light bulbs must have uniform brightness.
- No dead or stuck pixel.

### **UNACCEPTABLE Flashing Arrow Panels, CMS**



ACCEPTABLE Flashing Arrow Panels, CMS



## Temporary Pavement Markings

These devices shall be:

- In place at applicable times.
- Reasonably aligned longitudinally.
- Clearly visible to approaching traffic during the day and night.
- Completely removed when no longer applicable.

### UNACCEPTABLE Temporary Pavement Markings

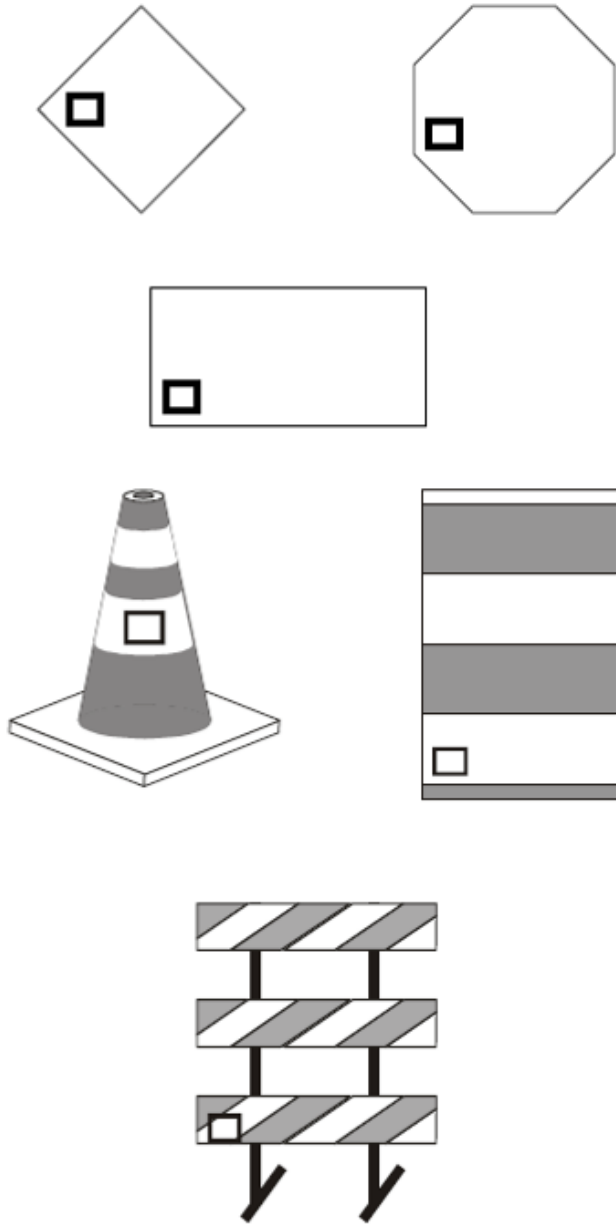


### ACCEPTABLE Temporary Pavement Markings



**Rejection**

During the initial setup of a project, all TCDs are considered to be 100 percent “acceptable” with the approval of the Engineer. During the duration of the project, TCDs could have become “unacceptable” (in according to this quality standard). It is the responsibility of the Engineer to notify the contractor to replace the “unacceptable” TCDs and it is the contractor’s responsibility to replace his “unacceptable” TCDs within 24 hours before the Engineer spray a black paint over the “unacceptable” TCDs at the location shown below. Also, it is the responsibility of the Engineer to ensure none of the sprayed painted TCDs are allowed in the work zone.





