

# Oregon Work Zone Reviews

## Summary Report

# 2017



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# Introduction

As part of ODOT's statewide work zone safety and temporary traffic control program, jointly with the FHWA, the Work Zone Unit travels around the State conducting several, multi-day construction Work Zone Reviews. The 2017 Work Zone Reviews visited and reviewed 30 different highway construction work zones.

The 2017 construction season provided a wide variety of work zones to review. Project locations ranged from the Oregon Coast to the high desert of Eastern Oregon. Several projects completely closed the road to public travel, while others worked alongside high-speed, live traffic.

In conducting the Reviews, a number of Reviewers are invited to participate. Reviewers represent a broad cross-section within the temporary traffic control discipline – FHWA, ODOT Region TCP Design and Region Safety personnel. Review participants are asked to score the work zones on a wide array of performance measures. Scores and comments are used to focus and heighten awareness of the many standards, practices, procedures and devices used in the design and implementation of ODOT's Traffic Control Plans. This report provides important feedback for statewide TCP Designers, ODOT engineering consultants and Region Construction Project Management staff. ODOT benefits from the Reviews by realizing measurable improvements in the quality and safety of the temporary traffic control plans used on its highway construction projects.

## Objective

The purpose of the Work Zone Reviews is to:

- Confirm ODOT Temporary Traffic Control Design Standards and Practices are being implemented in the field consistently and uniformly.
- Confirm that the latest Standards and Practices are effective at providing a satisfactory level of safety for the traveling public and construction workers.
- Reveal additional techniques or technologies needed to improve overall safety, traffic flow and construction efficiency.
- Strengthen communication and working relationships between ODOT design and construction staff, consultants, and contractor employees.
- Identify current standard practices that need to be updated based on observations and feedback.

## Methods

Since 2002, ODOT has been conducting detailed work zone reviews in an effort to strengthen the quality, efficiency and safety of its highway construction work zones. The Work Zone Reviews serve as a key element within the Agency's quality control and quality assurance programs. The Reviews allow designers, Safety staff, Project Coordinators and Construction personnel the opportunity to observe strengths and weaknesses within this unique and dynamic discipline.

Each Reviewer was asked to evaluate the condition and effectiveness of a variety of devices used within the work zone. Over 30 different "measures" are scored for each project visited. Scores are based on a scale of 1 (low) to 10 (high). A score of 4 or less warrants immediate contact with the ODOT Project Manager's office or an on-site agency representative to discuss the issue and possible mitigation strategies.

The Work Zone Review Evaluation Form (Figure 1) is used by Reviewers to record scores, notes and comments for each project visited.

This year's reviews were conducted over three separate trips :

- Regions 2 and 3 (north)
- Regions 3 (south) and 4
- Region 1 Night

Evaluation Forms were collected from 30 different construction projects, visited by 9 Reviewers, resulting in over 150 pages of scores and comments.

The large amount of information and comments collected allows for a wide array of reports. Please contact the Work Zone Unit in Salem for additional information regarding reporting options and availability.

This year:

- 30 projects evaluated, spanning four out of the five Regions.
- 9 different Reviewers participated, including representatives from:
  - ODOT Construction Project Management and Inspection
  - ODOT Traffic-Roadway Section
  - Designers from ODOT Region Tech Centers
  - ODOT Transportation Safety Division Safety Coordinators
  - Federal Highway Administration (FHWA)

Measures are scored as applicable for each project. If a device or condition was not present on a project at the time of the visit, a score was not given. For example, temporary concrete barrier may have been included in a particular contract, but if not in use on the project site at the time of the visit, "Temporary Concrete Barrier" (and likely, "Temporary Impact Attenuators") would not have been scored for that project.



Each of the following Measures are evaluated for each project visited:

**Temporary Signage** – Overall quality (design, condition), placement and spacing (visibility and legibility).

**Channelizing Devices** – Overall quality, condition, placement and effectiveness for tubular markers/ cones, drums, and barricades.

**Pavement Markings & Markers** – Overall quality (condition and visibility), placement and removal of temporary and permanent markings, where applicable.

