



Transportation Management Plan (TMP)

US26 (Powell Blvd): SE 99th Ave – East City Limits

026 Mt. Hood Highway

Multnomah County

90% PS&E Submittal

K21178

November 19, 2021



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PRELIMINARY
NOT FOR CONSTRUCTION

1.0 Introduction

Improvements are proposed to SE Powell Boulevard (U.S. Highway 26) in southeast Portland from approximately SE 99th Avenue to SE 174th Avenue (Figure 1) to address safety concerns for all roadway users. The purpose of these improvements is to reduce the frequency and severity of collisions by reducing potential conflicts between motor vehicles, transit, pedestrians, and bicyclists. Safety will be enhanced for people who walk, bicycle, use mobility devices, public transportation (transit), and drive in and through the project area by providing ADA-compliant sidewalks with landscaping strips, enhanced bike treatments and pedestrian crossings, improved illumination, signalization, and other treatments. The project has been divided into two design packages. The construction has been completed for Package 1 of the project to reconstruct SE Powell Boulevard between SE 122nd and SE 136th. Package 2 provides safety improvements on SE Powell Boulevard from 99th to 122nd and from 136th to the eastern Portland city limits at 174th.

The Oregon Department of Transportation (ODOT) is the authority responsible for design and construction of improvements to SE Powell Boulevard. As prescribed in HB2017, ODOT will transfer jurisdiction of SE Powell Boulevard to the City of Portland after construction, who will then own and operate the facility. The project is being designed to ODOT standards with the project team exploring opportunities to implement Portland Bureau of Transportation (PBOT) standards as much as possible as long as doing so does not create adverse impacts to schedule, budget, and/or previous stakeholder commitments.

The purpose of this Transportation Management Plan (TMP) for Package 2 of Outer SE Powell Boulevard design segment is to provide the details regarding the development of traffic control plans (TCP) and other measures recommended during the construction phase of this project. During construction, it is desired that disruptions and delays to travelers and freight be minimized without compromising public or worker safety and the quality of the work being performed. This TMP is considered a living document and will be subject to additions and modifications throughout the design life of this project.

1.1 TMP Roles and Responsibilities

Construction Project Manager, Chris Aguon, Christopher.aguon@odot.state.or.us

Resident Engineer, Jennifer Bachman, Jennifer.l.Bachman@odot.state.or.us

Work Zone Traffic Control Designers, Christopher Stepovich (HDR Inc.), christopher.stepovich@hdrinc.com and Mohammad Osman (Murray Smith), Mohammad.Osman@murraysmith.us

Work Zone Traffic Analyst, Simon Eng (HDR Inc.), Simon.Eng@hdrinc.com

Community Affairs Coordinator, Hope Estes, Hope.Estes@odot.state.or.us

2.0 Project Description

The physical limits of this design segment extend along SE Powell Boulevard between SE 99th Avenue and SE 174th Avenue (mile point [MP] 6.03 to MP 9.87). The project area is provided in Figure 1. SE Powell Boulevard is an ODOT-owned and maintained facility within the City of Portland limits. Adjacent land uses are a high-density mix of commercial and residential developments. The project area is in ODOT Region 1 in Multnomah County.

2.1 Goals and Objectives

The primary purpose of this TMP is to address the construction-related traffic impacts of this project in a cost-effective and timely manner with minimal interference to the traveling public. To accomplish this goal, the TMP incorporates the following elements:

- Project area characteristics
- Identification of other projects in the area that will require coordination
- List of holidays, local events, or seasonal restrictions
- Factors impacting traffic control and construction staging plans
- Mobility
- Pedestrian and bicycle connectivity and mobility through the work zone
- Proposed construction staging
- Lane closure restrictions
- Traffic management and operational strategies
- Incident management plan
- Public information and communication plan

2.2 Proposed Improvements

The Outer Powell Transportation Safety Project is classified as a safety project with 4R modernization elements. The proposed improvements have been clearly defined and identified in the project charter and the Multimodal Design Options Memorandum. These improvements include, but are not limited to:

- Sidewalk construction
- Bike lane construction
- Center turn lane/median construction
- Stormwater system improvements

2.3 Project Schedule

The scheduled bid date for this project is January/February 2023, with construction running through May 2027.

2.4 Project Stakeholders

There may be times during project construction when it will become necessary to contact stakeholders in the area to inform them of updated project developments such as schedule updates, traffic control modifications, or major potential disruptions. Primary stakeholders within the project area include major road authorities, emergency service providers, government contacts, garbage collection, mail service, local shopping centers, and local utilities.

Local emergency service providers will be notified of the expected lane closures on SE Powell Boulevard to ensure that emergency services are able to reach all locations in the project area during construction. The contractor should meet with the emergency service providers prior to the beginning of construction to confirm expectations for emergency services and coordinate communications. A list of project stakeholders is provided in Table 1.

Table 1. Project Stakeholders

Agency/ Organization	Name	Title	Phone Number
Agency Representatives			
Oregon Department of Transportation	Jen Bachmann	Project Manager	503-823-8133
	Hope Estes	Community Affairs	503-731-4812
	Christy Jordan	Mobility Program Manager Coordinator	503-378-6192
	Deborah Martisak	Region 1 Mobility Liaison	503-731-3315
City of Portland	Dan Layden	Public Information	503-823-2804
	Charles Radosta	Signals and Lighting Engineer	503-823-8133
TriMet	Ben Baldwin	—	503-962-4910
Schools			
Portland Public Schools	—	—	503-916-2000
West Powellhurst Elementary School	—	—	503-256-6509
Gilbert Heights Elementary School	—	—	503-256-6502

