Traffic Management Plan
For
K18759: OR99E Railroad Tunnel Illumination and ITS, and
K18760: I-5 N Denver Ave NB Tunnel Illumination

Prepared for
Oregon Department of Transportation Region - 1

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1. TMP Goals

The primary purpose of the TMP is to address the construction-related traffic impacts of this project in a cost-effective and timely manner. It also serves to identify means and methods to minimize public inconvenience due to constructions activities.

This Traffic Management Plan (TMP) document will facilitate the development team’s understanding of how traffic will be managed and why these decisions were made during project development along with details behind the development of the Traffic Control Plans (TCP) and other measures that will be put in place during construction to minimize disruptions to traffic without compromising public or work zone safety. This Transportation Management Plan is a living document, subject to additions and modifications throughout the life of the project.

Goals of this Project-Level TMP include the following:

- To describe the project construction footprint.
- To aid in creating a project development team and decision-making environment that looks at options available to limit and mitigate anticipated construction impacts.
- To communicate what elements will be included in the project to mitigate for any anticipated disruptions to travelers and freight without compromising public or worker safety.

The TMP accomplishes these goals by documenting the following elements:

- Description of project area
- Description of the proposed improvements
- Summary of the transportation system characteristics near the project site
- Identification of other agency and local jurisdiction projects in the area requiring coordination
- Identification of project stakeholders
- Identification of potential traffic mobility issues during construction
- Consideration of over-sized vehicle accommodations
- Selection of Traffic management and operation strategies
- Description of construction staging and traffic control narrative
- Recommendations for managing access during construction
- Provisions for Incident Management and Mobility Communication Plans
- “Decision Tree” ODOT Form 734-5042
- Work Zone Lane Closure Restrictions (Provided by Agency)

2. Project Background

The main purposes of this project are to upgrade the illumination system at the I-5: N Denver Avenue tunnel (northbound under Highway No 01 at MP 306.86) and, to upgrade the illumination for roadway and pedestrian tunnels that pass under the OR99E Railroad at Highway
81 MP 12.6 near downtown Oregon City. In addition, the project will install a new variable message sign (VMS) south of the OR99E Railroad tunnel. The improvements are being made to improve safety and mobility at each site.

2.1. Project Area Boundaries

For the I-5: N Denver Avenue tunnel, the main area of improvements occurs within confinement of the tunnel, which is approximately 360 feet in length. Minor conduit, junction box and wiring will occur between the tunnel entrance and the service cabinet located on N Expo Road, due west of the tunnel location.

Similarly, the illumination upgrades to the OR99E: Railroad pedestrian and roadway tunnels on OR99E (McLoughlin Boulevard), that passes under the railroad, the main improvements occur within the confines of the tunnels, additional improvements in external roadway lighting occurs approximately 100 feet north of the tunnel. Installation of the VMS will extend the project limits to approximately 550 feet south of the tunnel with conduit and junction box installations occurring between the south tunnel portal and the VMS location. Both project areas are in Oregon Department of Transportation (ODOT) Region 1. Figures 1 and 2 show the project areas.

2.2. Proposed Improvements

As previously described, the main component of these projects is to upgrade the existing tunnel lighting systems to reduce maintenance and improve visibility. The system upgrades will bring the tunnel illumination systems up to current ODOT standards. The proposed improvements at each location are as follows:

- K18760 I-5: N Denver Ave NB Tunnel Illumination (roadway tunnel that passes under Highway No 01 at MP 306.86). The proposed improvement at this location include the design and implementation of an upgraded tunnel illumination system.

- K18759 OR99E Railroad Tunnel Illumination and ITS (roadway and pedestrian tunnels that pass under the railroad at Hwy 81 MP 12.6 near downtown Oregon City). The proposed improvement at this location includes: Upgrades to the existing tunnel lighting including the pedestrian tunnel, and the design and implementation of a variable message sign (VMS) with new cantilever sign structure approximately 550 feet south of the tunnel.

The upgrades to the existing transportation system will improve mobility and improve traveler safety through the tunnel area. It has the added benefit of reducing maintenance on systems that have reached the end of their life cycle. The VMS near OR99E Railroad tunnel will provide drivers with real time travel information concerning queuing that may be occurring at the OR99E (McLoughlin Blvd)/Main Street intersection.
Roadway and pedestrian tunnels that pass under the railroad at Highway 81 MP 12.6

Figure 1   Vicinity Map

= Construction Zone
Figure 2 Vicinity Map
North Denver Avenue northbound tunnel (passes under Highway No 01 at MP 306.86)
3. Project Area Characteristics

This section includes a summary of existing transportation conditions within the project areas relevant to this TMP, including traffic and roadway characteristics and location of other construction projects.

3.1. Traffic Characteristics

Annual average daily traffic (AADT) volumes along N Denver Avenue and OR99E (McLoughlin Boulevard) near the project sites were researched to better understand the volume of vehicles that would need to be accommodated during construction of each site. AADT’s are summarized in.

Table 1. Existing Traffic volumes

<table>
<thead>
<tr>
<th>Segment Name</th>
<th>Mile Point</th>
<th>2016 AADT</th>
<th>Truck Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>I-5: North Denver Avenue Northbound Tunnel</td>
<td>(-5.27 to -5.76)</td>
<td>2,800*</td>
<td>4.76*</td>
</tr>
<tr>
<td>OR99E (McLoughlin Blvd) Railroad Tunnel</td>
<td>12.58</td>
<td>23,900</td>
<td>5.27</td>
</tr>
</tbody>
</table>

* ODOT TransGIS [https://gis.odot.state.or.us/transgis/]

2015 Volumes based on information provided by ODOT Staff.

3.2. Roadway Characteristics

The functional classifications of the project area roadways are summarized in Table 2 along with each roadway’s posted speed limit.

Table 2. Project Area Roadway Functional Classification

<table>
<thead>
<tr>
<th>Roadway</th>
<th>Functional Classification (Federal functional class)</th>
<th>ODOT State Classification System (SCS)</th>
<th>National Highway system (NHS)</th>
<th>National Network (NN)</th>
</tr>
</thead>
<tbody>
<tr>
<td>N Denver Ave. South of the tunnel</td>
<td>Urban Minor Arterial</td>
<td>District</td>
<td>----</td>
<td>----</td>
</tr>
<tr>
<td>McLoughlin Blvd (OR99E)</td>
<td>Urban Principal Arterial</td>
<td>Regional</td>
<td>NHS</td>
<td>NN</td>
</tr>
</tbody>
</table>

Oregon Highway Plan and ODOT TransGIS [https://gis.odot.state.or.us/transgis/]

The North Denver Avenue northbound tunnel is a one-way single lane road with a posted speed limit of 45 MPH. No bike or pedestrian facilities are present.

