Final Design Acceptance Package (DAP)

ODOT | K19786 Stafford Road to OR 213

Combined I-205 Freeway Widening and Abernethy Bridge Project

ODOT EA: C6035200
HDR Project #10063137

September 6, 2018

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Acronyms

ADA	Americans with Disabilities Act
AASHTO	American Association of State Highway and Transportation Officials
ATM	Active Traffic Management
BVC	best value contracting
BT	Bulb-T
Cat Ex	Categorical Exclusion
CE	Construction Engineering
CIA	contributing impervious area
Consultant	HDR Engineering, Inc. and subconsultant partners
County	Multnomah County, Oregon or Washington County, Oregon
CRCP	continuously reinforced concrete pavement
CTC	Cost-to-Complete
DBB	Design-Bid Build delivery method
DAP	Design Acceptance Package
EUAC	Equivalent Uniform Annual Cost
FAHP	Federal-Aid Highway Program Programmatic Endangered Species Act Consultation
FHWA	Federal Highway Administration
Hwy	Highway
I-205	Interstate 205
ITS	intelligent transport systems
LED	light-emitting diode
LCCA	life cycle cost analysis
M	million(s)
MP	milepost
MSE	Mechanically stabilized earth
MUTCD	Manual on Uniform Traffic Control Devices
NMFS	National Marine Fisheries Service
NB	northbound
NEPA	National Environmental Policy Act
ODOT	Oregon Department of Transportation
OTC	Oregon Transportation Commission
OR	Oregon Route
PE	Preliminary Engineering
Project	I-205: Stafford Road to OR 213 or the combined Interstate 205 Abernethy Bridge and Interstate 205 Freeway Widening Projects
Project Team	ODOT and HDR Engineering, Inc. and subconsultant partners
PS&E	Plans, Specifications, and Estimate
RCBG	reinforced concrete box girder
RCDG	reinforced concrete deck girder
ROW	right-of-way
SB	southbound
SPIS	Safety Priority Index System
VAS	variable advisory speed signs
VMS	variable message signs

Official Oregon Department of Transportation Interchange Names for Intersections with Interstate 205

Within the Design Acceptance Package, interchanges may be referred to using the following common pseudonyms, defined by the road that intersects with Interstate 205.

Interstate 205 Interchange Pseudonyms	Official Intersection Name
Stafford Road Interchange	Wankers Corner Interchange
10th Street Interchange	South West Linn Interchange
OR 43 Interchange	West Linn Interchange
OR 99E Interchange	Oregon City Interchange
OR 213 Interchange	Park Place Interchange

Purpose of this Final Design Acceptance Package (DAP) Report

With the passage of House Bill 2017 *Keep Oregon Moving*, the Oregon Legislature made a significant investment in transportation to help further Oregonians' values: a vibrant economy with good jobs, strong communities with a good quality of life, a clean environment, and safe, healthy people. This is a historic, once-in-a-generation investment in Oregon's transportation system that will pay dividends for decades to come.

A key tenet of the bill is that the Oregon Department of Transportation (ODOT) will effectively deliver programs and projects in an accountable, transparent, and efficient manner. With this goal in mind, the Oregon Legislature mandated the Oregon Transportation Commission (OTC) and ODOT conduct a study and make a report on its findings for the cost to complete the combined Interstate 205 (I-205) Abernethy Bridge and I-205 Freeway Widening Projects (Project). The pertinent provision extracted from the bill is as follows:

Figure 1. Section 27c of House Bill 2017

SECTION 27c. The Oregon Transportation Commission shall conduct a study and make a report on its findings to the Joint Committee on Transportation established under section 26 of this 2017 Act and to the appropriate fiscal and policy committees or interim committees of the Legislative Assembly as follows:

(1) No later than February 1, 2018, the costs to complete the Interstate 205 Abernethy Bridge Project and the Interstate 205 Freeway Widening Project.

In accordance with this mandate, the OTC submitted the Cost-to-Complete (CTC) Report to the Oregon Legislature on February 1, 2018 and conducted a presentation of it to the House Subcommittee on Transportation later that month.

The CTC Report provided the plan for how ODOT would deliver the Project in an accountable, transparent, and efficient manner. The CTC Report, which was based on a 15 percent level of design, provided the Project's scope and benefits, a recommended Project phasing plan and delivery method, and future steps for the OTC and the Oregon Legislature to consider.