**Rigid Barrier Systems** – Alignment, crashworthy installations, and quality of the barrier.

**Reflective Barrier Panels** – Condition (cleanliness and installation), effectiveness, and placement.

**Temporary Impact Attenuators** – Proper application and Quality (maintenance and placement).

**Portable Changeable Message Signs (PCMS)** – Effective placement, condition, and message quality.

**Sequential Arrow Panels** – Proper application, placement, and quality of the device.

**Temporary Traffic Signals** – Proper installation (design and layout), operation, and maintenance.

**Bike/Ped/ADA Facilities** – ADA compliance, adequate signing and devices; and, Continuity through the project site (detours, diversions), pedestrian channelizing device.

**Flaggers** – Proper placement, effective devices and equipment; and, performance.

**Pilot Cars** – Appropriate application and performance.

**Mobility** – Effect of construction activities on traffic. Not exceeding specified delay limits.

**Worker Garments & Equipment** – Standard application of safety measures for workers and equipment on the jobsite.

**Site Housekeeping** – Work site cleanliness and orderliness.

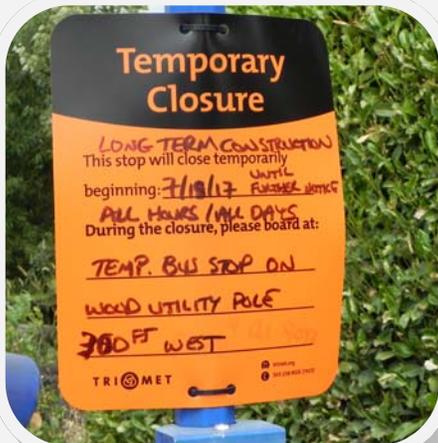


Figure 1—Work Zone Reviews Evaluation Form

**2017 WORK ZONE SAFETY AUDITS - EVALUATION FORM**

PROJECT NAME:		MAP #:	KEY #:	DATE:
HIGHWAY:		MILEPOST:	REGION:	REVIEWED BY:
PROJECT MANAGER:		OTHER CONTACTS:		
CONTRACTOR:		TCS:		
<b>GENERAL NOTES</b>				
Only score Devices you witnessed on the Project. If a certain device was not present, do not score it.				
<b>SCORING PROCESS: Only Score Devices/Categories witnessed on the project.</b>				
1	2	3	4	5
<b>NOTIFY PM (phone/email) or FIELD INSPECTOR !!</b>		BELOW AVG.	AVERAGE	ABOVE AVG.
6	GOOD	VERY GOOD	PERFECT	10
<b>CATEGORIES</b>		<b>SCORE</b>		<b>COMMENTS</b>
<b>TEMPORARY SIGNING</b> <small>LOOK FOR: Crashworthy design, supports, placement. Clean and visible. Legible, logical, efficient messages. Proper font size, sign color, design format.</small>		QUALITY		
		PLACEMENT		
		SPACING		
<b>CHANNELIZING DEVICES</b> <small>LOOK FOR: Placement and alignment. Quality and cleanliness. Proper application. Reflectivity. Crashworthiness.</small>		TUBES, CONES		
		DRUMS		
		BARRICADES		
<b>PAVEMENT MARKINGS</b> <small>LOOK FOR: Paint, Tape, Markers. Proper type, Placement, Alignment, Condition, Removal quality.</small>		CONDITION		
		PLACEMENT		
<b>RIGID BARRIER SYSTEM</b> <small>LOOK FOR: Quality, Alignment, Pinned together. Secured to pavement, where necessary.</small>		CONDITION		
		PLACEMENT		
<b>REFLECTIVE BARRIER PANELS: Y or N</b>		CONDITION		
