Oregon Work Zone Reviews

Summary Report

2023

Oregon Department of Transportation

U.S. Department of Transportation
Federal Highway Administration

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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 2023 Work Zone Reviews visited and reviewed 28 different highway construction work zones. The FHWA representative was unable to accompany ODOT staff on this year's Work Zone Review.

The 2023 construction season provided a wide variety of work zones to review. Project locations ranged from the Oregon Coast to Eastern Oregon and from the Columbia River basin to Southern Oregon. Several projects were built in lower-speed urban environments, while others were built in close proximity to high-speed freeway traffic.

In conducting the Work Zone Reviews, a number of Reviewers are invited to participate. Review participants are asked to score the work zones on a wide array of performance metrics. 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 Work Zone 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 Work Zone 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. 39 different "performance metrics" 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.

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

- Regions 2, 3, and 4
- Regions 1 (day/night tour)
- Regions 4 and 5

The Work Zone Review Evaluation Form (Figure 1 located on page 6) is used by Reviewers to record scores, notes and comments for each project visited. The amount of information and comments collected allows for a wide array of reports. Please contact the Work Zone Standards Unit in Salem for additional information regarding reporting options and availability.

Evaluation Forms were collected from 11 separate Reviewers for 28 different construction projects resulting in 102 pages of scores and comments.

This year:

- 11 different Reviewers participated, including representatives from:
    - Work Zone Standards Unit
    - Designers from ODOT Region Tech Centers
    - Traffic Standards Unit Manager

Performance metrics 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.

New to this years tour, we have updated existing performance metrics and added new metrics in an effort to better represent the performance being measured. The Pedestrian/Bicycle Accessibility and Police Enforcement metrics were updated and a Temporary Speed Reduction metric was added.

Each of the following **Performance Metrics** are evaluated for each project visited:

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

Vehicular 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.

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.

Pedestrian/Bicycle Accessibility* – ADA compliance, signing and devices, surface, continuity through the project site (detours and diversions), channelization devices.

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.

Temporary Speed Reduction* – Proper signing and spacing, performance, radar feedback signs in use or not.

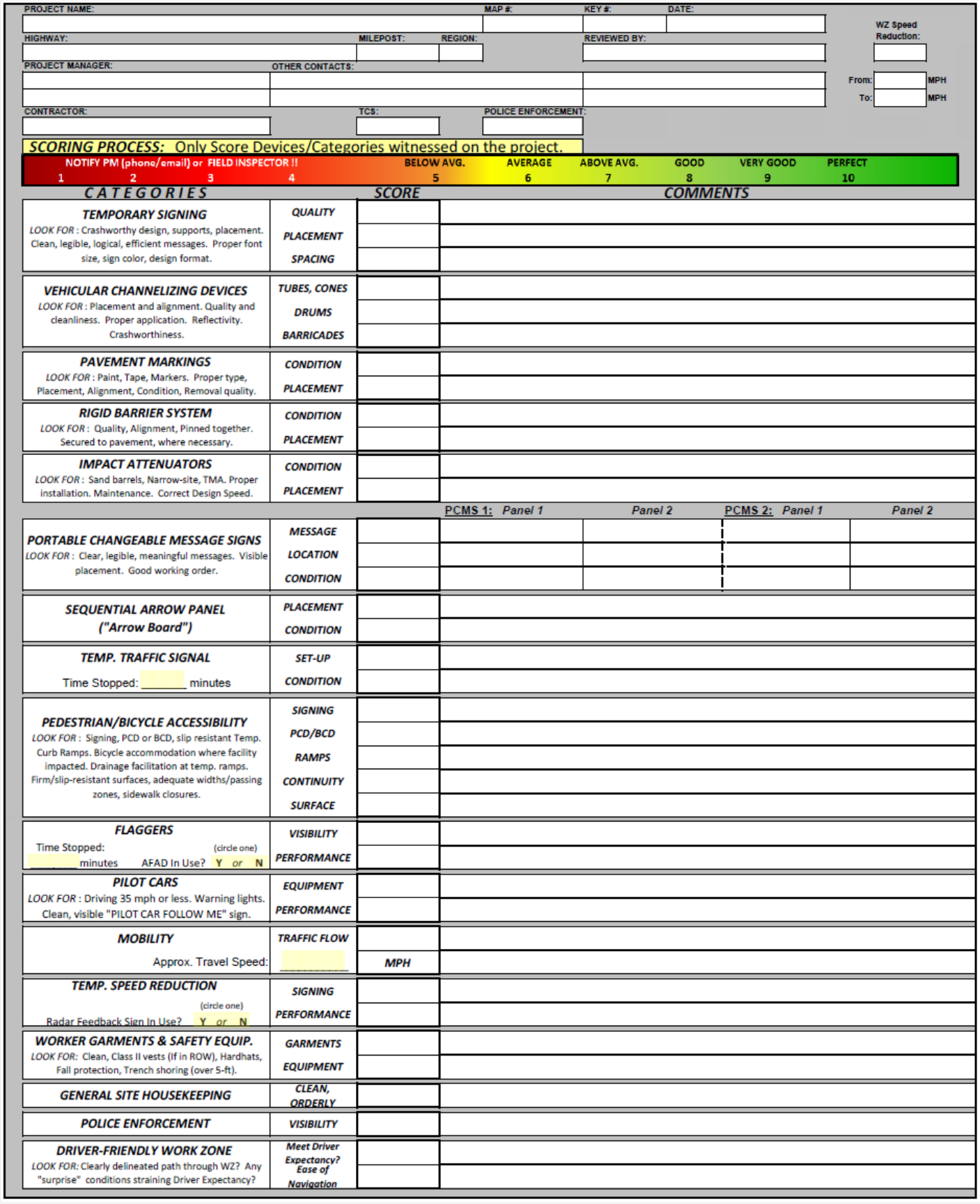
Worker Garments & Equipment – Standard application of safety measures for workers and equipment on the jobsite.