This Final Design Acceptance Package (DAP) utilized the recommendations in the CTC Report as its basis and progressed the design to approximately a 30 percent level. Per ODOT's 2017 Project Delivery Guidebook, the DAP is a critical decision point that establishes the geometric boundaries of a project footprint and allows for the concurrent right–of-way, permitting and construction contract document activities to move forward. Design Acceptance also considers the Americans with Disabilities Act (ADA), environmental and land use requirements and how they affect the permitting, and development of construction contract documents. Design Acceptance requires that all project disciplines have reviewed the design for balance of context with standards and policies; this occurs when the project obtains management signatures.

Final DAP Executive Summary

This Final DAP utilizes the recommendations from the CTC Report and progresses the design to approximately a 30 percent level. Table 1 lists the various Project features within the Final DAP and, when applicable, provides the rationale for why the feature changed from the CTC Report.

Table 1. Final DAP versus CTC Report Comparison Table

Project Feature	CTC Report	Final DAP	Change
I. Project Scope			
Package A	Abernethy Bridge; OR 43 and OR 99E interchanges; Northbound (NB) auxiliary lane to OR 213	Abernethy Bridge; OR 43 and OR 99E interchanges; NB auxiliary lane to OR 213	No change
Package B	I-205 widening from Abernethy Bridge to Stafford Road	I-205 widening from Abernethy Bridge to Stafford Road	No Change
Package C	Stand-alone active traffic management (ATM) installations	Stand-alone ATM installations	No change
II. Project Schedule			
Overall Construction Completion	All construction complete by 2025	All construction complete by 2025	No change
Package A Bid Date	December 2019	November 2020	Adjusted to allow for right-of-way (ROW) budgeting and 18-month process
Package A End of Construction Date	June 2024	December 2024	Change allows work in 2024 in-water work window (if required)
Package B Bid Date	March 2020	February 2021	Adjusted to allow for ROW budgeting and 18-month process
Package B End of Construction Date	December 2024	December 2024	No change
Package C Bid Date	September 2019	September 2019	No change
Package C End of Construction Date	October 2020	October 2020	No change
III. Project Cost			

Project Feature	CTC Report	Final DAP	Change
Overall Project Cost	$500 Million (M)	$513.1 M	$13.1 M increase due to construction estimate and ROW increases
Planning + Preliminary Engineering (PE)	$45.0 M	$45.0 M	No change
Construction + Other + Construction Engineering (CE)	$450.5 M	$464.1 M	Increased due to design refinement of unit cost changes, such as steel material cost increases, more sound walls, and more continuously reinforced concrete pavement (CRCP) volumes
ROW Acquisition	$1.4 M	$2.5 M	Increased for additional ROW
Utility Relocation	$2.7 M	$1.5 M	Decreased due to design refinement. Impact to the submarine cable is likely avoidable.

Project Scope

The Project Team has advanced and refined the Project design to a 25 percent level. The five elements of the Project's scope are illustrated in Appendix A, "Proposed Solutions," and are explained below. Final DAP-level Plans are provided in Appendix B and a list of anticipated Project Specifications (including Unique Specifications) are provided in Appendix C.

1. Seismic Upgrades: The Project upgrades the Abernethy Bridge and the eight other I-205 bridge sites in the Project area to withstand a major earthquake. ODOT designated I-205 as a statewide north-south lifeline route, which means it must be operational quickly after a disaster renders other roadways unusable or impassable. This critical route will provide supplies and services to the region.
2. I-205 Widening: The Project adds a third lane in each direction on the seven-mile stretch of I-205 between the Stafford Road and OR 99E Interchanges. It also adds a NB auxiliary lane ("entrance-to-exit") between the OR 99E and OR 213 Interchanges. Widening I-205 requires rock blasting in order to remove rock from the rock slope located in West Linn adjacent to the I-205 NB direction between the Sunset Avenue overcrossing and just south of the OR 43 Interchange. The Project Team has conducted refined noise, vibration, and traffic staging studies to determine the exact impacts of the blasting, the extent of noise mitigation measures (such as noise walls), and the duration of work anticipated. The Final DAP cost estimate assumes noise walls sites based on a preliminary noise analyses, but the final decision for their locations has not been