OR 99E (McLoughlin Blvd) near the project vicinity is a four-lane, two-way highway with two lanes on each direction and a posted speed limit of 30 MPH (at milepost 12.74 south of the tunnel, the speed limit changes to 40 mph in the southbound direction). Sidewalks are present along the east side of OR99E north of the tunnel and along the west side of OR99E south of the
tunnel. A pedestrian tunnel runs along the east side of OR99E providing a connection to the north and south sidewalks.

4. Location of Other Construction Projects

To minimize construction impacts for traffic traversing the project areas and surrounding roadways, this project has considered other projects planned in the project areas to coordinated with. However, there are no known projects that will occur within the same timeframe as this project. The following are known projects that will occur near or at the same location with the two projects:

At OR99E Railroad Tunnel Illumination and ITS project:

- OR99E: Rockfall – Oregon City Tunnel to Old Canemah Park
  - Project Description: Rockfall mitigation
  - Proposed Construction: May 2018

At N Denver Ave NB Tunnel Illumination project:

- 17516 I-5: Interstate Bridge - Hassalo St MP302 – MP308 (I-5 from the Interstate Bridge to Moda Center).
  - Project Description: Pavement rehabilitation, ADA approved ramps, inlets and manhole adjustments and upgrading traffic control mechanisms.
  - Proposed Construction: Summer 2018 through Fall 2019.
- 19531 I-5 / I-84: Banfield Interchange Bridge Ramps Structural Overlay and Desk Seal

5. Project Stakeholders

It may become necessary to contact stakeholders in the project area during project construction regarding new developments, major incidents, unforeseen schedule changes or traffic control changes. Primary stakeholders include major road authorities, emergency facility service providers, hospital medical facility providers, other government contacts, and local utilities.

The contractor should meet with the emergency service providers prior to the beginning of construction to confirm expectations for emergency services and to coordinate communications. A list of project stakeholders is provided in Table 3.

6. Factors Impacting Construction Staging

This section summarizes the factors that will impact construction staging that includes: project schedule, proposed improvements and impacts to traffic flow, alternate routes, existing vehicle

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1 ODOT project Tracking
https://gis.odot.state.or.us/odotprojecttracking/
restrictions, Work zone lane closure restrictions, environmental issues, seasonal restrictions, and construction noise regulations.

6.1. Project Schedule

The project is tentatively scheduled to bid in July 2018. A detailed construction schedule has been created as part of the project development process and will be available from the Agency. Refinements to the schedule will continue to evolve during the design process. Additional schedule modifications are expected once a Contractor has been selected.
6.2. **Proposed Improvements and Potential Impacts to Traffic Flow**

This project includes the proposed improvements listed above in section 2.2. At the OR99E Railroad Tunnel, much of the construction work will be completed using single lane closures. Short-term full closures may be required to accommodate construction activities. This is anticipated to include placement of the VMS over the travel lanes and removal/installation of the center row of lighting within the tunnel. These closures if required will be during off peak periods at night. Alternatively, traffic control measures for this work may be multi-lane closures with flagging during off peak hours.

Full- ramp closure of the N Denver Ave. tunnel is required during the implementation stage of the proposed illumination upgrades. This full ramp closure is required due to the constrained tunnel width (single lane northbound only road).

The full-closures on both proposed sites will require detours to parallel routes, and will occur during nighttime off peak hours. The identified detour routes are included with this TMP.

6.3. **Existing Vehicle Restrictions**

Based on review of the current ODOT Motor Carrier Transportation (MCTD) Road and Bridge Restrictions website\(^2\), no roadways have existing weight, height, or width restrictions for vehicles within either of the project limits. This site will be periodically reviewed prior to bid letting. When construction starts, the construction team needs to coordinate with MCTD and obtain the most current information on vehicle restrictions that may affect the project sites.

6.4. **Work Zone Lane Closure Restrictions**

Work zone lane restriction have been evaluated by ODOT’s traffic analysis staff. The following lane restriction and special events have been provided by the agency and will be included in the special provisions.

**00220.03(a) Over-Dimensional Vehicle Restrictions** – Add the following paragraphs:

During times of anticipated over-dimensional vehicles presence, maintain a minimum usable roadway width on Pacific Highway East (OR99E, SE McLoughlin Blvd) and Pacific Highway West (OR99W, N. Denver Avenue) northbound to I-5 north as shown below, to allow for over-dimensional vehicles to pass through the work area.

<table>
<thead>
<tr>
<th></th>
<th>DAYTIME</th>
<th></th>
<th>NIGHTTIME</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>SINGLE LANE (ft)</td>
<td>TWO LANE (ft)</td>
<td></td>
</tr>
<tr>
<td>OR99E &amp; OR99W (N Denver Ave)</td>
<td>16</td>
<td>28</td>
<td></td>
</tr>
<tr>
<td>OR99E &amp; OR99W (N Denver Ave)</td>
<td>14</td>
<td>28</td>
<td></td>
</tr>
</tbody>
</table>

Anticipate daytime over-dimensional vehicles between the following sunrise and sunset periods:

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\(^2\) ODOT Motor Carrier Transportation Division, “Road and Bridge Restrictions”, reviewed as of October 31, 2017. [https://www.oregontruckingonline.com/cf/MCAD/pubMetaEntry/restrictionsList/](https://www.oregontruckingonline.com/cf/MCAD/pubMetaEntry/restrictionsList/)
• January: between 7:00 a.m. and 5:30 p.m.
• February: between 6:30 a.m. and 6:00 p.m.
• March: between 7:00 a.m. and 8:00 p.m.
• April: between 6:00 a.m. and 8:30 p.m.
• May: between 5:30 a.m. and 9:00 p.m.
• June: between 5:00 a.m. and 9:30 p.m.
• July: between 5:00 a.m. and 9:30 p.m.
• August: between 5:30 a.m. and 9:00 p.m.
• September: between 6:00 a.m. and 8:00 p.m.
• October: between 7:00 a.m. and 7:00 p.m.
• November: between 6:30 a.m. and 5:30 p.m.
• December: between 7:00 a.m. and 5:00 p.m.