Site Housekeeping – Work site cleanliness and orderliness.

Police Enforcement* – Safe location, visibility, use of funding.

* - new or updated performance metrics added this year.

Figure 1—Work Zone Reviews Evaluation Form



PROJECT NAME: | MAP #: | KEY #: | DATE:

HIGHWAY: | MILEPOST: | REGION: | REVIEWED BY: | WZ Speed Reduction:

PROJECT MANAGER: | OTHER CONTACTS: | From: MPH | To: MPH

CONTRACTOR: | TCS: | POLICE ENFORCEMENT:

SCORING PROCESS: Only Score Devices/Categories witnessed on the project.

NOTIFY PM (phone/email) or FIELD INSPECTOR !! (1–4) | BELOW AVG. (5) | AVERAGE (6) | ABOVE AVG. (7) | GOOD (8) | VERY GOOD (9) | PERFECT (10)

CATEGORIES		SCORE	COMMENTS
TEMPORARY SIGNING — *LOOK FOR* : Crashworthy design, supports, placement. Clean, legible, logical, efficient messages. Proper font size, sign color, design format.	QUALITY		
	PLACEMENT		
	SPACING		
VEHICULAR CHANNELIZING DEVICES — *LOOK FOR* : Placement and alignment. Quality and cleanliness. Proper application. Reflectivity. Crashworthiness.	TUBES, CONES		
	DRUMS		
	BARRICADES		
PAVEMENT MARKINGS — *LOOK FOR* : Paint, Tape, Markers. Proper type, Placement, Alignment, Condition, Removal quality.	CONDITION		
	PLACEMENT		
RIGID BARRIER SYSTEM — *LOOK FOR* : Quality, Alignment, Pinned together. Secured to pavement, where necessary.	CONDITION		
	PLACEMENT		
IMPACT ATTENUATORS — *LOOK FOR* : Sand barrels, Narrow-site, TMA. Proper installation. Maintenance. Correct Design Speed.	CONDITION		
	PLACEMENT		
			PCMS 1: Panel 1 / Panel 2 / PCMS 2: Panel 1 / Panel 2
PORTABLE CHANGEABLE MESSAGE SIGNS — *LOOK FOR* : Clear, legible, meaningful messages. Visible placement. Good working order.	MESSAGE		
	LOCATION		
	CONDITION		
SEQUENTIAL ARROW PANEL ("Arrow Board")	PLACEMENT		
	CONDITION		
TEMP. TRAFFIC SIGNAL — Time Stopped: _____ minutes	SET-UP		
	CONDITION		
PEDESTRIAN/BICYCLE ACCESSIBILITY — *LOOK FOR* : Signing, PCD or BCD, slip resistant Temp. Curb Ramps. Bicycle accommodation where facility impacted. Drainage facilitation at temp. ramps. Firm/slip-resistant surfaces, adequate widths/passing zones, sidewalk closures.	SIGNING		
	PCD/BCD		
	RAMPS		
	CONTINUITY		
	SURFACE		
FLAGGERS — Time Stopped: _____ minutes (circle one) AFAD In Use? Y or N	VISIBILITY		
	PERFORMANCE		
PILOT CARS — *LOOK FOR* : Driving 35 mph or less. Warning lights. Clean, visible "PILOT CAR FOLLOW ME" sign.	EQUIPMENT		
	PERFORMANCE		
MOBILITY	TRAFFIC FLOW		
Approx. Travel Speed: _____	MPH		
TEMP. SPEED REDUCTION	SIGNING		
(circle one) Radar Feedback Sign In Use? Y or N	PERFORMANCE		
WORKER GARMENTS & SAFETY EQUIP. — *LOOK FOR:* Clean, Class II vests (If in ROW), Hardhats, Fall protection, Trench shoring (over 5-ft).	GARMENTS		
	EQUIPMENT		
GENERAL SITE HOUSEKEEPING	CLEAN, ORDERLY		
POLICE ENFORCEMENT	VISIBILITY		
DRIVER-FRIENDLY WORK ZONE — *LOOK FOR:* Clearly delineated path through WZ? Any "surprise" conditions straining Driver Expectancy?	Meet Driver Expectancy?		
	Ease of Navigation		

Results

Results from the scores of the different Reviewers for the 28 projects are used to develop the project and metric scores. Project scores are combined and averaged based on the number of participants submitting an Evaluation Form (Figure 2). Average project scores are calculated for each Region and are compared to scores collected since 2010 (Figures 3 through 6).

Performance Metric Scoring Summary

Figure 2 shows the statewide average score for each Work Zone performance metric. Figure 2 can be used to identify performance metrics (devices, practices) needing additional attention at the design and/or implementation phase of the project. It also identifies performance metrics that are meeting or exceeding expectations.

All of Work Zone performance metrics received a statewide averaged score of at least 5.6. A score of 5.0 pertains to the median score rating; therefore, all performance metrics were rated above the median score threshold. The average metric score of the data was determined to be 6.7. Of the 35 performance metrics, 16 metrics were rated below average metric score and 19 metrics were rated at or above average metric score.