Table 1. Project Stakeholders

Agency/ Organization	Name	Title	Phone Number
Earl Boyles Elementary School	—	—	503-256-6554
Emergency Services			
Emergency Dispatch	Emergency Only	—	911
Oregon Emergency Management	Non-Emergency	—	503-378-2911
Multnomah County Office of Emergency Management	—	—	503-988-6700
Oregon State Police	Andy McCool	Lieutenant	503-731-3020
Multnomah County Sheriff	Michael Reese	Sheriff	503-988-4300
Portland Police Bureau	—	—	503-823-0000
Portland Fire and Rescue	—	—	503-823-3700
Hospitals			
Adventist Medical Center	—	—	503-257-2500
Utility Owners			
Oregon Utility Notification Center	--	--	800-332-2344
<i>See Section 00150 of the Special Provisions for project-specific utility contacts.</i>			
Other			
TriMet		Engineering & Construction	503-962-2103
Oregon Trucking Association	Debra Dunn	President	503-513-0005
AAA Oregon	--	--	503-222-6767

Table 1. Project Stakeholders

Agency/ Organization	Name	Title	Phone Number
Metro Central Transfer Station (garbage service)	--	--	503-823-7700
Lents at Eastport (US Post Office)	—	—	503-774-1522

3.0 Existing Traffic & Roadway Conditions

The following section includes a summary of existing transportation conditions within the Project area relevant to this TMP, including traffic and roadway characteristics.

3.1 Traffic Characteristics

The existing annual average daily traffic (AADT) volumes on SE Powell Boulevard are 20,800 in the project area, with 4.0 percent trucks. The future year AADT’s (2045) are 27,500 from SE 99th Avenue to SE 122nd Avenue, 24,100 east of SE 136th Avenue to SE 174th Avenue. The corridor also has a number of top 10 percent Safety Priority Index System sites. They are located at SE 111th, 112th, 115th, 119th, 120th, 147th, 148th, 162nd, 164th, 166th, and 174th Avenues.

The majority of traffic in the corridor is made up of passenger vehicles and small trucks. The project section of SE Powell Boulevard is not a designated truck route according to the Oregon Highway Plan and the Commerce and Compliance Division (CCD) reported trucks generally use adjacent routes. Although the majority of truck traffic can use parallel routes, some truck traffic will need access to local businesses for commercial deliveries during construction.

Bicycle and pedestrian traffic is very common through the corridor; accommodations will need to be made to ensure pedestrian and cyclist safety and mobility during construction.

3.1.1 Roadway Characteristics

According to the 1999 Oregon Highway Plan, SE Powell Boulevard is classified as District Highway. This segment of SE Powell Boulevard is urban, part of the National Highway System, and an ODOT Reduction Review Route. Within the project area, SE Powell Boulevard is a two-lane arterial with existing bike lanes and minimal sidewalks.

US26 east to Mount Hood is an important freight route for access to US20 toward Idaho and US97 through the center of Oregon south to California. SE Powell Boulevard also functions as a route to the Mount Hood wilderness areas and ski resorts. US26 is a Critical Pair Route with I-84.

3.2 Pedestrian/Bicycle Facilities

The existing facilities are at grade road shoulders striped as two 4-foot to 5-foot widths on either side of the road. One 4-foot to 5-foot width is intended for pedestrians and the other for cyclists. There are also a very limited number of sporadic segments of sidewalk within the project area.

The 2018 count for cyclists was 36 from 4:00 PM to 6:00 PM at SE 122nd and 10 from 4:00 PM to 6:00 PM at SE 162nd Ave. There was an immediate increase in the number of cyclists using the SE 122nd Ave to SE 136th Ave section when the 2020 project was completed. The magnitude of this increase has not been quantified yet and a projection for the bicycle traffic after completion of the SE 99th to ECL project would be conjecture at this time. Once the bike facilities on SE Powell Boulevard (Blvd) are connected to the I-205 multi-use path there is the potential for moderate commuter and recreational cyclist use of the facility in addition to local community use.

Existing marked bicycle facilities are comprised of: shared use markings on SE 102nd south of Powell Boulevard, striped bike lanes on SE 148th Avenue north of Powell, and striped bike lanes on SE 162nd Avenue north of Powell.

Pedestrian crossing beacons with marked cross walks are existing at SE 116th Avenue, SE 119th Avenue, SE 156th Avenue, and SE 168th Avenue. Signals with marked cross walks exist at SE 99th Avenue, SE 104th Avenue, SE 112th Avenue, SE 122nd Avenue, SE 136th Avenue, SE 148th Avenue, SE 162nd Avenue, Meadowland Shopping Center, and SE 174th Avenue.

3.3 Transit Facilities

Transit service is highly utilized along the corridor and includes two routes on SE Powell Boulevard (bus line 9-Powell Blvd and bus line 17-Holgate/Broadway). Additionally, it is common for school buses to use the corridor during the school year. PBOT has designated SE 148th Avenue and SE 162nd Avenue as Transit Priority streets. SE 112th is designated as a Transit Access street.

The vast majority of the existing bus stops are shoulder stops. Existing bus pullouts are at SE 99th Avenue, SE 112th Avenue, SE 122nd Avenue, SE 136th Avenue, SE 148th Avenue, and SE 156th Avenue. The stops at SE 99th Avenue, SE 112th and SE 122nd have shelters and are likely more heavily used than other stops in the project.

TriMet plans to run 60-foot articulated buses on bus line 9 starting in the near future.

The Powell Garage, a TriMet bus maintenance and storage facility, is on the west end of the project near SE 99th Avenue.

3.4 Land Use

Adjacent land uses are a high-density mix of commercial and residential developments. The project area is in ODOT Region 1 in Multnomah County. The surrounding area are characterized by single-story and double-story apartments and single-family dwellings, with

commercial and industrial uses clustered near I-205 and at the major intersections with SE Powell Boulevard: SE 112th, SE 122nd, SE 136th, SE 162nd, and SE 174th avenues. The intersection with the most intensive commercial development is SE 122nd Avenue, where development extends east of SE 124th Avenue. Uses include a supermarket, pharmacy, gas station, shopping center (with multiple retail tenants and services), furniture store, automotive services, restaurants, taverns, money services, and human services. On the south side of SE Powell Boulevard from just east of SE 99th Avenue to east of SE 104th Avenue, there is a public park that includes skateboard facility. Land uses servicing vehicle fleets are located near I-205. These include the TriMet garage, Curtis Trailers, and Funtastic Traveling Shows. Single-family residential use predominates, from SE 138th Avenue to SE 162nd Avenue.