<b>IMPACT ATTENUATORS</b> <small>LOOK FOR: Sand barrels, Narrow-site, TMA. Proper installation. Maintenance. Correct Design Speed.</small>		CONDITION		
		PLACEMENT		
		PCMS 1: <b>PANEL 1</b> <b>PANEL 2</b> PCMS 2: <b>PANEL 1</b>		
<b>PORTABLE CHANGEABLE MESSAGE SIGNS</b> <small>LOOK FOR: Clear, Legible, meaningful Messages. Visible @ Location. Good working order. (Use Back for more)</small>		MESSAGE		
		LOCATION		
		CONDITION		
<b>SEQUENTIAL ARROW PANEL ("Arrow Board")</b>		PLACEMENT		
		CONDITION		
<b>TEMP. TRAFFIC SIGNAL (Span wire); or PORTABLE TRAFFIC SIGNAL</b>		SET-UP		
		CONDITION		
<b>BICYCLE, PEDESTRIAN, ADA COMPLIANCE</b> <small>LOOK FOR: Signing, PCD or other Channelizers, Smooth surfaces, Adequate widths, Temp. Curb Ramps. Bicycle accommodation where facility impacted.</small>		SIGNING		
		PCD, RAMPS		
		ACCESSIBILITY		
		Y		
<b>FLAGGERS</b> <small>LOOK FOR: Clean, reflective ANSI Class II garments. Proper hats, radio, Stop/Slow paddle. Hand signals, eye contact.</small>		VISIBILITY		
		PERFORMANCE		
<b>PILOT CARS</b> <small>LOOK FOR: Driving 35 mph or less. Warning lights. Clean, visible "PILOT CAR FOLLOW ME" sign.</small>		EQUIPMENT		
		PERFORMANCE		
<b>MOBILITY</b> Time Stopped At Flagger or Temp. Signal: emp. Speed Reduction? FROM: _____ TO: _____		TRAFFIC FLOW		
		Minutes		
		MPH		
<b>WORKER GARMENTS &amp; SAFETY EQUIPMENT</b> <small>LOOK FOR: Clean, Class II vests (if in ROW). Hardhats. Fall protection. Trench shoring (over 5-ft).</small>		GARMENTS		
		EQUIPMENT		
<b>GENERAL SITE HOUSEKEEPING</b>		CLEAN, ORDERLY		
<b>POLICE ENFORCEMENT</b> Is Law Enforcement on site or in WZ? Are there OT Hours?		On-Site? Y or N		
		OT? Y or N		
<b>DRIVER-FRIENDLY WORK ZONE</b> Clearly delineated path through WZ? "Surprises,"? Conditions straining Driver Expectancy?		Meet Driver Expectancy?		
		Ease of Navigation		
<b>FINAL SCORE =</b>				<b>AVG. SCORE of</b>

Figure 2 — Average Scores

# Results

Results from the scores of the 12 different Reviewers for the 30 projects are used to develop the project and measure scores. Project scores are combined and averaged based on the number of participants submitting an Evaluation Form. Overall average project scores are calculated for each Region and are compared to scores collected since 2002 (Figures 3 through 7).

## Measure Scoring Summary

Figure 2 shows the statewide average score for each work zone measure. Figure 2 can be used to identify measures (devices, practices) needing additional attention at the design and/or implementation phase of the project. It also identifies measures that are meeting or exceeding road users' expectations.