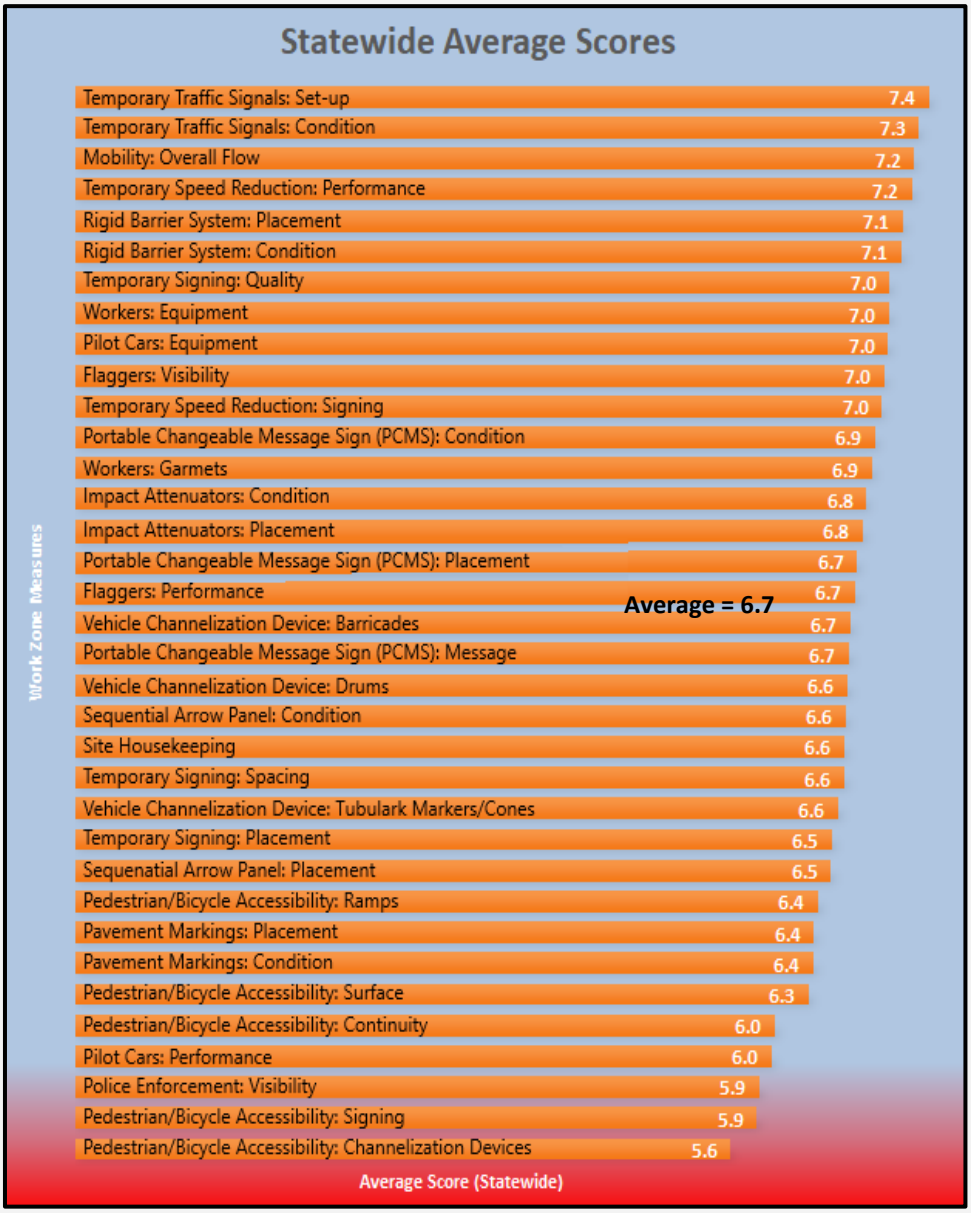


Figure 2—Statewide Averaged Performance Metric Scores

Statewide Comparison Summary

The 2023 Work Zone Review Tour reviewed 28 projects. The performance metrics scored during the Work Zone Reviews are averaged and ranked by project, then converted to scores based on 100 for annual comparison purposes (see Figure 3). The statewide average project score remained consistent when compared to previous years with an average score of 66. The low and high scores also remained consistent when compared to previous years. The steady score ra. ngs is indicative that the Agencies overall TCP Standards and Practices are being effectively and consistently implemented. Of the 28 projects reviewed, 100% of the projects scored an average score greater than the median score of 50. Although score ratings remained steady, they will be continued to be monitored in future years to ensure a negative shift is not measured.

WORK ZONE SAFETY AUDIT SUMMARY REPORT - SCORING STATISTICS									
	2010	2011	2012	2013	2015	2017	2019	2021	2023
# PROJECTS REVIEWED	42	43	29	29	39	30	31	41	28
HIGH SCORE	74	75	80	76	80	76	82	82	79
AVERAGE SCORE	67	69	71	67	69	66	72	63	66
LOW SCORE	53	57	57	50	30	49	67	45	51

Figure 3—Annual Scores (raw scores "out of 10" are converted to scores based on 100 for annual comparison purposes)

NUMBER OF PROJECTS SCORED IN REGION	
Region 1	5
Region 2	11
Region 3	5
Region 4	4
Region 5	3

Figure 4 - 2023 Number of Projects Scored Per Region

Project Average Score	# of Projects	% of Projects
≥ 80	0	0%
75 - 80	2	7%
70 - 75	3	11%
70 - 65	14	50%
65 - 60	7	25%
60 - 55	1	4%
< 55	1	4%