3.5 Property Access

Existing driveway access will be maintained or temporary accommodations will be provided for private property ingress/egress during construction. Garbage pickup, mail service, and other delivery vehicles (e.g., UPS, FedEx) will also need to be accommodated during construction. A detailed list of business hours of operations and additional access is provided in Appendix X. This information is provided for reference only. The Contractor shall work with the resident or business on a one-on-one basis to accommodate a window of time the contractor may be allowed to temporarily close the access. However, if no time exists the contractor will be required to provide temporary access or stage constructed accesses half width at a time for businesses and residents fronting the corridor.

The State's obligations document produced during ROW acquisition should also be checked for specific access requirements during construction. There are commitments on some ownerships to provide parking replacement for stalls occupied by the Contractor. In some cases, this may mean paying for nearby City of Portland metered parking. The Contractor shall not occupy existing parking lot areas within temporary easements except when that property is under active construction. Parking areas within temporary easements shall be made available to the property owner at the end of each work shift. The traffic control plans or building access plans will indicate if the Contractor is to maintain parking within easements and the minimum number of temporary stalls to provide.

3.6 Stakeholder Input

The primary goal of the communications effort for this project is to inform project stakeholders and highway users of scheduled construction activities and expected impacts. ODOT Community Affairs staff will continue to coordinate with the public and project stakeholders throughout the design and construction process. Project information is regularly updated at www.oregon.gov/odot/projects/pages/project-details.aspx?project=19786.

4.0 Proposed Work Zone Strategies

The primary purpose of this TMP is to address the construction-related traffic impacts of the Phase 1A project in a cost-effective and timely manner with minimal interference to the traveling public and adjacent properties.

4.1 Work Zone Traffic Control Narrative

4.1.1 Construction Stages and Phases

The Outer Powell Transportation Safety Project will utilize staged construction to keep traffic lanes and local access open as much as possible. For construction activities that require lane closures, lanes will only be closed at night per the project special provisions included in Section 3.2. A brief description of the proposed construction staging and key traffic control components is provided below. Construction staging will be further developed as the project's final design progresses.

West Segment (SE 99th Avenue - SE 122nd Avenue)

- Stage 1 is divided into two substages.
- Stage 1a: Widening to the north side, with no traffic shift.
- Stage 1b: Traffic shifts onto temporary widening from Stage 1a, to the north side of road.

Night lane closures are needed in Stage 1 to put in drainage structures. This is shown in the typical sections. Lane closures (when needed) will be performed at night, providing a single flagger-controlled, bi directional travel lane for traffic. A shoulder/bike lane will be provided whenever possible, but there may be times when bikes will be required to share the travel lane for short distances. The availability of a shoulder/bike lane during night work will vary on a case-by-case basis.

- Stage 2: Traffic shifts onto the south side that was built in Stage 1b; the north side then gets constructed. This includes construction for new sidewalks, buffered bike lanes, bus pullouts, illuminations, stormwater facilities, and other improvements. In most cases the bikes/peds are on the final condition facilities on the south side.
- Stage 3: Nighttime lane closures providing single flagger-controlled bi-directional for remaining work within the road core.

East Segment (SE 136th Avenue - SE 174th Avenue)

Due to the roadway alignment, shifts are on different sides of the existing center stripe; the segment between SE 136th Avenue and SE 148th Avenue will have a different staging sequence.

SE 136th Avenue – SE 148th Avenue:

- Stage 1 is divided into two substages.

- Stage 1a: Widening to the south side; no traffic shift.
- Stage 1b: Traffic shifts onto temporary widening from Stage 1a while north side of road gets constructed.

Night lane closures are needed in Stage 1 to put in drainage structures. This is shown in the typical sections.

- Stage 2: Traffic shifts onto the north side that was built in Stage 1b; south side will be constructed.
- Stage 3: Nighttime lane closures providing single flagger-controlled bi-directional for remaining work within the road core.

SE 148th Avenue – SE 174th Avenue:

- Stage 1 is divided into two substages.
- Stage 1a: Widening to the north side; no traffic shift.
- Stage 1b: Traffic shifts onto temporary widening from Stage 1a while south side of road gets constructed.

Night closures are needed in Stage 1 to put in drainage structures. This is shown in the typical sections.

- Stage 2: Traffic shifts onto the south side that was built in Stage 1b; north side will be constructed.
- Stage 3: Nighttime lane closures providing single flagger-controlled bi-directional for remaining work within the road core.

Preliminary pedestrian and TCP are provided in Appendix X. ODOT's Guiding Principle Decision Tree Form was used in the development of the TCP and is provided in Appendix X. The decision tree form helps identify separation options available for the work zone and captures impacts to safety, mobility, delay, driver and bicycle/pedestrian convenience, and other impacts when assessing traffic control options. It is anticipated the decision tree form and proposed construction staging will be updated throughout the design phase and captured in the TMP as the project progresses.

4.1.2 Construction Schedule

The construction time estimate (CTE) is still a living document at this time. Currently, the utility relocation is to begin in August of 2022 and be complete in December of 2023. The roadway construction is to begin in March of 2023 and be complete in May of 2027. The schedule is sequenced to complete the portion of the work from SE 148th Avenue to the East City Limit earlier - in October of 2026 by making that segment the first priority for utility relocation.

4.1.3 Land Use

There are potentially impacts to planned developments that may be under construction at the same time as the roadway is under construction. Impacts would be dependent upon the timing of the planned development.

The State's obligations document produced during ROW acquisition should be checked for specific requirements during construction and delayed access to certain temporary easements to facilitate planned development

4.1.4 Work Zone Traffic Analysis/Lane Restriction hours

The work zone lane closure restrictions for Outer Powell Transportation Safety Project are included for information purposes only; refer to the Project special provisions for final restrictions.