00220.40(e)(1) Closed Lanes - Replace this subsection, except for the subsection number and title, with the following:

One or more traffic lanes on the Pacific Highway East (OR99E) and N. Denver Avenue (OR99W) northbound ramp to I-5 may be closed when allowed, shown, or directed during the following periods of time except as indicated in 00220.40(e)(2):

A) Pacific Highway East (OR99E) Northbound and Southbound

Single lane closures are allowed:

• Daily, Monday through Friday afternoon between 9:00 a.m. and 3:00 p.m.
• Nightly, Monday night through Friday morning between 7:00 p.m. and 6:00 a.m.
• Friday night through Saturday morning between 7:00 p.m. and 9:00 a.m.
• Saturday night through Sunday morning between 6:00 p.m. and 10:00 a.m.
• Sunday night through Monday morning between 6:00 p.m. and 6:00 a.m.

B) N. Denver Avenue (OR99W) Northbound Ramp to Pacific Highway (I-5)

Closures of the ramp are allowed:

• Nightly, Sunday night through Friday morning between 9:00 p.m. and 5:00 a.m.
• Friday night through Saturday morning between 9:00 p.m. and 7:00 a.m.
• Saturday night through Sunday morning between 10:00 p.m. and 8:00 a.m.

Do not close the ramp until all materials and equipment are on hand or guaranteed to be delivered so that the work can be done in an efficient manner with a minimum period of ramp closure.

The ramp closure will not be allowed until the area and the detour route are signed according to the TCP and the requirements of Section 00225.

00220.40(e)(2)(b) Special Events - Add the following to the end of this subsection:

The following special events will occur during this Project:

• Teddy Bear Parade - May 21, 2018, apply only to section 220.40(e)(1)A.
- Clackamas County Fair and Rodeo - August 14-18, 2018, apply only to Section 220.40(e)(1)A.
- Cruise to Historic Downtown Oregon City - September 15, 2018, apply only to section 220.40 (e)(1)A.

The Contractor shall verify the dates of the special events.

Add the following subsection:

00220.40(f) Limited Duration Road Closure on OR99E – The Contractor will be permitted to close all traffic lanes on Pacific Highway East (OR99E) in both directions for periods not to exceed 20 minutes in duration for removing or erecting the sign structures over the traffic lanes. This work will only be permitted between the hours of 10:00 p.m. and 4:30 a.m., Monday through Sunday.

Succeeding roadway closures will not be allowed until traffic clears from a preceding closure.

6.5. Seasonal Restrictions

There are no weather related seasonal restrictions for upgrading the tunnel Illumination system at either project site. However, constructing the cast in place concrete for foundation would be restricted during below freezing temperatures when installing the sign support structure that carries the VMS. Casting concrete during freezing or below freezing temperature can cause the fresh concrete to freeze before it settles and prevent it from attaining its desired strength.

6.6. Alternate Routes

Although there are planned detour routes, drivers who are familiar with the area can choose alternative routes to avoid the construction area during the full or partial tunnel closures.

The planned detour route as shown in the attached temporary traffic control for the N Denver Ave Ramp is the only alternative route there is during construction. See Appendix B.

A full roadway closure will be required of the OR99E (McLoughlin Blvd) Tunnel to facilitate removal and installation of lighting along the center of the tunnel. Up to a five consecutive night closures are anticipated. The following routes are recommended alternate routes that bypass the project area and limits traffic to arterial level streets:

Local Traffic (non-heavy vehicles)
Route all northbound traffic along S 2nd Street to N High Street. The Detour will continue east along High Street, south on 5th Street, east along Washington Street and finally north on 14th Street. Southbound traffic will be detoured at 14th Street and follow the same route as northbound traffic.
Truck Traffic
Detour truck traffic in Aurora, Oregon. Route northbound traffic via Main St and Ehlen Road to OR551. At OR551 route traffic northbound to I-5 and I-205 to the Oregon City Exit.

6.7 Environmental Issues

Lead Based Paint
A lead base paint (LBP) investigation was conducted at each tunnel location. No LBP was identified in the I-5: Denver Avenue Tunnel location samples. LBP was identified in nearly all the paint samples in the OR99E Railroad and Pedestrian Tunnels. Based on the lead concentrations and in comparison, with the past ODOT sampling of LBP, paint in the OR99E shall be disposed of as hazardous waste. If any wash water is used on the OR99E tunnels, the water shall be containerized and sampled prior to proper disposal. The contractor will be required to consider worker safety relating to lead exposure at OR99E. LBP reports are available.

Polychlorinated Biphenyls (PCB) and Mercury
All lights should be assumed to contain polychlorinated biphenyls (PCB) and mercury until they can be confirmed otherwise.

Suspect asbestos-containing material (ACM)
Old wiring insulation, shall be assumed to contain asbestos until sampling can be conducted to determine otherwise. Additionally, there may also be suspect ACM may in joint materials, packing material/gaskets, and sealants.

6.8 Construction Noise Regulations

Two jurisdictions will be impacted by this project. The basic requirements of applicable noise regulations for City of Portland and City of Oregon city are listed below.

OR99E: Railroad Tunnel Illumination and ITS
Oregon City does not require a noise variance but has the following procedures for performing work outside of normal hours. Submit a short letter requesting the ability to work outside of the normal work hours. Standard work hours are shown at the following:
https://www.orcity.org/publicworks/construction-work-hours

Include in the letter: the type of work being done, where the work will be located, the time that it will occur, why it cannot be done during standard work hours, what public outreach will be conducted about the night work you will do and a 24 hour Contact name & telephone number for noise complaints/concerns. The City will respond to the request with a letter. The request should be sent though the Senior City Engineer for routing.

I-5: N Denver Ave NB Tunnel Illumination
No noise variance is anticipated to be required at this location by the City of Portland. However, the following permitting requirements should be noted:
The City of Portland permits a construction noise standard during daytime hours 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.

7. Potential Mobility Issues

This section includes a discussion of traffic mobility issues during construction, input from the public and stakeholders, agency coordination, holidays and special events, and consideration of oversized vehicles.

7.1. Traffic Mobility during Construction

For the construction phase at the OR99E Tunnel, single lane closures, single direction detours and short term full tunnel closures (either 20 minutes or a single nighttime closure) are being considered. Single lane closures can occur during most off-peak hours, and short-term full closures with detour routes will be at night during low volume periods.

At the N Denver Avenue Northbound Tunnel, an alternate access (detour) to I-5 northbound is immediately adjacent to the project site. Full closure of the tunnel will speed up construction and is required due to the limited roadway cross-section. The full tunnel closures will occur at night during off-peak hours and a detour provided that can accommodate general traffic and annually permitted freight traffic.