Figure 5 – 2023 Project Average Score Statistics

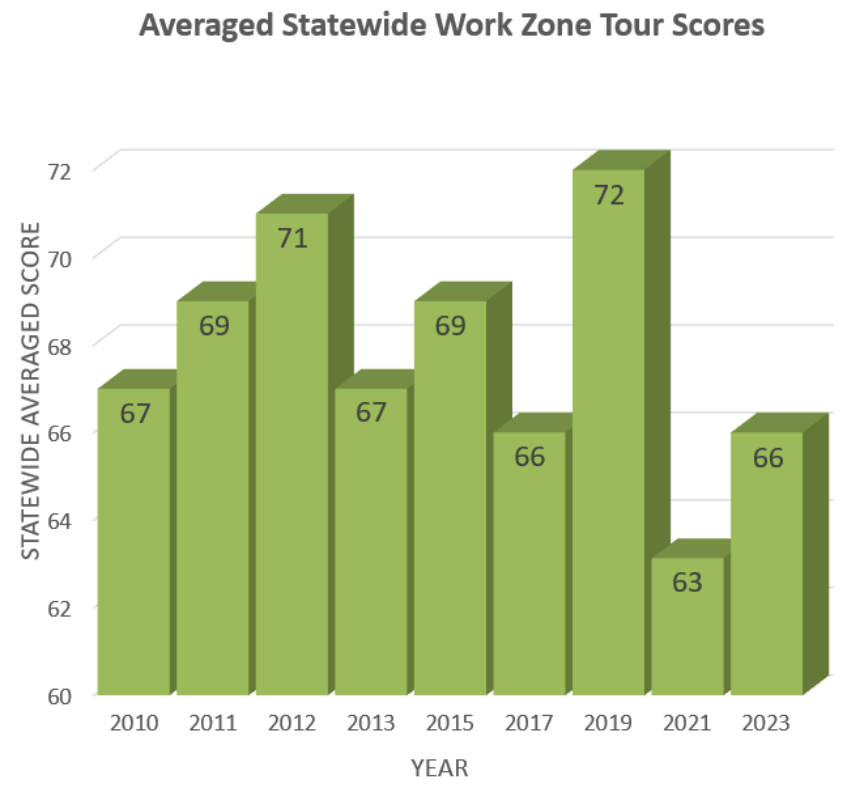


Figure 6—Biennial Scores Graph

Traffic Control Supervisor (TCS)

Performance metric scores were examined to determine if the average score of a given performance metric was affected by the inclusion of a TCS in the contract. As is evident in Figure 7, 2023 results slightly favored the inclusion of a TCS in a contract, which is evident by the quantity of metrics highlighted green under the TCS column. It should be noted that results do not take into account that contracts that include a TCS bid item are generally reserved for the most complex projects, and therefore, are inherently subject to a higher level of scrutiny and difficulties. As projects continue to get more complex, especially ADA specific projects that will require frequent maintenance of devices, it is anticipated that the inclusion of a TCS will remain a favorable performance metric.

MEASURE	TCS	NO TCS
TEMPORARY SIGNING	6.63	6.84
VEH. CHANNELIZATION DEVICES	6.64	6.62
PAVEMENT MARKINGS	6.13	6.72
RIGID BARRIER SYSTEM	7.12	7.13
IMPACT ATTENUATORS	6.89	6.60
PCMS	6.80	6.70
SEQUENTIAL ARROW PANEL	6.68	6.22
TEMP. TRAFFIC SIGNALS	7.00	7.42
PEDESTRIAN/BIKE ACCESSIBILITY	6.19	5.81
FLAGGERS	6.83	6.86
PILOT CARS	--	6.50
MOBILITY	7.23	7.23
TEMP. SPEED REDUCTION	7.17	6.90
WORKER GARMENTS	6.99	6.88
SITE HOUSEKEEPING	6.47	6.83
ENFORCEMENT	6.33	5.00
DRIVER EXPECTANCY	6.84	6.55

= High score = Equal score
= Low score = Insufficient data

Figure 7 -TCS Statistics Comparison

Project-Specific Plan Sheets vs. Standard Drawings

It should be noted that some less complex projects do not necessarily warrant the development of project-specific plan sheets. Further should be noted that some quantity of standard drawings will be applicable to all projects regardless of the development and inclusion of project-specific plan sheets. Some TCP metrics are almost always shown on a project-specific plan sheet due to the complex nature and function of the device/performance metric, for example temporary traffic signals and TPAR diversions. The plans 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 metric effectiveness could be improved with more detail or clarity provided by project-specific plan sheets.