4.1.5 Holidays and Special Events

Traffic within the project area may be impacted by holidays and local special events. There are no known local special events within the project area. Nighttime lane closures will not be allowed during holidays. Major holidays are included as standard restrictions in the construction specifications. However, this is a route typically used by Hood to Coast support crews and volunteers.

- Hood to Coast – One of the last two Fridays of August

Restricted work times for this project will be included in the special provisions, Section 00220, and will include the following:

- Holidays: Do not close any traffic lanes between noon on the day preceding legal holidays or holiday weekends and midnight on legal holidays or the last day of holiday weekends, except for Thanksgiving, when no lanes may be closed between noon on Wednesday and midnight on the following Sunday

4.1.6 Detours

Please see TCP in Appendix X

4.2 Temporary Pedestrian Accessible Routing

Site-specific "Temporary Pedestrian Accessible Routes (TPARs)" and pedestrian-specific TCP (Appendix X) are provided to safely accommodate pedestrians during construction.

4.3 Property Access

All driveway access will be maintained or temporarily accommodated during construction. Some temporary driveways will be provided at critical locations to maintain continuous access. To help motorists accessing businesses, blue tubular markers will be used to show the temporary access point. Garbage pickup, mail service, and other delivery vehicles (such as UPS

or FedEx) will also be accommodated during construction. Lane closures may occur in these areas with flagging to continue the flow of traffic as needed. In some cases, public side streets will be closed to through traffic but will allow local access.

4.4 Freight Mobility

The project section of SE Powell Boulevard is not within a designated truck route and the Commerce and Compliance Division (CCD) reported trucks generally use adjacent routes. Although the majority of truck traffic can use parallel routes, some truck traffic will need access to local businesses for commercial deliveries during construction. To minimize traffic and freight mobility impacts, construction activities requiring lane closures on SE Powell Blvd will be scheduled during nighttime hours as much as possible. The current lane closure restrictions noted in the Project Special Provisions Section 00220 call out:

Single Lane Closures – One Traffic Lane on US26 (SE Powell Blvd) may be closed during the following times:

- Friday night through Saturday morning between 8:00 p.m. and 9:00 a.m.
- Saturday night through Sunday morning between 7:00 p.m. and 10:00 a.m.
- Sunday night through Monday morning between 7:00 p.m. and 6:00 a.m.
- Nightly, Monday night through Friday morning, between 8:00 p.m. and 6:00 a.m.

4.5 Public Information and Outreach

The project team will continue to conduct outreach through public open houses, email and mail notifications, targeted community activities and information on the Outer Powell Transportation Safety Project [website](#).

Activities so far have included:

- Interviews with individuals and organizations that work with people who speak Russian, Vietnamese, Chinese, Spanish and other languages to help inform and guide our public engagement to ensure we are involving everyone in this project.
- Focus groups with faith-based and social service organizations working along and near Outer Powell.
- Individual Outer Powell Community Walks spoken in Chinese, Russian, and Spanish, Vietnamese and English.
- A project Community Advisory Group, representing diverse organizations and interests.
- In-person and online open houses.
- A community bike ride.
- Information booths at community events including 'Powellhurst-Gilbert National Night Out' and 'Festival of Nations' in outer east Portland.
- Canvassing of more than 60 businesses between I-205 and SE 174th to provide information about the project.

- Interviews with TriMet Route #9 bus users along Powell Boulevard.
- A ground breaking ceremony to celebrate the start of construction on the initial section of the project.
- Email newsletters to update the public at project milestones.

4.5.1 Public Awareness Strategies

Public information and outreach in advance of construction work is essential for maintaining public support for projects, as well as encouraging changes in construction travel behavior. Informing the public of potential delays incurred while traveling through the project area or detour routes may encourage motorists to use alternate routes or plan trips to avoid peak construction activity times, which will help manage congestion within the project area. Strategies may include radio and television advisories, mailers, or the project website.

4.5.2 Motorist Information Strategies

Providing motorists with real-time information helps notify drivers of upcoming work zone disruptions and may alleviate congestion and delays. Motorist information strategies may be used to provide traveler information in the following ways:

Portable Changeable Message Signs (PCMS): PCMS is a portable electronic sign that can display changeable messages. They are useful when informing drivers of upcoming construction periods and warning drivers of construction activities, as needed.

Ground-mounted signs: Typically installed at the endpoints of work zones, these are used to inform motorists of road construction and the possibility of delays. Ground-mounted signage would also be needed to alert motorists of Highway Advisory Radio information availability if/when provided.

511 (highway advisory telephone): Inclusion of this project on ODOT's statewide 511 highway advisory telephone system will help provide travelers with up-to-date information about construction activities and potential delays.

TripCheck (ODOT's Intelligent Transportation Systems [ITS] website): TripCheck allows motorists to retrieve real time information and weather conditions via the Internet. Additionally, motorists may also call 511 to receive this same information

4.6 Other Work Zone Strategies

A common deficiency noted by internal annual ODOT work zone reviews are design and accommodation measures used for managing bicycles, pedestrians, and Americans with Disabilities Act (ADA) users in the work zone. More details are shown for work zone friendly bicycle and pedestrian strategies on the TCP (Appendix X).

Work zone safety strategies that will be employed include:

- Provide law enforcement in the work zone
- Provide temporary kiosk signs at heavy entry points to work areas to provide project information to pedestrians and bicyclists

4.7.1 Temporary Traffic Control Strategies

ODOT's *Guiding Principle Decision Tree Form* was used in the development of the TCP and is provided in Appendix X. The decision tree form helps identify separation options available for the work zone and captures impacts to safety, mobility, delay, driver and bicycle/pedestrian convenience, and other impacts when assessing traffic control options. It is anticipated the decision tree form and proposed construction staging will be updated throughout the design phase and captured in the TMP as the project progresses.

Potential construction strategies as they pertain to this project are described below.

4.6.1.1 Traffic Control Devices

Business Access: Business accesses will be constructed under traffic. To help motorists accessing businesses, blue "Business Access" signs and tubular markers will be used to delineate the temporary access point.