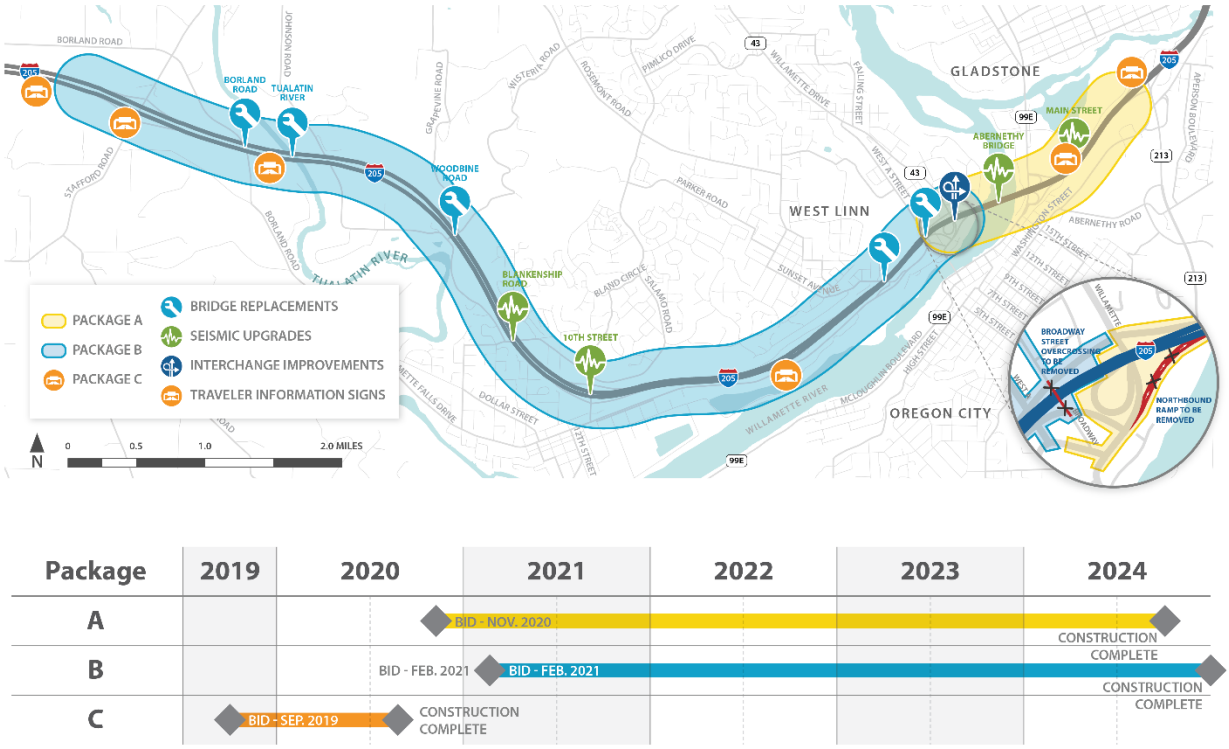
made. This decision is expected before the Final DAP is submitted in September 2018.

3. Bridge Replacements: Widening I-205 requires rebuilding the West A Street and Sunset Avenue bridges, which cross over I-205, due to column conflicts with the location of the new lanes. The Project will also replace the I-205 bridges over the Tualatin River, Borland Road, and Woodbine Road. These replacements are less costly than retrofitting and widening the bridges.
4. Interchange Improvements: To improve I-205 safety and travel-time predictability, the Project makes changes to entrance ramps, exit ramps, and intersections around the OR 43 and OR 99E Interchanges. At the OR 43 Interchange, the Project consolidates the two I-205 NB entrance ramp points to reduce merging and weaving issues and reduce rear-end crashes. The Project removes the Broadway Street bridge overcrossing to enhance the functionality of the consolidated interchange. At the OR 99E Interchange, the Project modifies the ramps to conform to the widened freeway lanes. The Project will not modify the existing ramp terminals.
5. Traveler Information Signs (Active Traffic Management (ATM) improvements): The Project includes ODOT RealTime traffic information signs to help travelers get where they are going safely and efficiently. These signs can display traffic flow information, roadway conditions, and advisory speeds limits.

Project Schedule

The Project Team advanced the Project construction contract, or “packages” established in the CTC Report. These three, separately phased construction packages are illustrated in Figure 2 and described further below. A detailed Microsoft Project construction schedule is provided in Appendix E.

Figure 2. Project Packages and Construction Timing



Package	2019	2020	2021	2022	2023	2024
A			BID - NOV. 2020			CONSTRUCTION COMPLETE
B			BID - FEB. 2021	BID - FEB. 2021		CONSTRUCTION COMPLETE
C	BID - SEP. 2019	CONSTRUCTION COMPLETE				