As is evident in Figure 8, there are some performance metrics where the relationship between the metric itself and the presence or lack of plan sheets is ambiguous, for example Worker Garments, Mobility, and Site Housekeeping, which are not metrics shown on either a project specific plan sheet or standard drawing. However, for the remaining metrics, 2023 data suggests a decrease in scores can be attributed to the presence of project-specific plan sheets in the TCP. Only one project toured this year excluded the use of project-specific plan sheets as part of the contract. Therefore, one can conclude that the suggested decrease in metric scoring is likely not representative of a larger issue regarding the presence of project-specific plan sheets in the TCP. The Work Zone Standards Unit will continue to monitor this metric during future work zone tours to see if a trend occurs.

MEASURE	PLANS	NO PLANS
TEMPORARY SIGNING	6.70	7.33
VEH. CHANNELIZATION DEVICES	6.65	6.00
PAVEMENT MARKINGS	6.29	8.00
RIGID BARRIER SYSTEM	7.12	--
IMPACT ATTENUATORS	6.80	--
PCMS	6.77	6.67
SEQUENTIAL ARROW PANEL	6.57	--
TEMP. TRAFFIC SIGNALS	7.31	--
PEDESTRIAN/BIKE ACCESSIBILITY	6.04	7.00
FLAGGERS	6.80	7.17
PILOT CARS	--	6.50
MOBILITY	7.25	6.67
TEMP. SPEED REDUCTION	7.08	--
WORKER GARMENTS	6.93	7.17
SITE HOUSEKEEPING	6.59	7.67
ENFORCEMENT	5.89	--
DRIVER EXPECTANCY	6.75	5.92

= High score = Equal score
= Low score = Insufficient data

Figure 8 - Plans Comparison

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 metric scores from this year, and comparative 2021 metric rankings, were used to identify TCP strengths and deficiencies for 2023.

TCP Strengths for 2023 included Rigid Barrier Systems, Impact Attenuators, and Flaggers. Of the strengths, Flaggers were revealed as having the most increase in quality and effectiveness as compared to 2021. It should also be noted that worker apparel was seen to have improvements during the 2023 work zone tour, which could be indicative of the industries ongoing focus towards enhanced worker safety.

TCP Deficiencies for 2023 included Pedestrian/Bicycle Accessibility, Pavement Markings, and Pilot Vehicles. Of the deficiencies, Pilot Vehicles and Pavement Markings were revealed as having the highest overall decrease in quality and effectiveness as compared to 2021. It should be noted that only one project toured this year included Pilot Vehicles in the contract, and therefore, the low metric scoring is not necessarily representative of a statewide deficiency. Aside from these deficiencies, only one isolated project required immediate contact with the ODOT Project Manager's office or an on-site agency representative to discuss seen issues and possible mitigation strategies due to an incompliant use of regulatory signing.

Below are several examples of temporary traffic control performance metrics that were encountered during this years tour:

MEASURE	Statewide Ranking		+/-
	2021*	2023	
TEMP. TRAFFIC SIGNALS	1	1	
MOBILITY	2	2	
RIGID BARRIER SYSTEM	4	3	+
TEMP. SPEED REDUCTION**	-	4	
APPAREL	6	5	+
FLAGGERS	14	6	+
IMPACT ATTENUATORS	8	7	+
PCMS	7	8	
DRIVER EXPECTANCY**	-	9	
TEMPORARY SIGNING	9	10	
VEH. CHANNELIZATION DEVICES	10	11	
SITE HOUSEKEEPING	11	12	
SEQUENTIAL ARROW PANEL	12	13	
PILOT CARS	3	14	-
PAVEMENT MARKINGS	5	15	-
PEDESTRIAN/BIKE ACCESSIBILITY	13	16	-
ENFORCEMENT**	-	17	

*No data for 2022
**New metric for 2023

+ = Increase in ranking
= Decrease in rank is less than or equal to 2
- = Greater than 2 decrease in ranking
= Insufficient data

Figure 9—Metric Ranking Comparison

(Above) Portable Rumble Strip use with flagger operation.