4.6.1.2 Project Coordination Strategies

Coordination with adjacent construction: To minimize impacts for traffic traveling through the Project area on Outer Powell and surrounding roadways, it is critical that this Project be coordinated with other projects planned in the area. Opportunities should be explored to schedule projects during different time periods or stage them to avoid overlapping impacts to traffic. Contractor will coordinate with PBOT" as outlined in the subsection 00150.55 of the project specifications.

4.6.1.3 Traffic Control Strategies

Potential construction strategies as they pertain to this project are described below.

Temporary striping: When required, temporary striping on the travel lanes will be provided to direct and control traffic in areas where lane shifts are necessary.

Planned lane closures: Temporary lane closures, when required, will be limited to off-peak and nighttime hours. Closures will be required to adhere to the applicable restriction specifications.

Project phasing: Maintaining the existing travel lane configuration in each direction during construction will create less delay for motorists. Although phasing requires a longer construction period, it minimizes impacts to traffic.

Coordination with adjacent construction: The coordination of this project with other projects in the area, as discussed in Section X, will help to avoid unnecessarily compounding of traveler delay.

Full-time traffic control supervisor: Maintaining a full-time traffic control supervisor on-site will allow one person to be dedicated to traffic control and not be distracted by other construction activities. Benefits include the ability to make quick decisions and implement contingency plans, as needed.

Temporary pavement widening: will be provided as needed to maintain one travel lane in each direction.

4.7.2 Transportation Operations Strategies

4.7.2.1 Work Zone Safety Management Strategies

Full-time traffic control supervisor (TCS): Maintaining a full-time TCS on-site will allow one person to be dedicated to traffic control and not be distracted by other construction activities. Benefits include the ability to make quick decisions and implement contingency plans, as needed.

4.7.2.2 Incident Management and Enforcement Strategies

The possibility of a minor incident increases within construction zones. Given that minor incidents can potentially evolve into a major event, an incident management plan is a helpful tool to detect and remove incidents from the highway and restore traffic capacity as quickly and safely as possible.

4.7 Work Zone Strategies Checklist

Temporary Traffic Control		√
Traffic Control Devices		
1. Temporary signs		<input checked="" type="checkbox"/>
2. Sequential arrow boards		<input type="checkbox"/>
3. Channelizing devices (tubular markers, drums)		<input checked="" type="checkbox"/>
4. Pedestrian channelizing devices (PCD)		<input checked="" type="checkbox"/>
5. Bicycle Channelization Devices (BCD)		<input checked="" type="checkbox"/>
6. Temporary pavement markings		<input checked="" type="checkbox"/>
7. Temporary traffic signals		<input checked="" type="checkbox"/>
8. Flaggers		<input checked="" type="checkbox"/>
9. Flaggers station lighting		<input checked="" type="checkbox"/>

Temporary Traffic Control		√
10. Radar speed trailers		<input type="checkbox"/>
11. Temporary barrier glare screen		<input type="checkbox"/>
12. Surface mounted tubular markers		<input type="checkbox"/>
Project Coordination Strategies		
13. Other area projects		<input checked="" type="checkbox"/>
14. Utilities		<input checked="" type="checkbox"/>
15. Right-of-Way		<input checked="" type="checkbox"/>
16. Other transportation infrastructure		<input checked="" type="checkbox"/>
Innovative Contracting Strategies		
17. Design-Build		<input type="checkbox"/>
18. A+C+D Bidding		<input type="checkbox"/>
19. Incentive / Disincentive clauses		<input type="checkbox"/>
20. Lane rental		<input type="checkbox"/>
21. Performance specifications		<input type="checkbox"/>
Innovative or Accelerated Construction Techniques		
22. Prefabricated / precast elements		<input checked="" type="checkbox"/>
23. Rapid cure materials		<input checked="" type="checkbox"/>
Traffic Control Strategies		
24. Construction phasing / staging		<input checked="" type="checkbox"/>
25. Full roadway closures / detour		<input type="checkbox"/>
26. Lane shifts or closures		<input checked="" type="checkbox"/>
27. two-way, one-lane closures		<input checked="" type="checkbox"/>
28. Ramp closures		<input type="checkbox"/>
29. Freeway-to-freeway interchange closures		<input type="checkbox"/>
30. Rolling slowdowns		<input type="checkbox"/>
31. Night work		<input checked="" type="checkbox"/>
32. Day work		<input checked="" type="checkbox"/>
33. Weekend work		<input checked="" type="checkbox"/>
34. Work hour restrictions for peak travel		<input checked="" type="checkbox"/>
35. Pedestrian accommodation		<input checked="" type="checkbox"/>
36. Bicycle accommodation		<input checked="" type="checkbox"/>
37. Business access improvements		<input checked="" type="checkbox"/>

Transportation Operations	√
Demand Management Strategies	
1. Transit service improvements	<input type="checkbox"/>
2. Transit incentives	<input type="checkbox"/>
3. Shuttle services	<input type="checkbox"/>
4. Parking supply management	<input type="checkbox"/>
5. Variable work hours	<input type="checkbox"/>
6. Telecommuting	<input type="checkbox"/>
7. Ridesharing / carpooling incentives	<input type="checkbox"/>
8. Park-and-Ride promotion	<input type="checkbox"/>
Corridor/Network Management Strategies	
9. Signal timing / coordination improvements	<input type="checkbox"/>
10. Bus turnouts	<input type="checkbox"/>
11. Turn restrictions	<input checked="" type="checkbox"/>
12. Parking restrictions	<input type="checkbox"/>
13. Truck / heavy vehicle restrictions	<input type="checkbox"/>
14. Reversible lanes	<input type="checkbox"/>
15. Dynamic lane closure system	<input type="checkbox"/>
16. Railroad crossing controls	<input type="checkbox"/>
17. Coordination with adjacent construction site(s)	<input checked="" type="checkbox"/>
Work Zone ITS Strategies	
18. Late lane merge (zipper merge)	<input type="checkbox"/>
19. Portable changeable message signs (PCMS)	<input checked="" type="checkbox"/>
20. Smart work zone system, queue detection	<input type="checkbox"/>
21. Smart work zone system, construction vehicle ingress warning	<input type="checkbox"/>
22. Smart work zone system, delay/operations information	<input checked="" type="checkbox"/>
23. Smart work zone system, wireless video monitoring	<input type="checkbox"/>
24. Real-time detour	<input type="checkbox"/>
Work Zone Safety Management Strategies	
25. Speed limit reduction	<input type="checkbox"/>
26. Temporary traffic barrier	<input type="checkbox"/>
27. Mobile barrier	<input type="checkbox"/>