7.2. Input from the Public and Stakeholders

The scope of this project, as it affects the public, is similar to freeway maintenance. Its impacts and decisions are guided primarily by technical factors and ODOT policy. The primary goals of the communication effort for this project are to inform project stakeholders, including affected property owners, tenants, and adjacent communities, of construction activities and to gather feedback on factors that will affect them. The major communication elements planned for this project will be determined by ODOT Region 1 staff.

7.3. Agency Coordination

Local agencies and other departments within ODOT need to be contacted and notified before the start of project construction to coordinate any unknown issues that may not have been identified during the design phase. Particularly close coordination with local agencies is
necessary for the planning and use of detour routes. Communication protocols are described in Section 11, and a list of known projects near the project area is included in Section 40.

7.4. **Holidays and Events**

Traffic can be impacted by holidays and local events as well as seasonal activities. Lane or ramp closures will not be allowed during holidays or special event days. The major holidays are included in the ODOT standard specifications. Local events scheduled in the project vicinity that would impact the construction schedule has been identified in Section 6.4.

7.5. **Consideration of Over-Sized Vehicles**

As mentioned on section 2.2. OR99E within the project vicinity is a federally designated truck route and is part of the National Highway System. Although N Denver Avenue is not part of the national highway system nor a federally designated truck route, it is a ramp connection to I-5 northbound which is part of the National Highway System and a designated as Freight Route. Since trucks are anticipated to be on these roads, it is essential that any temporary lane restrictions or detours can accommodate large trucks during construction at both project sites to minimize impact to the timely and dependable movement of goods.

When a project restricts the width, length, height, or weight of vehicles through a work zone or detours trucks around a work zone, the MCTD must be notified by using the web based electronic version of the "Highway Restriction Notice-Size and/or Weight" form (Form No. 734-2357) at least 35 calendar days before the restriction or detour takes effect. As soon as the restriction is lifted, notification must be sent to the same individuals on a revised copy of the original Form #734-2357 so this information can be relayed to all affected parties. No such restrictions are anticipated for either project site.

8. **Traffic Management and Operation Strategies**

To help meet the performance goals for congestion management and promote work zone safety, several types of traffic management strategies were examined for implementation. A range of common traffic management strategies is available for consideration on this project. The strategies selected are described below. It should be recognized that before selecting a strategy for application, an evaluation of the benefits provided versus the cost to implement should be conducted. Project budgets may determine which strategies can be implemented.

ODOT’s Decision Tree Matrix (Form #734-5042) has been assembled to document traffic management and operational strategies and the reasoning behind the decision for their use on the project. The Decision Tree Matrix has been included in Appendix A.

8.1. **Public Information and Outreach Strategies**

Making the public aware of the 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 periods. This will help to manage congestion within the project area. Therefore,
public information and outreach is beneficial for maintaining public support for projects, as well as for encouraging changes in travel behavior during construction.

8.2. Motorist Information/ITS Strategies

Providing motorists with real-time information helps notify drivers of upcoming work zones and may alleviate congestion and delay. Existing Intelligent Transportation Systems (ITS) and other strategies may be used to provide traveler information in the following ways:

- **Variable message sign (VMS):** Variable message signs are electronic signs that can display changing messages. Permanent Variable Message Signs (VMS) may be utilized at the discretion of Region 1 Traffic Management and Operations Center (TMOC) to notify motorists about incidents in the project area so that they can choose to detour to an alternate route if needed.

- **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 informing motorists of road construction and the possibility of delay. Ground mounted signage will be needed to alert motorists of the availability of Highway Advisory Radio information 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 ITS Website):** Including this project on ODOT’s ITS website (www.tripcheck.com) will help to inform users of construction activities. TripCheck allows motorists to retrieve real time information and weather conditions via the Internet. In addition to the Internet, motorists may also call 511 to receive this same information. ODOT also shares this information with WAZE so users of the popular application receive notifications when approaching construction zones.

8.3. Construction Strategies

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

- **Off-peak/off-seasonal/night/weekend work:** As much as possible, temporary lane or ramp closures should be undertaken during the off-peak period to avoid excessive congestion. Closures should adhere to the applicable restriction specifications.

- **Planned lane or ramp closures:** Temporary lane or ramp closures, when required, will be limited to the off-peak periods.

- **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.
• **Truck Traffic/Permit Restrictions:** Width restrictions may be required at some locations, depending on existing roadway/lane widths and required work zones. No height restrictions have been identified for this project except the existing height restriction throughout the tunnels. The proposed detour routes will not restrict most trucks. However, oversize vehicles may be rerouted by ODOT MCTD if desired. Detailed detour plans for each site are included with this TMP. See Appendix B.

• **Extended weekend closures:** Weekend closures are advantageous because of greatly reduced disruption of AM and PM peak commuters during week days. Weekend closures for the two project sites would be during nighttime hours.

• **Coordination with adjacent construction:** The coordination of this project with other projects in the area, as discussed in Section 4, will help to avoid unnecessarily compounding traveler delay.

• **Full-time traffic control supervisor (TCS):** Having a full-time TCS on-site allows 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 to implement contingency plans as needed.

### 8.4. Alternate Route Strategies

Alternative routes for motorists should be identified whenever a ramp or full roadway closure is anticipated during construction.

• **Ramp closures:** The N Denver Avenue entrance ramp tunnel will be closed during construction activities. A detour has been identified adjacent to the site and will be used to facilitate all construction activities within the tunnel.

• **Road closures:** Full closure of the McLoughlin Blvd (OR99E) tunnel will be required to facilitate certain stages of construction for the illumination upgrade and VMS installation project. A detour route along arterial level roadways (based on City of Oregon City TSP road functional classification system) for local traffic has been identified and will be coordinated with the City of Oregon City for short term full closures. For heavy and over-sized vehicles, a detour has been identified that reroutes traffic at Aurora, Oregon via OR551, I-5 an I-205.

### 9. Proposed Construction Staging

Multiple staging options were explored for both tunnel illumination upgrade projects. The options considered included a full closure of the roadways, staged construction, and temporary traffic diversions. The options considered have been documented in the ODOT’s Decision Tree Matrix (Form #734-5042) to document the staging options and the reasoning behind the decision for their use on the project. The Decision Tree Matrix has been included in Appendix A.