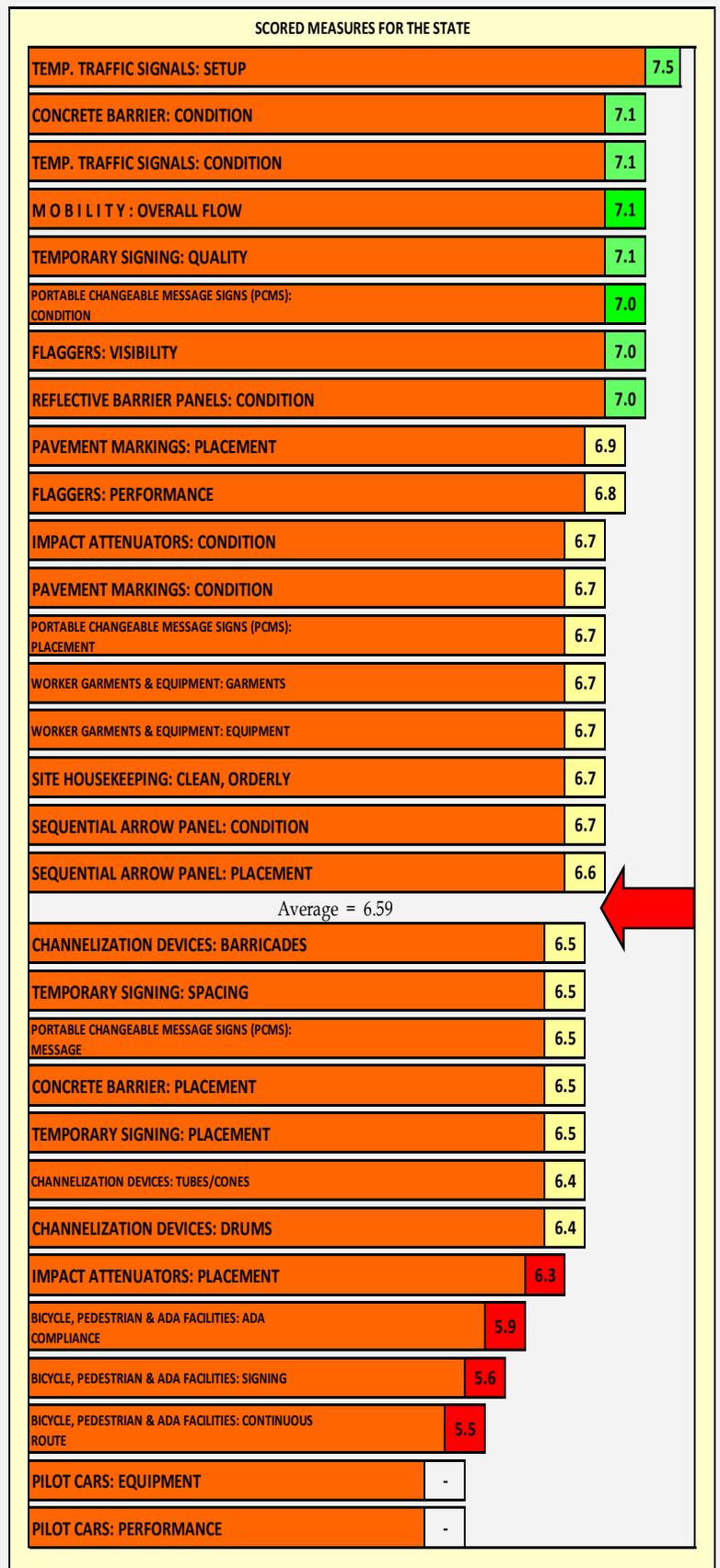
Of the 31 measures, all but three received an average score above 6.0. Five of the measures received average scores above 7.0.

Measures that consistently received the highest average scores for 2017 are:

- Temp. Traffic Signals – Setup, 7.5
- Concrete Barrier - Condition, 7.1
- Temp. Traffic signals – Condition, 7.1
- Mobility – Overall Flow, 7.1
- Temporary Signing—Quality, 7.1

Measures that consistently received the lowest average scores for 2017 are:

- Bicycle, Pedestrian & ADA Facilities – Continuous Route, 5.5
- Bicycle, Pedestrian & ADA Facilities – Signing, 5.6
- Bicycle, Pedestrian & ADA Facilities – ADA Compliance, 5.9
- Impact Attenuators—Placement, 6.3



## Statewide Scoring Summary

The 2017 Work Zone Reviews reviewed 30 projects. The statewide average project score decreased from previous years and was the lowest it has ever been.

The statewide average project score of 66\* equates to a rating of, “Average” based on the current scoring system. The average rating confirms that the TCP Standards and Practices are mostly effective and being implemented a majority of the time.

\* Raw scores (“out of 10”) are converted to scores based on 100 for annual comparison purposes.

During the Reviews, a few isolated projects needed immediate attention to the traffic control plan. On-site Region Project Management staff was prompt and cooperative in responding to questions or suggested improvements.

The Measures scored during the Reviews are averaged and ranked . No Work Zone Reviews were conducted in 2014 or 2016 (See Figures 3 through 6).