Transportation Operations	√
28. Movable Barrier	<input type="checkbox"/>
29. Impact attenuators	<input type="checkbox"/>
30. Temporary transverse rumble strips	<input type="checkbox"/>
31. Intrusion alarms	<input type="checkbox"/>
32. Temporary sign supplemental warning light	<input type="checkbox"/>
33. Automated flagger assistance devices (AFADs)	<input type="checkbox"/>
34. Traffic control supervisor	<input checked="" type="checkbox"/>
35. Temporary widening	<input checked="" type="checkbox"/>
36. Road safety audits	<input type="checkbox"/>
Incident Management and Enforcement Strategies	
37. ITS for traffic monitoring/management	<input type="checkbox"/>
38. Transportation Management Center (TMC)	<input checked="" type="checkbox"/>
39. Surveillance (e.g., CCTV)	<input type="checkbox"/>
40. Helicopter for aerial surveillance	<input type="checkbox"/>
41. Traffic Screens	<input type="checkbox"/>
42. Call boxes	<input type="checkbox"/>
43. Mile-post markers	<input type="checkbox"/>
44. Tow/freeway service patrol	<input type="checkbox"/>
45. Total station units	<input type="checkbox"/>
46. Photogrammetry	<input type="checkbox"/>
47. Media coordination	<input type="checkbox"/>
48. Local detour routes	<input checked="" type="checkbox"/>
49. Contract support for Incident Management	<input type="checkbox"/>
50. Incident/Emergency management coordination	<input checked="" type="checkbox"/>
51. Incident/Emergency response plan	<input checked="" type="checkbox"/>
52. Dedicated (paid) police enforcement	<input checked="" type="checkbox"/>
53. Cooperative police enforcement	<input type="checkbox"/>
54. Automated enforcement	<input type="checkbox"/>
55. Increased penalties for work zone violations	<input type="checkbox"/>
56. Emergency pull-offs	<input type="checkbox"/>

Public Information and Outreach		√
Public Awareness Strategies		
1. Branding		<input type="checkbox"/>
2. Press kits		<input type="checkbox"/>
3. Brochures and mailers		<input checked="" type="checkbox"/>
4. Press releases / media alerts		<input checked="" type="checkbox"/>
5. Mass media (earned and/or paid)		<input type="checkbox"/>
6. Paid advertisements		<input type="checkbox"/>
7. Project Information Center		<input type="checkbox"/>
8. Telephone hotline		<input checked="" type="checkbox"/>
9. Planned lane closure website		<input checked="" type="checkbox"/>
10. Project website		<input checked="" type="checkbox"/>
11. Public meetings / hearings, workshops		<input checked="" type="checkbox"/>
12. Community task forces		<input type="checkbox"/>
13. Coordination with media/schools/business/emergency services		<input checked="" type="checkbox"/>
14. Work zone education and safety campaigns		<input type="checkbox"/>
15. Work zone safety highway signs		<input type="checkbox"/>
16. Rideshare promotions		<input type="checkbox"/>
17. Visual information		<input type="checkbox"/>
Motorist Information Strategies		
18. Radio traffic news		<input checked="" type="checkbox"/>
19. Variable message signs (VMS)		<input type="checkbox"/>
20. Temporary motorist information signs		<input type="checkbox"/>
21. Highway Advisory Radio (HAR)		<input type="checkbox"/>
22. Extinguishable Signs		<input type="checkbox"/>
23. Trip Check		<input checked="" type="checkbox"/>
24. Traveler information systems(wireless, handheld)		<input type="checkbox"/>
25. Live traffic camera(s) on a website		<input type="checkbox"/>
26. Project information hotline		<input checked="" type="checkbox"/>
27. Email alerts		<input checked="" type="checkbox"/>

5.0 Potential Work Zone Impacts

5.1 Traffic

The construction phase of the project will include several types of closures ranging from portions of shoulders to single lane operation. To minimize traffic and freight mobility impacts, construction activities requiring lane closures on SE Powell Boulevard will be scheduled during nighttime hours as much as possible. Although the project section of SE Powell Blvd is not a designated freight route, SE Powell Blvd provides freight access to and from the I-205 interchange. As a result, temporary traffic control and associated lane restrictions will be required to accommodate oversized vehicles during daylight hours (one half hour before sunrise to one half hour after sunset). Emergency vehicle access must also be provided at all times.

Construction at intersections with public side streets will be taken into consideration during construction. Some side streets are through streets and have alternate access from parallel east-west routes from the north via SE Division Street or from the south including SE Bush Street or SE Holgate Boulevard. These streets could be closed to through traffic allowing local access only. Other side streets are dead ends without alternate access requiring staged construction under traffic for two-way, one-lane with flagger control. The stage construction of the side street intersections will be coordinated with that of Powell so that the side streets affected will be on the same side as Powell mainline work.

Similarly, driveways to adjacent properties will need to be staged and constructed half-width at a time for properties without alternate access

5.1.1 Alternate Route Strategies

Running parallel to SE Powell Boulevard is SE Division Street, which has similar capacity. During night work on SE Powell Boulevard, PCMS can be placed on SE Division Street at key intersections. Doing so will notify drivers of SE Powell Boulevard construction and encourage drivers to continue using SE Division Street. Due to low traffic volumes at night, capacity issues are not anticipated on SE Division Street. A detailed detour plan sheet (EA12) is provided in Appendix X.