In general, the construction staging for the illumination upgrade will include removing the existing lights and replacing them with new lighting systems. The construction staging for the
new VMS support structures will include construction of new sign support footings, erecting the new sign support, and installation of the VMS.

The following outlines the preferred construction staging option for both the N Denver Avenue Northbound Tunnel and OR99E Railroad Tunnel project locations. Staging has been developed to accommodate heavy vehicles at both locations. Complete plans for the construction has been included in Appendix B.

9.1. I-5: N Denver Avenue NB Tunnel Illumination

Concept
Fully close the northbound ramp to all traffic during work periods. Reopen during non-work hours if lighting is present.

Detour
Route all northbound N Interstate Avenue vehicles to N Victory Boulevard and east to the intersection of N Victory Boulevard/I-5 NB Ramps/N Whitaker Road. At the intersection, eastbound vehicles can turn left to access I-5 northbound. No geometric constraints have been identified. Signal timing should be evaluated.

Pedestrians and Bicycle Accommodations
No bike or pedestrian accommodations exist for the Denver Tunnel and none will be provided during construction. Bikes utilizing N Interstate Avenue will be detoured along the same route as vehicular traffic.

9.2. OR99E: Railroad Tunnel Illumination and ITS

Concept
Provide three stages of construction that will allow for modification to the tunnel illumination along the southbound lanes, northbound lanes (including construction activities associated with the VMS, and along the centerline of the tunnel. Extended temporary traffic control needs to be put into place to accommodate curvature in the roadway north of the tunnel and due to constrained right-of-way.

Lane widths through the tunnel will be no less than 15 feet. Two travel lanes, one in each direction will be provided which will allow for a 12-foot work zone (total width of 42 feet). Adjustments in cones to allow for 16-foot travel lanes can be provided to accommodate WB-67 vehicles as required.

Stage 1: Close the curbside northbound lane south of the VMS location. Construct VMS footing and modify vehicle tunnel illumination. Reopen all lanes during non-work hours. Reduced lane closure lengths can be provided to accommodate the VMS footing construction should it take longer than the illumination modifications within the tunnel.

Stage 2: Close the southbound curbside travel lane through the tunnel area to replace tunnel illumination along the southbound lanes. No construction activities on the VMS structure should be conducted under this stage.
Stage 3: This stage will consist of a detour and closes the northbound and southbound approach to the tunnel. The southbound approach will be closed at Main Street and northbound at S 2nd Street. This closure allows the centerline lighting to be removed/installed and any additional work that requires a full closure to be conducted.

Detour
Local Traffic (non-heavy vehicles)
Route all northbound traffic along S 2nd Street to N High Street. The Detour will continue east along High Street, south on 5th Street, east along Washington Street and finally north on 14th Street. Southbound traffic will be detoured at 14th Street and follow the same route as northbound traffic. This route keeps traffic on minor arterial roadway or higher. No geometric constraints have been identified, but further review will be conducted at Advanced Plans.

Truck Traffic
Detour truck traffic in Aurora, Oregon. Route northbound traffic via Main St and Ehlen Road to OR551. At OR551 route traffic northbound to I-5 and I-205 to the Oregon City Exit.

Pedestrians and Bicycle Accommodations
For the OR99E Railroad Tunnel, pedestrian and bike traffic will be unaffected by the tunnel and VMS construction activities. The exception to this is during modification to the pedestrian tunnel illumination. It is anticipated during work periods in the pedestrian tunnel, pedestrian and bike traffic can be staged at each portal and walked through the tunnel as needed. The construction activities anticipated in the pedestrian tunnel are surface mounted conduits and luminaires. No work is anticipated to the walking surface or overhead.

10. 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 that is operated from the Region 1 Traffic Management and Operations Center (TMOC). Any incidents that impact traffic flow during construction should be coordinated with the TMOC for State owned and maintained roadways. For City owned and maintained roadways, coordination should be through the City of Oregon City and City of Portland public work offices (depending on project site). The Emergency Communication Plan and Contingency Plan are two important tools for incident management, described in the following sections.

10.1. Emergency Communications Plan

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

- Plan goals and objectives
- Key Contacts
- Emergency Services Contacts
- Emergency response and communications procedures
• Roles and responsibilities of those executing the plan

Maintaining an updated list of emergency contacts for use in the event of an incident shall be the responsibility of the contractor.

10.2. Contingency Plan

The Contingency Plan includes both traffic and contractor contingency plans. The traffic contingency plan addresses specific actions that will be taken to restore or minimize effects on traffic due to excessive delays and congestions. This can be due to:

• Accidents
• Unforeseen work-zone events
• Higher than anticipated traffic demand
• Delays in initiating lane restrictions
• Delay in removing lane restrictions
• Other unforeseen events.

The contractor contingency plan addresses activities under the contractor’s control in the work zone.

11. Mobility Communication Plan

The Mobility Communication Plan provides communication strategies for informing affected road users, the public and various project stakeholders about the project and changing work zone conditions. Communication with the regional agencies, local agencies, the freight industry and public stakeholders about the project and changing work zone conditions are critical to the success of traffic mobility on project area. For this project, media releases will be coordinated and distributed by ODOT Region 1 staff. ODOT MCTD will be responsible for communications with the freight industry. It is recommended that all other communications not described above be disseminated by ODOT Region 1 staff. See Table 4 for the communications strategy for this project.

Table 4. Communication Strategy

<table>
<thead>
<tr>
<th>Responsible Party</th>
<th>Communication Target</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contractor</td>
<td>ODOT Region 1</td>
</tr>
<tr>
<td>ODOT Region 1 Staff</td>
<td>Multnomah and Clackamas county</td>
</tr>
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<td></td>
<td>City of Portland and City of Oregon City</td>
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<tr>
<td></td>
<td>The Media</td>
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<td></td>
<td>General Public / Road users</td>
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<td></td>
<td>Local agencies</td>
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<td></td>
<td>Police/ Fire</td>
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<td></td>
<td>Emergency medical services</td>
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<td></td>
<td>Schools</td>
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<tr>
<td></td>
<td>Other stakeholders not assigned to other parties</td>
</tr>
<tr>
<td>ODOT MCTD</td>
<td>Freight industry</td>
</tr>
</tbody>
</table>
Appendix A