Figure 3—Annual Scores

2017 WORK ZONE SAFETY AUDIT SUMMARY REPORT - SCORING STATISTICS by YEAR																
	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
TOTAL PROJECTS REVIEWED	22	29	46	54	43	38	43	60	42	43	29	29	-	39	-	30
HIGH SCORE	89	82	87	82	81	81	94	88	74	75	80	76	-	80	-	76
AVERAGE SCORE	72	73	73	71	71	75	77	76	67	69	71	67	-	69	-	66
LOW SCORE	54	63	53	51	59	63	68	62	53	57	57	50	-	30	-	49

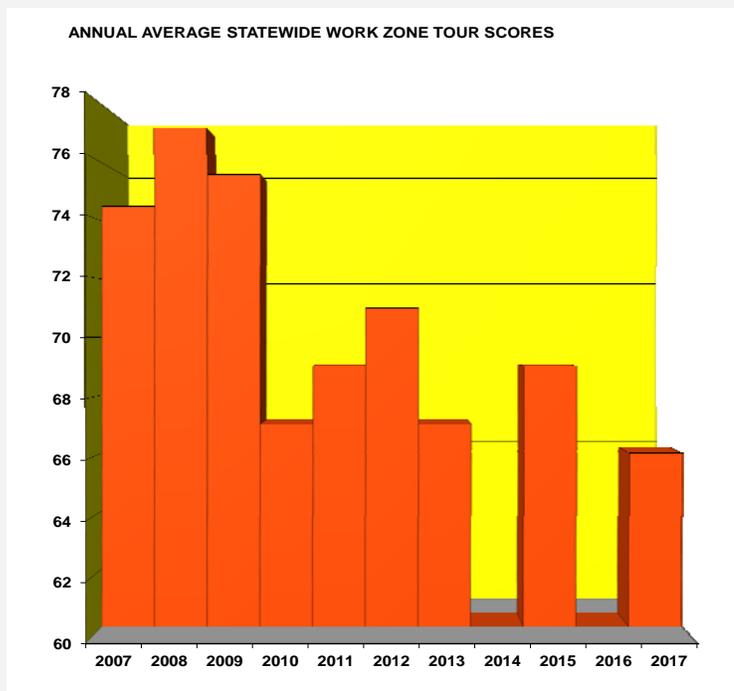


Figure 4—Annual Scores graph



## Region Scoring Summary

All of the ODOT Regions scores decreased compared to 2015. Some of the decrease can be attributed to the state of ADA and pedestrian accommodation in the work zones. Many of the projects reviewed were already in construction when the new standards were implemented. There were also fewer reviewers on this tour. There was also many projects that needed improvement in the Temporary Traffic Control. Overall , Region average scores remain relatively consistent with historical scores dating back to 2002.

Figure 5 - Region Scores

2017 WORK ZONE SAFETY AUDIT SUMMARY REPORT - SCORING STATISTICS by REGION												
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	AVERAGE
REGION 1	76.7	82.0	74.3	68.1	68.0	68.6	67.7	-	66.5	-	61.1	70.3
REGION 2	74.8	74.0	78.4	67.2	70.2	70.8	65.7	-	69.2	-	68.4	71.0
REGION 3	72.8	75.0	75.7	66.1	70.2	71.2	68.1	-	66.2	-	66.0	70.1
REGION 4	74.8	78.0	73.8	68.4	68.1	78.2	62.3	-	73.7	-	65.6	71.4
REGION 5	73.5	77.0	73.6	64.6	68.0	71.0	66.7	-	69.5	-	-	70.5

Figure 6 - # of Projects

Projects Scored per Region	
Region 1	7
Region 2	13
Region 3	8
Region 4	2
Region 5	0



Figure 7- Project Average Scores

SCORE	# of Projects	% of Projects
> 7	10	33%
6 - 7	15	50%
5 - 6	4	13%
< 5	1	4%

# RECOMMENDATIONS

The annual Work Zone Reviews revealed a number of consistencies, improvements and positive comments. However, substandard quality control issues were observed – some new, some recurring. Comments and Measure scores from this year, and comparative 2015 measure rankings, were used to identify TCP strengths and deficiencies for 2017.