Statewide: Efforts to accommodate pedestrians in work zones.

(Below) Temporary Portable Traffic Signal usage during bridge replacement project.

2021 Work Zone Reviews — Ac. on Items

Flaggers

A 2021 work zone review Action Item was to address the decline in Flaggers performance. The Work Zone Standards Unit identified the need to review training materials to ensure they were up-to-date and satisfactory in coverage. Additionally, the Work Zone Standards Unit was going to continue to educate ODOT staff of the standards for flagging operations and what they should be doing to make sure flaggers are operating safely. As a final effort, education and use of Automated Flagger Assistance Devices (AFAD) was strongly encouraged to aid in lessening the reliance and risks associated with traditional flagging methods.

Since the 2021 Work Zone Tour, the Work Zone Standards Unit has put out a technical advisory bullet (TR20-1(a)) directing AFADs as the preferred option when flagging. This was part of a larger industry effort to help reduce the inherent risks flaggers encounter when being in close proximity to traffic. A standard detail was developed for AFAD use and included additional enhancements such as channelizing devices on center line and “DO NOT PASS” signs for improved compliance and yielding to AFADs. Additionally, a maintenance specific AFAD detail was created and new AFAD products have been reviewed and added to the ODOT Qualified Products List (QPL). Based on evidence of this years performance metric scoring and dramatic increase in the state-wide flagger ranking, these action items have proven to be successful.

Pedestrian/Bicycle Accessibility

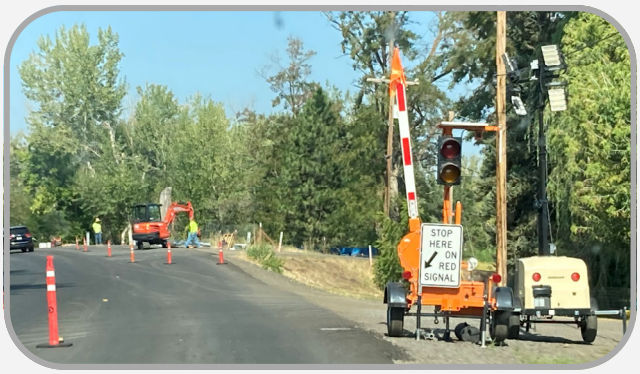
A 2021 work zone review Action Item was to review pedestrian/bicycle accessibility technical guidance to ensure adequate coverage and to continue to educate designers and construction staff on placement, maintenance, and proper use of accessibility devices. The Work Zone Standards Unit also needs to try and make it easier for designers and construction staff to use and implement the new standards and to request feedback from design and field staff on how to better the performance metric.

Since the 2021 Work Zone Tour, the Work Zone Standards Unit has created seven new Standard Details to better address accessibility issues. The Work Zone Standards Unit has created a TPAR-specific online training that is available for free to all ODOT staff, consultants, and construction personnel and has included as a requirement that all consultant staff designing ODOT projects be required to complete the training as part of their scope of work contract. Additionally, Work Zone Standards Unit has worked closely with one particular pedestrian channelization device vendor that is used widely on ODOT projects to address frequent device alignment issues seen in the field that are causing substandard performance.

Work Zone Traffic Control Safety Review "Strengths"

1. *Flaggers*

Flaggers were revealed as having the most increase in quality and effec. veness as compared to 2021. This may partially be attributed to ODOT's efforts of making Automated Flagger Assisted Devices (AFAD) as the new preferred standard flagging option, as documented in technical advisory (TR20-1(a)). This was part of a larger industry effort to help reduce the inherent risks flaggers encounter when being in close proximity to traffic. In addition to the technical advisory, AFADs have been added to flagging operation Standard Drawings (TM850 and TM854) and enhancements such as channelizing devices on center line and "DO NOT PASS" signs were added in an effort to improve driver awareness, compliance, and yielding to AFADs. The Work Zone Standards Unit is currently in the process of publishing a new standard AFAD flagging operation that will include the use of temporary transverse rumble strips in conjunction with AFAD.