Decision Tree Matrix
## Opportunities to Evaluate

### Phase

<table>
<thead>
<tr>
<th>Opportunities to Evaluate</th>
<th>Phase</th>
<th>Possible / Viable</th>
<th>Impacts</th>
<th>Stakeholders &amp; Input</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Road closure (full closure, directional closure)</td>
<td>1</td>
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<tr>
<td></td>
<td>2</td>
<td>Full or directional closures are possible for both project sites. Alternative routes are present.</td>
<td>-Operational capacity of Intersections and corridors along alternative routes may not be sufficient to support an increase in vehicles traffic. -Pavement conditions and cross-sections along alternative routes may not be sufficient to support an increase in heavy vehicles. -Residents along the detour and alternative routes will experience increases in traffic volume. -Heavy vehicles can be detoured along route outside of residential areas.</td>
<td>-ODOT Mobility -City Of Oregon City Public works -TriMet -Oregon State Police -Clackamas County -Emergency response team -Oregon Truck Association -Local businesses and residents</td>
<td>(R) It is recommended that a full closure option should be considered to facilitate replacement of center row of lights within the OR99E Railroad Tunnel.</td>
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<tr>
<td>Crossover/on-site diversion</td>
<td>1</td>
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<tr>
<td></td>
<td>2</td>
<td>Not Possible.</td>
<td>-Constrained Right-of-Way. No Parallel facility for crossover/ on-site diversion.</td>
<td>-ODOT Mobility -City of Oregon City Public works</td>
<td>(R) Crossover/on-sited diversion is not Feasible at this project sites.</td>
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<td></td>
<td>3</td>
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<tr>
<td>Rigid barrier (concrete, steel, temporary guardrail)</td>
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<td></td>
<td>2</td>
<td>Use of rigid barrier is possible. However, short duration of project does not make this a viable option.</td>
<td>-Increase in project cost -Increase in schedule</td>
<td>-ODOT Mobility -City of Oregon City Public works</td>
<td>(R) Due to short duration and presence of adequate traffic control plan to regulate traffic flow, rigid barrier is not recommended.</td>
</tr>
</tbody>
</table>

- Increase in project cost
- Increase in schedule
| Work at night |  
|---|---|---|
| **1** | Night Work is possible | -Reduce impact to Traffic  
-May reduce safety due to night work, if appropriate temporary lighting is provided  
-Requires on sit Work zone Lighting  
-Increase noise levels for residents  
-ODOT Mobility  
-City of Oregon City Public works  
-Local Business and residence  |
| **2** | | (R) Night work is recommended to reduce impact to traffic operations and freight mobility during the day.  
(R) City of Oregon City Public works  
(R) Local Business and residence |

| Staged construction with temporary widening |  
|---|---|---|
| **1** | Any sort of widening is not possible at this site due to width constraints on the tunnel approaches. Railroad truck on west side and a cliff on east side limits the width of that road segment. | (R) Temporary widening is not feasible.  
(R) Recommended at OR99E Railroad Tunnel- due to the size and duration of the project site, this option allows for short schedules, quick changes in construction staging, allows the roadway to be opened back to four lane during no construction periods.  
(R) Oregon State Police short schedules, quick changes in construction staging, allows the roadway to be opened back to four lane during no construction periods.  
(R) Oregon Truck Association short schedules, quick changes in construction staging, allows the roadway to be opened back to four lane during no construction periods.  
(R) TriMet short schedules, quick changes in construction staging, allows the roadway to be opened back to four lane during no construction periods.  
(R) Oregon State Police short schedules, quick changes in construction staging, allows the roadway to be opened back to four lane during no construction periods.  
(R) Oregon Truck Association short schedules, quick changes in construction staging, allows the roadway to be opened back to four lane during no construction periods.  
(R) TriMet short schedules, quick changes in construction staging, allows the roadway to be opened back to four lane during no construction periods.  
(R) Oregon State Police short schedules, quick changes in construction staging, allows the roadway to be opened back to four lane during no construction periods.  
(R) Oregon Truck Association short schedules, quick changes in construction staging, allows the roadway to be opened back to four lane during no construction periods. |

| Standard lane closures with channelizing devices |  
|---|---|---|
| **1** | This is a viable option | -Minimizes construction cost  
-Provides sufficient space to accommodate heavy vehicles and provides adequate work zone space.  
-Channelizing devices and construction area can easily be removed and implemented to allow four lanes of travel during none work periods.  
-ODOT mobility  
-City of Oregon City Public works  
-TriMet  
-Oregon State Police  
-Clackamas County Sheriff  
-Emergency response team  
-Oregon Truck Association  |
| **2** | | (R) Recommended at OR99E Railroad Tunnel- due to the size and duration of the project site, this option allows for short schedules, quick changes in construction staging, allows the roadway to be opened back to four lane during no construction periods.  
(R) Oregon State Police short schedules, quick changes in construction staging, allows the roadway to be opened back to four lane during no construction periods.  
(R) Oregon Truck Association short schedules, quick changes in construction staging, allows the roadway to be opened back to four lane during no construction periods.  
(R) TriMet short schedules, quick changes in construction staging, allows the roadway to be opened back to four lane during no construction periods.  
(R) Oregon State Police short schedules, quick changes in construction staging, allows the roadway to be opened back to four lane during no construction periods.  
(R) Oregon Truck Association short schedules, quick changes in construction staging, allows the roadway to be opened back to four lane during no construction periods.  
(R) TriMet short schedules, quick changes in construction staging, allows the roadway to be opened back to four lane during no construction periods.  
(R) Oregon State Police short schedules, quick changes in construction staging, allows the roadway to be opened back to four lane during no construction periods. |

| Law enforcement overtime |  
|---|---|---|
| **1** | Possible but not viable - such construction activities do nor require law enforcement. | - Increased construction cost  
(R) Site conditions and nature of the construction activity do not require law enforcement to facilitate.  
(R) Oregon State Police site conditions and nature of the construction activity do not require law enforcement to facilitate.  
(R) Oregon Truck Association site conditions and nature of the construction activity do not require law enforcement to facilitate.  
(R) TriMet site conditions and nature of the construction activity do not require law enforcement to facilitate. |
| **2** | | (R) Not recommended due to short durations of construction time.  
(R) Accelerated contracting is not recommended. Schedule is not constrained.  
(R) Oregon State Police Accelerated contracting is not recommended. Schedule is not constrained. |

| Accelerated contracting strategies |  
|---|---|---|
| **1** | Possible, but not necessary, construction schedule is not constrained. | (R) Accelerated contracting is not recommended. Schedule is not constrained.  
(R) Oregon State Police Accelerated contracting is not recommended. Schedule is not constrained. |