**TCP Strengths** for 2017 included the usage and quality of temporary traffic signals, , flaggers, pavement markings , as well as mobility and the accommodation of traffic through our work zones.

**TCP Deficiencies** for 2017 included design and accommodation measures used for managing bicycles, pedestrians and ADA users in the work zone. In addition, impact attenuators and channelization devices all showed declines in quality and effectiveness.

Several extraordinary examples of temporary traffic control measures were encountered during the safety reviews, as shown below.

MEASURE	Statewide Ranking		+/-
	2015*	2017	
TEMP. TRAFFIC SIGNALS	8	1	+
M O B I L I T Y	2	2	
FLAGGERS	10	3	+
PAVEMENT MARKINGS	3	4	
CONCRETE BARRIER	5	5	
PCMS	11	6	+
APPAREL	7	7	
TEMPORARY SIGNING	13	8	+
SITE HOUSEKEEPING	4	9	-
SEQUENTIAL ARROW PANEL	12	10	
IMPACT ATTENUATORS	1	11	-
CHANNELIZATION DEVICES	9	12	
BICYCLE/PED/ADA	14	13	
PILOT CARS	6	-	

\*No data for 2016

Figure 8 - Year Comparison



Region 4: US97: UPRR Crossing. ODOT Maintenance. Automated Flagger Assistance Device (AFAD) uses to control traffic in place of a flagger.



15: Boone Bridge to Woodburn  
Combination of efforts accommodate a safe and efficient work zone, including a Smart Work Zone System.



Statewide: Efforts to accommodate pedestrians in work zones.

## 2015 Work Zone Reviews — Action Items

### **Bike/Ped/ADA TCP Action**

A 2015 Work Zone review action item was to inform and encourage design and construction staff on the proper accommodation of Bicycle/Pedestrian/ADA users in work zones. ODOT, propelled by external forces, has made significant advancements in making Bicycle/Pedestrian/ADA users a priority in all work zones. The work zones standards have been updated to accommodate all users in work zones better or equal to the existing conditions while not introducing any new hazards.

The TCP unit has updated Bike/Ped/ADA guidance in the 2018 Standard Specifications and TCP Design Manual. The TCP Unit has also taken every opportunity to educate personnel on proper Bike/Ped/ADA use, including ODOT TLC All-Staff meetings, TCP Design Class, Project Managers meetings, Region Safety meetings, Work Zone Reviews, and the Statewide Work Zone Action Group. Although the TCP unit worked on informing ODOT staff on proper use, the Bicycle/Ped/ADA Measure continues to reveal the need for continued emphasis within ODOT's TCP Design program and our construction implementation efforts.

### **Temporary Signing TCP Action**

A 2015 Work Zone review action item was to strengthen the guidance/requirements regarding the maintenance and use of temporary signing and to help educate design and construction staff on the proper maintenance and use of temporary signing.

The TCP unit has updated the sign maintenance and use guidance in the 2018 Standard Specifications and the TCP Design Manual. The TCP Unit has highlighted sign maintenance and use in the TCP Design Class. One of the main issues was leaving signs in place when the condition was no longer present.

One of the most common signs left up when there is no construction taking place is the Road Work Ahead sign. The 2018 Standard Specifications were updated to provide additional requirements on when to use and when to cover the Road Work Ahead sign. Additionally ODOT design and construction staff have been educated in the proper use of the Road Work Ahead sign.

## Work Zone Traffic Control Safety Review “Strengths”

### 1. Traffic Signals

Temporary Traffic Signals are used to control traffic through a work zone or at an intersection in a work zone. The signals can be portable, a temporary setup of a permanent signal, or use the existing signals. The choice of a certain type of signal and how it is used depends greatly on the existing roadway configuration, duration of need, traffic volumes, and location.