2. *Rigid Barrier Systems and Impact Attenuators*

ODOT places a strong emphasis on the use of temporary positive protection strategies and opportunities to mitigate worker exposure to traffic and vehicular exposure to construction hazards. This years tour saw a mix of both concrete and steel barriers in addition to various impact attenuators used successfully throughout the state. As part of ODOT's continued emphasis on the use of temporary positive protection strategies and opportunities, the expectation has been made for design teams to apply the *Guiding Principle* and *Work Zone Decision Tree* at key milestones through the life of a project—from initial scoping, during project development, and throughout construction. Additionally, ODOT staff has worked to further allow alternative positive protection options on the QPL, including the addition of steel barrier and mobile barrier systems.

Work Zone Traffic Control Safety Review "Deficiencies"

1) Pedestrian/Bicycle Accessibility

Since the 2021 Work Zone Tour, the Work Zone Standards Unit has created seven new Standard Details to better address accessibility issues. The Work Zone Standards Unit has created a TPAR-specific online training that is available for free to all ODOT staff, consultants, and construction personnel and has included as a requirement that all consultant staff designing ODOT projects be required to complete the training as part of their scope of work contract. Additionally, Work Zone Standards Unit has worked closely with one particular pedestrian channelization device vendor that is used widely on ODOT projects to address frequent device alignment issues seen in the field that are causing substandard accessibility compliance.

Despite those efforts, metric scoring for the 2023 tour indicated a overall decline in the state-wide pedestrian/bicycle accessibility ranking, which may be partially attributed to the updated scoring metrics implemented this year. The effort to design projects to pedestrian/bicycle accessibility standards has been seen to be successful in most projects, yet the effort has not been comprehensive with the majority of deficiencies over several years noted to be occurring at the implementation (construction) and device maintenance level.

TCP Action

The Work Zone Standards Unit needs further outreach and education efforts specifically with ODOT construction staff on the proper implementation of the various accessibility metrics and proper use and maintenance of accessibility devices. In turn, ODOT construction staff should inform Work Zone Standards Unit staff regarding challenges and deficiencies seen in the field in applying metrics and devices. ODOT construction staff's diligence towards emphasizing accessibility and educating contracted construction personnel will continue to be imperative for ensuring ODOT's accessibility goals are achieved.

2) Pavement Markings

The condition and placement of temporary pavement markings are measured to determine their effectiveness in conveying lane location information to the traveling public. Although the condition and placement of temporary pavement markings were observed as having an overall decrease in measurement rank when compared to the 2021 work zone tour, the statewide average score rating remained relatively steady with a score of 6.4 (Figure 2). For comparison purposes, the 2021 work zone tour measured an average pavement marking placement and condition rating score of 6.6. Based on the minimal decrease to the statewide average score rating observed during the 2023 tour in combination with the relatively high ranking of temporary pavement markings had during the 2021 tour, the decrease in the metric rank for 2023 is not overly alarming.

TCP Action

To address this action item, the Work Zone Standards Unit will review their technical guidance and work with the ODOT Pavement Engineer in reviewing their technical guidance to ensure the information being provided is both consistent and comprehensive. The Work Zone Standards Unit will additionally continue to monitor temporary pavement marking metric ranking and statewide average score rating during future work zone tours for further decreases that may warrant additional alarm.

CONCLUSION

The 2023 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 28 different State highway construction work zones. The action items of the 2021 reviews were for the most part accomplished and ODOT will continue to improve the practice of temporary traffic control across the State of Oregon.

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 contractors.
- Identified current standard practices that need modifications 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, Inspectors and Contractors who helped with the monumental task of improving safety in Oregon work zones. Thank You! If you have any feedback or questions regarding the 2023 Work Zone Review Summary Report, please contact the Work Zone Standards Unit at workzonestandards@odot.oregon.gov.

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