| Accelerated construction strategies |  
|---|---|---|
| **1** | | |
| 3 | Automated Flagger Assistance Devices (AFAD) | 1 |
| 2 | Not Viable | (R) Not recommended. Single lane will not be used for two way traffic. |
| 3 |  |

| 3 | Temporary Transverse Rumble Strips (TTRS) | 1 |
| 2 | Not Viable | (R) Not recommended due to short durations of construction. |
| 3 |  |

| 3 | Radar speed trailers | 1 |
| 2 | A Possible option, if speeds through work zone are excessive and are not controlled through means. | - May reduce speed through work zone - Increase cost - ODOT Mobility - City of Oregon City | (R) Recommended as a countermeasure along OR99E Railroad Tunnel. |
| 3 |  |

| 3 | Construction Speed Zone Reductions | 1 |
| 2 | Possible | - May reduce speed through work zone - ODOT Mobility - City of Oregon City | (R) A speed zone reduction is not recommended unless speed is found to be a factor through the work zone. The current speed limit along this road is 30 MPH. |
| 3 |  |

| 3 | Increased lateral buffer space | 1 |
| 2 | Not possible at OR99E Railroad Tunnel. Tunnel width constraints. | (R) If possible, provide additional buffer space. This is not likely a solution due to heavy vehicle off-tracking through the tunnel that requires additional space to avoid impacting tunnel walls. |
| 3 |  |

<p>| 3 | Public information campaigns | 1 |</p>
<table>
<thead>
<tr>
<th></th>
<th>Possible and viable option.</th>
<th>- Increases Public awareness - Allows informed motorist to plan alternative routes or avoid rush-hour reducing congestion.</th>
<th>- ODOT Mobility and Public relations - City of Oregon City Public works - Clackamas County</th>
<th>(R) Recommended to follow standard ODOT Public information campaign methods. Providing web base information at public meetings, special events, and notify local stakeholders.</th>
</tr>
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<tbody>
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<td>2</td>
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</tbody>
</table>

**Other: Accelerated Construction Strategies**

<table>
<thead>
<tr>
<th></th>
<th>Possible, but not necessary, construction schedule is not constrained.</th>
<th></th>
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<tbody>
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<tr>
<td>Opportunities to Evaluate</td>
<td>Phase</td>
<td>Possible / Viable</td>
<td>Impacts</td>
<td>Stakeholders &amp; Input</td>
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<tr>
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</tr>
<tr>
<td>Road closure (full closure, directional closure)</td>
<td>1</td>
<td></td>
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</tr>
<tr>
<td>Full closure of the N Denver Ave Tunnel is required throughout the active construction period.</td>
<td>2</td>
<td></td>
<td>-Detour routes traffic to adjacent intersection.</td>
<td>-ODOT Mobility -TriMet -Ctran -Oregon State Police -Multnomah County -City of Portland -Portland Police Bureau -Emergency response team -Oregon Truck Association -Local businesses and residents</td>
</tr>
<tr>
<td>Crossover/on-site diversion</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not Possible.</td>
<td>2</td>
<td></td>
<td>- Constrained Right-of-Way. No Parallel facility for crossover/on-site diversion.</td>
<td>-ODOT Mobility -Multnomah County -City of Portland</td>
</tr>
<tr>
<td>Rigid barrier (concrete, steel, temporary guardrail)</td>
<td>1</td>
<td></td>
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</tr>
<tr>
<td>Rigid barrier is not viable due to roadway width constraints within the tunnel.</td>
<td>2</td>
<td></td>
<td>-ODOT Mobility -Multnomah County -City of Portland</td>
<td>(R) Not recommended due to constrained ROW within tunnel.</td>
</tr>
<tr>
<td>Work at night</td>
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<tr>
<td>2</td>
<td>Night Work is possible and a viable option at this site.</td>
<td>-Reduce impact to traffic operations -Requires on sit Work zone Lighting -May reduce safety due to night work</td>
<td>ODOT Mobility -Multnomah County -City of Portland -Local Business and residence</td>
<td>(R) Night work is recommended due to the lesser impact it imposes to Traffic operations compared to day time construction work.</td>
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<td>3</td>
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<tr>
<td></td>
<td>Staged construction with temporary widening</td>
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<td>1</td>
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<tr>
<td>2</td>
<td>Not Feasible. The freeway and Freeway entrance ramp limits the width of the tunnel and its approach.</td>
<td></td>
<td>(R) Temporary widening is not a feasible option at this site. During active construction periods, the Tunnel is anticipated to be closed and the entire width of the tunnel can be utilized for construction activities.</td>
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<td>3</td>
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<tr>
<td></td>
<td>Standard lane closures with channelizing devices</td>
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<td></td>
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<tr>
<td>2</td>
<td>Not possible at this site due to constrained width of tunnel</td>
<td></td>
<td>(R) Not Recommended at this location due to the geometry of the road. N Denver Ave Northbound Tunnel is a single lane one way road/ramp.</td>
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<tr>
<td></td>
<td>Law enforcement overtime</td>
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<td>1</td>
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<td></td>
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</tr>
<tr>
<td>2</td>
<td>Not Viable - such construction activities do not require law enforcement.</td>
<td>- increased construction cost</td>
<td>(R) Site conditions and nature of the construction activity do not require law enforcement to facilitate.</td>
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<tr>
<td></td>
<td>Smart Work Zone System/Work Zone ITS</td>
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<tr>
<td>2</td>
<td>Not a Viable option</td>
<td>-Increased construction cost</td>
<td>(R) Not recommended at this project site, due to short duration of construction time.</td>
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<tr>
<td></td>
<td>Accelerated contracting strategies</td>
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<tr>
<td>1</td>
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<td></td>
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</tr>
<tr>
<td>2</td>
<td>Possible, but not necessary, construction schedule is not constrained.</td>
<td></td>
<td>(R) Accelerated contracting is not recommended. Schedule is not constrained.</td>
<td></td>
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<td>3</td>
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<tr>
<td></td>
<td>Accelerated construction strategies</td>
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<tr>
<td>2</td>
<td>See &quot;Others&quot; Section for Comments</td>
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<td>3</td>
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<tr>
<td></td>
<td>Automated Flagger Assistance Devices (AFAD)</td>
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<td></td>
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<td></td>
<td>(R) Not recommended. single lane will not be used for two way traffic on either site. The tunnel and the tunnel approach will completely be closed during active construction period.</td>
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<tr>
<td>2</td>
<td>Not Viable and not necessary. Full closure is being recommended</td>
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</tbody>
</table>