The temporary traffic signals encountered this year functioned well and were generally setup properly. Most of the signals encountered this year were temporary setups of permanent designs using wooden poles and wires to support the signals. These signals use a signal controller that is able to be extensively programmed to handle most situations. Very few portable signals, which have simple controller, were encountered. The signals encountered were setup properly and functioned well. Temporary signals all require a significant review and approval process, so a good design is expected.

Temporary Traffic Signals are most commonly not efficiently maintained throughout the project duration. Other common deficiencies include not accommodating all forms of traffic, lack of sight specific design, and lack of proper installation.



### 2. Mobility

ODOT places strong emphasis on Mobility through its work zones. Mobility is actively managed by setting and modifying lane closure restrictions. The coordination of travel delay within the Region also plays an important piece of the mobility puzzle.

ODOT’s emphasis on mobility was evident in the majority of projects visited during the Safety Review. Most freeway projects had minimal delays, even when they included temporary speed reductions. The majority of work zones controlled by flaggers had minimal delays as well.

A current challenge at ODOT is balancing the mobility impacts to traffic while also trying to maintain an efficient work window. For paving projects on highly congested highways this has been a significant issue. The balance of mobility, safety, and productivity will have to continue throughout the project lifecycle.



## Work Zone Traffic Control Safety Review “Deficiencies”

### 1. Bike/Pedestrian/ADA

ODOT has recently emphasized accommodating all modes of traffic in work zones, including Bike/Pedestrian/ADA traffic. Despite this emphasis the Bicycle/Pedestrian/ADA measures scored relatively poorly compared to the other measures. The effort to design and construct project to Bike/Pedestrian/ADA standards has been implemented in most projects but the effort hasn't be comprehensive. The TCP unit expects to see a significant increase in scores as the implementation of accommodation all modes of traffic becomes more prevalent.

The MUTCD and ODOT TCP Design Manual include standards requiring projects to include pedestrian accommodation at the same (or better) level as the existing facilities, or provide appropriate alternative routes.

There was some projects that did an outstanding job of accommodation Bike/Pedestrian/ADA traffic, but there was also a lot of room for improvement. Observations this year included, unclear pedestrian detours/guidance and lack of a comprehensive strategy to accommodate bike/pedestrian/ADA

#### TCP Action

The TCP Unit has implemented many new measures for accommodation of all modes of traffic in work zones. The TCP Unit needs to continue to educate ODOT staff on the proper use of the new measures. The TCP Unit also needs to try and make it easier for designers/construction staff to use and implement the new standards. ODOT design and construction staff need to implement the new standards and provide feedback to the TCP Unit to provide guidance on how to better the measures.



### 2. Impact Attenuators

Impact Attenuators are used to protect specific Traffic Control Devices and areas in the work zone. Impact Attenuators can be installed for the duration of the project, or used temporarily. Impact Attenuators can also be fixed to the ground, or mobile.

In 2015, Impact Attenuators were a strength of the work zone tour, this year they are a weakness. Every year, the team encounters several projects where an impact attenuator is missing. This year there was a high number of projects where a impact attenuator should have been used and it was missing. There was also some instances where a impact attenuator was installed, but the installation was sub-standard.

With the increased use of tall barrier in work zones, the impact attenuators used either need to be designed for a tall barrier, or a tall barrier to standard barrier transition piece needs to be used to facilitate the proper installation. When the impact attenuator is omitted or improperly applied, the work zone becomes less safe for both workers and traffic.

#### TCP Action

Impact Attenuators are most commonly omitted from the project altogether, ODOT needs to educate designers and construction staff on when a impact attenuator is needed. The TCP unit will emphasize the proper use of impact attenuators at trainings and take a look at updating the guidance in the TCP Design Manual.



## Work Zone Traffic Control Review

### Traffic Control Supervisor (TCS)

For the sixth year, measure scores were examined to determine if the average score of a given performance measure was affected by the inclusion of a TCS in the contract. In Figure 9, 2017 results slightly favor the omission of a TCS in a contract. TCS are usually required in more complex projects, so this may explain some of the results. The fact remains that over a six-year period, from 2009 to 2017, over majority of measure scores were higher when a TCS was included in the project. Results do not take into account that TCS are generally reserved for complex projects or projects with frequent changes in traffic control.