5.1.2 Incident Management Plan

Incident management is a planned and coordinated program that detects and removes incidents from the highway and restores traffic capacity as safely and quickly as possible. ODOT Region 1 has an incident management program in operation that is operated from the Region 1 Traffic Management and Operations Center (TMOC). Any incidents that impact traffic flow during construction will need to be coordinated with the TMOC. The Emergency Communication Plan

and Contingency Plan are two important tools for incident management that are described in the following sections.

5.1.3 Emergency Communication Plan

The Emergency Communication Plan describes how communications will occur and lists important contact information for responding to an incident. Important elements include:

- Goals and objectives of the plan
- Key contacts and their contact information
- Emergency and essential services contacts
- Definitions of emergencies and the appropriate response and communications for each type of emergency
- Roles and responsibilities of the stakeholders who execute the plan
- Maintaining an updated list of emergency contacts for use in the event of an incident will be the responsibility of the contractor. A template has been included in Appendix X to help guide the contractor in developing an Emergency Communication Plan

5.1.3.1 Contingency Plan

As a part of the Incident Management Plan, the Contingency Plan will include both traffic and contractor contingency plans. The traffic Contingency Plan addresses specific actions that will be taken to restore or minimize traffic effects when congestion or delay exceeds original estimates due to unforeseen events such as work-zone accidents, higher than predicted traffic demand, or delayed lane closures. The contractor Contingency Plan addresses activities under the contractor's control within the work zone. A guideline has been included in Appendix X to help guide the contractor (once under contract) in developing a Contingency Plan.

5.1.3.2 Mobility Communication Plan

The Mobility Communication Plan provides communication strategies for informing affected road users, the general public, and various project stakeholders about the project and changing work zone conditions. For this project, media releases will need to be coordinated with and reviewed by ODOT Region 1 staff. ODOT SPDB will address communications with the freight industry. It is recommended that all other communications not described above be disseminated by ODOT Region 1 staff. Table 2 summarizes contractor and ODOT communication responsibilities.

Table 2. Communication Responsibilities

Responsible Party	Communication Target
Contractor	ODOT Region 1
ODOT Region 1 Staff	ODOT SPDB ODOT Region 1 TMOG ODOT District 2B Multnomah County City of Portland Media General Public/Road Users Police/Fire Emergency Medical Services Schools Other Stakeholders
ODOT SPDB	Freight Industry

5.1.4 Temporary Traffic Control Design Exception

This section of the TMP provides a documentation of the temporary traffic control design exception to the ODOT Traffic Control Plans Design Guide.

5.2 Construction Traffic Control

During construction, travelers can expect:

- Short-term lane, side street, shoulder, and sidewalk closures. Side street closures for up to 20 minutes during paving operations at intersections and street closures for signal pole erection are anticipated; both of which will occur at night.
- Allowable extended nighttime lane closures with single lane flagger controlled operation can occur on US26. Bicycles will be accommodated during construction. In general, a shoulder lane in each direction or a separated pathway will be provided. There are a few locations where limited duration shared bicycle/motorized vehicle lanes will be needed.
- Pedestrian routes meeting ADA requirements will provide access to adjacent properties and will be maintained during construction.
- Emergency vehicles and mobility will be accommodated throughout the project area during construction.

- Periodic closures of transit stops as allowed by TriMet. Transit will be accommodated throughout the project area during construction.
- Strategies to reduce traffic demand within the project area include public information and outreach strategies, as well as the use of PCMS to alert drivers of ongoing and future construction activities.
- Public side street intersections and driveways will also be stage constructed under traffic, half width at a time with flagging as needed, if no alternate access is available. If alternate access is available, then public side streets will be closed to thru traffic allowing local access only.
- Closure of consecutive transit stops in the same direction is not anticipated.
- Providing the pedestrian portion of the shoulder will have priority over providing the bicycle portion of the shoulder. Pedestrians will be separated from motorized traffic with pavement markings where a separated pathway is not provided. Pedestrian channelizing devices will separate the non-motorized traffic from the adjacent parts of the work area closed to traffic. Motorized traffic will be separated from adjacent work areas closed to traffic with tubular markers. Cyclists can travel in the lane with motorized traffic when the bicycle portion of the shoulder is closed and a separated pathway is not available. When cyclists share the motorized vehicle lane, end of bike lane symbol (OBW1-9) and “Bikes on Roadway” signing will be provided.
- Site-specific TPARs and pedestrian-specific TCP will safely accommodate pedestrians at intersections during construction.

5.3 TPAR

This Temporary Pedestrian Accessible Route Plan will guide the accommodation of pedestrians during implementation of the SE Powell Boulevard Project. The plan reflects the commitment of ODOT to accommodate pedestrians, including pedestrians who are disabled, during project implementation. Additional information is provided in Appendix X.

5.4 Bicycle

A marked bike path and a pedestrian path will be maintained in both directions, with the exception of some bike lane closures of weekends and at night time. During these closures, bicyclists will be directed to share the road with other vehicles. In these cases, signage will be provided alerting travelers that the bike lane has ended, as well as signage stating, “Bikes on Roadway.”

Pedestrian routes meeting ADA requirements will provide access to adjacent properties during construction. Along this path, sections of sidewalk may be closed and pedestrians diverted to a temporary pedestrian-accessible route in the roadway shoulder.

In all cases, a barrier will be placed between the pedestrian path and any work on the same side of the road. A striped bike lane will also be maintained, similar to what you see on Powell today.

5.5 Environmental

Environmental issues are not anticipated to impact construction staging or project scheduling. Erosion control measures will include inlet protection to filter stormwater runoff and compost socks around excavated areas to prevent sediment from leaving the project area and to meet current standards.

5.6 Transit

TriMet bus routes will remain operational during construction, although bus stops within the project area may be relocated or closed temporarily. ODOT will work with TriMet to coordinate as construction gets closer. Emergency vehicles and mobility will be accommodated throughout the project area during construction. Temporary impacts to TriMet bus stops will be subject to the following special provision:

- **00220.40(g) Bus Stop Closure** - The Contractor shall coordinate with TriMet for the removal of bus shelters, benches, garbage receptacles, and signs. The Contractor shall notify, in writing, TriMet, with a copy to the Engineer, at least 14 Calendar Days before beginning Removal Work at a bus stop. The Contractor shall provide TriMet access to the bus stop locations and allow TriMet two (2) days to complete each bus shelter removal.