**Temporary Transverse Rumble Strips (TTRS)**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th>(R) Not recommended due to short duration of construction.</th>
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<tbody>
<tr>
<td>1</td>
<td></td>
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</tr>
<tr>
<td>2</td>
<td>Not Viable</td>
<td></td>
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<td>3</td>
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</tr>
</tbody>
</table>

**Radar speed trailers**

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th>(R) Not recommended along N Denver Ave Northbound tunnel since the tunnel will completely be closed during construction. The posted speed limits along the alternative routes should be enough to regulate vehicle speed.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Possible but not Viable.</td>
<td>-Increase cost</td>
<td>-ODOT Mobility -City of Portland -Multnomah County</td>
</tr>
<tr>
<td>3</td>
<td></td>
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</tbody>
</table>

**Construction Speed Zone Reductions**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th>(R) Construction Speed Zone Reduction is not recommended since N Denver Ave Northbound Tunnel will completely be closed during construction.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Not a viable option. N Denver Ave Northbound tunnel will be closed during construction.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
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</tr>
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</table>

**Increased lateral buffer space**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th>(R) For N Denver Ave Northbound tunnel, the complete lateral width is available for construction activities since the tunnel will completely be closed during construction.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Not Feasible.</td>
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</tbody>
</table>

**Public information campaigns**

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
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<tbody>
<tr>
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<td></td>
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</tr>
</tbody>
</table>
| 2 | Possible and a viable option. | - Increases Public awareness  
- Allows informed motorist to plan alternative routes or avoid rush-hour reducing congestion. | - ODOT Mobility and Public relations  
- City of Portland  
- Multnomah County | (R) Recommended to follow standard ODOT Public information campaign methods. Providing web base information, attend public meetings and special events; and notify local stakeholders. |
| 3 |   |   |   |   |

**Other: Accelerated Construction Strategies**

<p>| | | | | |</p>
<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>1</td>
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<td></td>
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</tr>
<tr>
<td>2</td>
<td>Possible, but not necessary, construction schedule is not constrained.</td>
<td></td>
<td></td>
<td>(R) Accelerated construction is not recommended. Schedule is not constrained.</td>
</tr>
<tr>
<td>3</td>
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<tr>
<td>4</td>
<td></td>
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</tr>
</tbody>
</table>

ADD ANOTHER ITEM
Appendix B
Traffic Control Plans
NORTHBOUND N DENVER AVE TUNNEL DETOUR

LEGEND

- Work Zone
- Detour Route
- Temporary sign on TSS
- Type III barricade

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FULL TUNNEL CLOSURE
LOCAL (OTHER THAN TRUCK TRAFFIC) DETOUR PLAN
STAGE III

GENERAL NOTES:
1. To be used for nighttime closure of OR99E Railroad Tunnel. See EA01 for heavy and oversized vehicle detour.
2. Pedestrian route along OR99E at Railroad Tunnel to remain open during Stage 3 Construction.

LEGEND

<table>
<thead>
<tr>
<th>Color</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>Green</td>
<td>Detour Route A8</td>
</tr>
<tr>
<td>Blue</td>
<td>Detour Route AN</td>
</tr>
<tr>
<td>Purple</td>
<td>Type III barricade</td>
</tr>
<tr>
<td>Red</td>
<td>Temporary sign on TSS</td>
</tr>
<tr>
<td>Yellow</td>
<td>Work Zone</td>
</tr>
</tbody>
</table>

CLOSED WORK ZONE:
- M4-8 24"x12"
- M3-1 24"x12"
- M3-3 24"x12"
- M4-1 30"x24"
- M5-2 21"x15"
- M6-1R 21"x15"
- M6-1L 21"x15"
- W29-1 48"x48"
- W2-2 48"x48"

ROAD CLOSURES:
- R11-2 33"x20" Type "W1"
- M4-106 48"x18"
- M4-108 48"x18"
- M4-109 48"x18"
- M4-110 48"x18"
- M9-3 30"x100"

DETOUR PLAN:
- DETOUR ROUTE NB
- DETOUR ROUTE SB

NOTES:
- M. Leal
- D. Beckwith
- 227 SW Five Street
- Suite 350
- Portland, OR 97204
- 503.776.7907

DESIGNED: M. Leal
REVIEW: D. Beckwith

GLOBAL TRANSPORTATION ENGINEERING
PACIFIC HIGHWAY & PACIFIC HIGHWAY EAST
CLACKAMAS & MULTNOMAH COUNTIES

DATE: 11/30/2018
FORMAT: PDF

MARCH 31, 2019
FULL TUNNEL CLOSURE
HEAVY AND OVER SIZED VEHICLE DETOUR PLAN
STAGE III

SIGNING TO BE
ADDED AFTER DAP.

GENERAL NOTES:
1. To be used for nighttime closure of OR99E Railroad Tunnel. See EA02 for local detour.

LEGEND
Detour Route
Work Zone

1. To be used for nighttime closure of OR99E Railroad Tunnel. See EA02 for local detour.
ACCESSIBLE PEDESTRIAN ROUTE AND STAGING PLAN
STAGE I
(NIGHT WORK ONLY)

SECTION A - A
Not To Scale

LEGEND

- Under Construction
- Under Traffic
- Temporary plastic drums on 20' max. spacing
- Temporary 28" tubular markers on 20' max. spacing
- Type III barricade
- Temporary sign on TSS
- Temporary sign on temporary sign support
- Accessible pedestrian route

GENERAL NOTES:
1. Night work traffic control configuration.
2. Contractor to provide guidance through pedestrian tunnel during active work times.

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ACCESSIBLE PEDESTRIAN ROUTE AND STAGING PLAN
STAGE II
(NIGHT WORK ONLY)

SECTION A - A

GENERAL NOTES:
1. Night work traffic control configuration.
2. Pedestrian route along OR99E at Railroad Tunnel to remain open during Stage 3 Construction

LEGEND
Under Traffic
Temporary plastic drums on 20' max. spacing
Temporary 28" tubular markers on 20' max. spacing
Temporary sign on TSS
Type III barricade
Temporary sign on temporary sign support
Sequential arrow sign
Accessible pedestrian route

GENERAL NOTES:
1. Night work traffic control configuration.
2. Pedestrian route along OR99E at Railroad Tunnel to remain open during Stage 3 Construction

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Under Traffic
Temporary plastic drums on 20' max. spacing
Temporary 28" tubular markers on 20' max. spacing
Temporary sign on TSS
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Sequential arrow sign
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