Figure 9 - TCS

MEASURE	TCS	NO TCS
TEMPORARY SIGNING	6.47	6.87
CHANNELIZATION DEVICES	6.27	6.60
PAVEMENT MARKINGS	6.83	6.83
CONCRETE BARRIER	6.88	6.74
IMPACT ATTENUATORS	6.94	5.93
PCMS	6.78	6.72
SEQUENTIAL ARROW PANEL	6.50	6.82
TEMP. TRAFFIC SIGNALS	0.00	7.08
BICYCLE/PED/ADA	5.63	5.57
FLAGGERS	0.00	6.89
PILOT CARS	0.00	0.00
MOBILITY	6.86	7.26
WORKER GARMENTS	6.49	6.95
SITE HOUSEKEEPING	6.53	6.82

### Project-Specific Plan Sheets vs. Standard Drawings

It should be noted that some projects would not warrant the development of project-specific TCP sheets, nor would those projects that clearly demand TCP sheets benefit from relying solely on Standard Drawings. Some TCP measures are almost always shown on a plan sheet due to the nature and function of the device (e.g. concrete barrier, temp. traffic signals). Further, this comparison is being made to examine the relationship between the level of detail in the TCP and its effectiveness during implementation. Resulting data may determine if individual measure effectiveness could be improved with more detail or clarity provided by project-specific plan sheets.

As is evident in Figure 10, there are some measures where the relationship between the measure itself and the presence or lack of plan sheets, seems ambiguous – e.g. Worker Garments, Mobility, Site Housekeeping. However, for the remaining measures, 2017 data suggests an appreciable increase in measure scores can be attributed to the presence of project-specific plan sheets in the TCP. The most notable scores were for Pavement Markings, PCMS, and Mobility. Of note are the scores for impact attenuators and flaggers, the lower scores associated with plans indicates a need for more detail in the plans on these topics.

Figure 10 - Plans

MEASURE	PLANS	NO PLANS
TEMPORARY SIGNING	6.68	6.70
CHANNELIZATION DEVICES	6.47	6.32
PAVEMENT MARKINGS	6.86	6.61
CONCRETE BARRIER	6.80	0.00
IMPACT ATTENUATORS	6.47	7.50
PCMS	6.80	6.54
SEQUENTIAL ARROW PANEL	6.59	6.64
TEMP. TRAFFIC SIGNALS	7.29	0.00
BICYCLE/PED/ADA	5.64	5.54
FLAGGERS	6.79	7.08
PILOT CARS	0.00	0.00
MOBILITY	7.20	6.45
WORKER GARMENTS	6.72	6.73
SITE HOUSEKEEPING	6.68	6.70

## CONCLUSION

The 2017 Work Zone Reviews were again a success in identifying strengths and weaknesses within ODOT's TCP standards and practices and the implementation of those practices in our contracts. The Reviews gave us the opportunity to review 30 different State highway construction work zones.. The goals of the reviews were accomplished, and continue to help ODOT improve the practice of temporary traffic control across the State of Oregon.

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The Reviews helped us meet some important goals:

- Confirmed ODOT Temporary Traffic Control Design Standards and Practices are largely being implemented in the field with consistency and uniformity.
- Confirmed the latest Standards and Practices are effective at providing a satisfactory level of safety for the traveling public and construction workers.
- Revealed additional techniques and technologies needed to improve overall safety, traffic flow, and construction efficiency.
- Strengthened communication and working relationships between ODOT design and construction staff, consultants, and contractor employees.
- Identified current standard practices that need updating based on observations and feedback.

An important additional benefit from the Work Zone Reviews is seeing recurring "Deficiencies." We can prioritize and more closely analyze these features for solutions to improve the overall design and implementation of our work zone traffic control plans. 'Lessons learned' can be shared between all TCP designers and construction personnel in efforts to reduce repeat "Weaknesses".



The Traffic Control Plan Unit would like to thank each of the Reviewers who helped with the monumental task of improving safety in Oregon work zones. Thank You.



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