Oklahoma Department  
of Transportation

**CONSTRUCTION WORK ZONE  
FOCUSED INSPECTION REPORT**

PROJECT NO.	JOB PIECE NO.	ODOT DIV.	RESIDENCY
INSPECTION MADE BY		INSPECTION DATE	
PROJECT DESCRIPTION			COUNTY

**I. Construction Signing / Advance Warning**

Item Description	Meets or Exceeds Citation		Not Applicable	Comments
	Yes	No		
<u>Sign Quantity</u> Look for missing signs, incorrect type  {880.02(a)(3), Construction Plans}				
<u>Text Credibility</u> Look for messages or text on the sign, legible  {880.04, TCS7-1, 8-1A, 8-1B, 8-1C, 8-1D, 9-1A, 9-1B, 9-1C, 9-1D, MUTCD Part 6, Construction Plans}				
<u>Sign Placement</u> Look for adequate spacing, visibility, clustered, height, leaning/straight  {880.04, TCS7-1, 8-1A, 8-1B, 8-1C, 8-1D, 9-1A, 9-1B, 9-1C, 9-1D, MUTCD Part 6, Construction Plans}				
<u>Sign Conditions</u> Look for cleanliness, retro-reflectivity, broken, faded, bent or dented  {880, 719, TCS7-1, 8-1A, 8-1B, 8-1C, 8-1D, 9-1A, 9-1B, 9-1C, 9-1D, MUTCD Part 6, Construction Plans}				
<u>Electronic Signs (CMS, Arrowboard)</u> Look at light brightness, burned out or stuck pixels, placement, delineated/sheilded  {882, 880.02(a)(1), MUTCD 6F.55 and 6F.56}				
<u>Existing/Permanent Signs</u> Look for knocked down, damaged, conflicting with temporary signs, dirty from construction operations  {Construction Plans}				

**II. Pavement Markings**

Item Description	Meets or Exceeds Citation		Not Applicable	Comments
	Yes	No		
<u>RPM, Tapes, Water Paint</u> Look for proper spacing, damaged, retro-reflectivity, straight/weave, # of consecutive RPM missing, confusing and/or conflicting  {856, 857, MUTCD Part 3, TCS1-1, PM1-1, PM2-1, PM4-1, PM5-1, PM6-1, Construction Plans}				

### III. Channelization Devices

Item Description	Meets or Exceeds Citation		Not Applicable	Comments
	Yes	No		
<u>Drums</u> Look for cleanliness, spacing, retro-reflectivity, knocked down, dent/bent, operating C-light, taper length (if applicable)  {880.02(a)(10), 719.04, MUTCD 6F.62, TCS6-1, Construction Plans}				
<u>Barricade</u> Look for correct type, stripe direction, cleanliness, lean/straight, unsafe ballasting, dent/bent, broken  {880.02(a)(2), TCS4-1, MUTCD 6F.63, Construction Plans}				
<u>Cones / Tubular / Vertical Panels</u> Look for correct type, stripe direction, cleanliness, lean/straight, unsafe ballasting, dent/bent, broken, spacing, knocked down, taper length (if applicable)  {880.02(a)(6), (a)(4), (a)(11), TCS6-1, MUTCD 6F.58-6F.61, Construction Plans}				

### IV. Pedestrian Safety

Item Description	Meets or Exceeds Citation		Not Applicable	Comments
	Yes	No		
<u>Path of Travel</u> Sufficient width, slope, protected/shielded, marked detour path, or blocked path  {Construction Plans}				

### V. Miscellaneous Traffic Control

Item Description	Meets or Exceeds Citation		Not Applicable	Comments
	Yes	No		
<u>Worker Safety</u> Protected work operations, safety equipment  {TCS33-1 thru TCS88-1, Construction Plans}				
<u>Speed Limit</u> Adequate posted speed limit  {Construction Plans}				
<u>Permanent/Original Quality of Delineation</u> Look for retro-reflectivity, damage, missing  {719, MUTCD Part 2}				
<u>Access Control</u> Look for guide signs, channelization into businesses, blockage, marking  {Construction Plans}				

Oklahoma Department of Transportation:

Division 1: 918-687-5407

Division 2: 580-298-3371

Division 3: 580-332-1526

Division 4: 580-336-7340

Division 5: 580-323-1431

Division 6: 580-735-2561

Division 7: 580-255-7586

Division 8: 918-838-9933

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