5.7 Freight (Project Mobility Considerations Checklist)

(The updated Project Mobility Considerations Checklist will be provided with the 90% Design submittal.)

5.8 Seasonal Restrictions

Some construction activities such as paving or pavement marking installation require relatively dry and warmer conditions. These activities typically occur during the summer months when traffic volumes are at their highest levels, which generally require off-peak or nighttime work.

Vegetation removal will be required for this project, and the Migratory Bird Treaty Act prohibits this activity during the March 1 to September 1 breeding season unless nest clearance surveys are conducted.

5.9 Construction Noise Regulations

The City of Portland permits construction noise during daytime hours of up to 85 dBA (decibels A-Weighting) at 50 feet, with exceptions for haul trucks, pile drivers, pavement breakers, scrapers, concrete saws and rock drills. Between the hours of 6:00 p.m. to 7:00 a.m. the following morning, and 7:00 a.m. Saturday to 7:00 a.m. the following Monday, and on legal holidays, construction noise must adhere to the Noise Control Ordinance, which limits construction noise to 60 dBA.

ODOT's 2011 Noise Manual has methods and procedures for abatements of highway traffic noise and construction noise. The construction noise abatement section of the manual lists methods and procedures that are typically implemented to limit the noise levels when construction takes place near noise sensitive land uses. Section 2, Section 8, Appendix B and Appendix H of the ODOT Noise Manual describes the standards and procedures for noise abatement, construction equipment noise levels and mitigation for construction noise impacts.

5.10 Rail

No rail lines are in the project limits.

PRELIMINARY
NOT FOR CONSTRUCTION

6.0 Alternative Work Zone Strategies

Construction staging was evaluated based on safety, work zone needs, and available public right-of-way. Primarily 3 alternative sections were evaluated for each phase of construction:

- **Three-Lane Section** - 3 vehicle travel lanes with shared ped/bike on shoulders
- **Two-Lane Section** - 2 vehicle travel lanes with shared ped/bike on shoulders
- **Bi-directional flagging** - Single vehicle travel lane with shared ped/bike on shoulder and managed by flaggers

The three and two-lane sections allow for daytime construction, whereas the bi-directional flagging is required to be conducted at night due to traffic demands. The feasibility of each section was assessed based on the construction activity, with the larger dimensional section being the preferred. A brief recount of work zone strategies may be seen below.

Waterline Work Zone: The construction of the waterline was first assessed with two lane section, but was determined infeasible for the majority of the corridor due to right-of-way constraints. With the work zone being located within the center of Powell Boulevard, there is insufficient room for placement of two lanes with pedestrian facilities to one side or the other. The possibility of splitting traffic to either side of the work zone was explored though ultimately dismissed as it presented safety risk. Therefore Bidirectional flagging was determined to be the preferred option.

Storm Sewer Work Zone: The bulk of the storm sewer construction takes place along either the south or north side of Powell Boulevard, allowing for two-lane traffic section to be maintained with the use of temporary pavement. However, where the waterline construction falls within the center of the roadway an evaluation determined that bi-directional flagging to be the preferred option. The use of temporary concrete barriers was explored at drywell locations, but determined to be unwarranted based short construction duration and implementation of temporary delineation.

Sidewalk and Bike Lane Work Zones: Construction zone for the sidewalk and roadside development was evaluated determined to support a three lane traffic section, provided that only one side of the roadway be constructed at a time. The bulk of the construction activities (e.g. roadside, sidewalk, and driveways) may be constructed while maintaining 3-lanes of traffic with shared pedestrian and bike facilities on either side of the road. When construction activities require additional roadway space (e.g. bike lanes & pavement), the roadway section may be narrowed to 2-lanes.

Temporary pedestrian and bicycle width provided in temporary configurations

- In progress

7.0 Referenced Work Zone Documents (not provided for 11/19/21 submittal)

- Appendix A. Construction Noise Regulations
- Appendix B. Traffic Control Plans
- Appendix C. Decision Tree Form
- Appendix D. Emergency Communication Plan
- Appendix E. Contingency Plan Guidelines
- Appendix F. Mobility Considerations Checklist
- Appendix G. Temporary Pedestrian Accessible Route Plan

PRELIMINARY
NOT FOR CONSTRUCTION

8.0 Construction Monitoring

Construction Staff, in conjunction with the Work Zone Traffic Control Designer, should monitor the work zone and if necessary make changes. Any changes to the work zone strategies, including Contractor proposed modifications, should be consistent with the decisions and commitments made during the design of the project. All changes to the Work Zone Strategies should involve the Work Zone Traffic Control Designer and should be documented in the TMP.

The changes to the project temporary traffic control may include:

- Schedule, including work that can be done during day or night.
- Traffic.
- TPAR.
- Bicycle.
- Environmental.
- ROW.
- Transit.
- Freight (Project Mobility Considerations Checklist)

8.1 Schedule

8.2 Traffic

8.3 TPAR

8.4 Bicycle

8.5 Environmental

8.6 Property Access

8.7 Transit

8.8 Freight (Project Mobility Consideration Checklist)

9.0 TMP Evaluation

The TMP should include an evaluation report upon completion of construction to document the temporary traffic control lessons learned and provide recommendations on how to improve the TMP process and/or modify guidelines.

The evaluation report should include an overall statement reflecting the usefulness, suggested improvements or changes for similar future projects, Traffic Control CCO's, and incidents related to the TMP.

For a small project, a TMP evaluation could be a discussion with the TCP designer regarding what elements of the TCP plan went well and which could be further improved.

For larger projects, an actual evaluation report should be developed. The evaluation report not only helps the designer with lesson learned, but could also help policy makers improve the overall design process.

PRELIMINARY
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