Project Packages

- **Package A (Abernethy Bridge plus adjacent OR 43 and OR 99E interchanges; estimated construction cost at $258.7 M).** Package A consists of the Abernethy Bridge widening and retrofit, the OR 43 and OR 99E Interchange reconstructions on either end of the bridge, the widening and retrofit of the Main Street Bridge, and the construction of a new I-205 NB auxiliary lane between the OR 99E to OR 213 Interchanges. This package will be delivered using an alternative contracting method that combines low-bid with qualification parameters (known as Design-Bid-Build [DBB] Best Value Contracting [BVC]). Although the parameters have not been defined at this time, it is anticipated that the following will be implemented: A (Price) + C (Qualifications) + D (Approach) specifically for the Abernethy Bridge transversely launched construction method, the construction of geotechnical hazard mitigation, construction sequencing, and the in-water drilled shaft work.
- **Package B (I-205 Widening south of the Abernethy Bridge; estimated cost at $199.8 M).** Package B consists of the I-205 widening from the Stafford Road Interchange to the Abernethy Bridge. It also includes the rock cut required to widen the roadway between Sunset Avenue and the OR 43 Interchange, the West A Street and Sunset Avenue bridge replacements, the Broadway Street Bridge removal, and the replacement or widening plus retrofit of all bridges carrying I-205 from the 10th Street Interchange to the Stafford Road Interchange. This package will be delivered using the alternative contracting DBB BV method. Although the parameters have not been defined yet, it is anticipated that the following will be implemented: A (Price) + C (Qualifications) + D (Approach),

specifically for the rock blasting and removal work, the construction of geotechnical hazard mitigation, and construction sequencing.

- **Package C (Stand-alone ATM installations; estimated cost at $5.6 M).** Package C consists of the ATM improvements throughout the Project limits, except those attached to the Sunset Avenue Bridge (which will be constructed as an element within Package B). This package will be delivered using the traditional low-bid DBB method.

Project Cost

The overall Project cost, including all phases of work, is estimated at $513.1M. This includes the construction costs escalated to the year of construction (see Appendix D). This value is a result of a 25 percent level of PE performed to support this report.

Table 2. Total Project Cost Estimate

Project Phase	Final DAP Project Costs ($ millions)		
Planning + Preliminary Engineering (PE)	$45.0 M total		
ROW acquisition	$2.5 M		
Utility relocation	$1.5 M		
Final DAP Per-Package Costs ($ millions)			
Project Phase	**Package A (Abernethy Bridge and Interchanges)**	**Package B (I-205 Widening)**	**Package C (ATM Improve.)**
Construction + Other + Construction Engineering (CE)	$258.7 M	$199.8 M	$5.6 M
Total Project Cost: $513.1 M			

The following are the key Project changes since the CTC Report based on design refinements since January, 2018 (Note: a detailed description of the cost changes is provided in Section 3.2 of this Final DAP):

- Abernethy Bridge increase due to steel material pricing
- Thickened CRCP freeway section (9” to 11”) throughout Project
- Retaining walls cost increase due to refined grading information that decreased the number and height of retaining walls.
- Noise walls cost increase due to increase in number and length of noise walls.
- Increased number of required cantilever sign supports.
- Right-of-way (ROW) acquisition increase due to a more accurate understanding of the Project’s construction needs

1 Project Purpose and Need

1.1 Problem Statement

The section of I-205 from Stafford Road (beginning at milepost [MP] 2.9) to just beyond the OR 99E Interchange (MP 9.6) is the last remaining segment of two-lane freeway on the I-205 corridor, resulting in congestion and crashes. Insufficient capacity, as well as the closely spaced interchanges (OR 43, OR 99E, and OR 213) and the current OR 43 NB entrance ramp configuration, results in significant I-205 travel delays in both the morning (a.m.) and evening (p.m.) peak periods. Collectively, these conditions contribute to safety and travel-time predictability issues, which result in significant delays to passenger and freight traffic. Regional growth is expected to expand the congested peak periods, further reducing the number of hours vehicles can move on the system without major delay.[1]

1.1.1 Seismic Resiliency

There is a 30 percent chance that a Magnitude 8.0+ earthquake will occur in Oregon within the next 50 years. Transportation infrastructure resilience is one of the primary components required for an effective recovery following this significant natural disaster. In the event of the earthquake, this route may be the only connection between Oregon and Washington. ODOT designated I-205 as a Phase 1 statewide north-south lifeline route, which means it must be operational quickly after a disaster renders other roadways unusable or impassable. This critical route will provide supplies and services to the region (Figure 3).[2]

1.1.2 Congestion Relief

Portland freeways have shown increasing congestion, decreasing travel speeds, greater delays, and unreliable trip times. Traffic congestion can now occur at any hour of the day, including holidays and weekend. It is no longer a weekday, peak-hour problem. In 2013, 11.3 percent of all travel in the Portland metropolitan region took place in congested conditions. In 2015, that number increased to 13.7 percent.

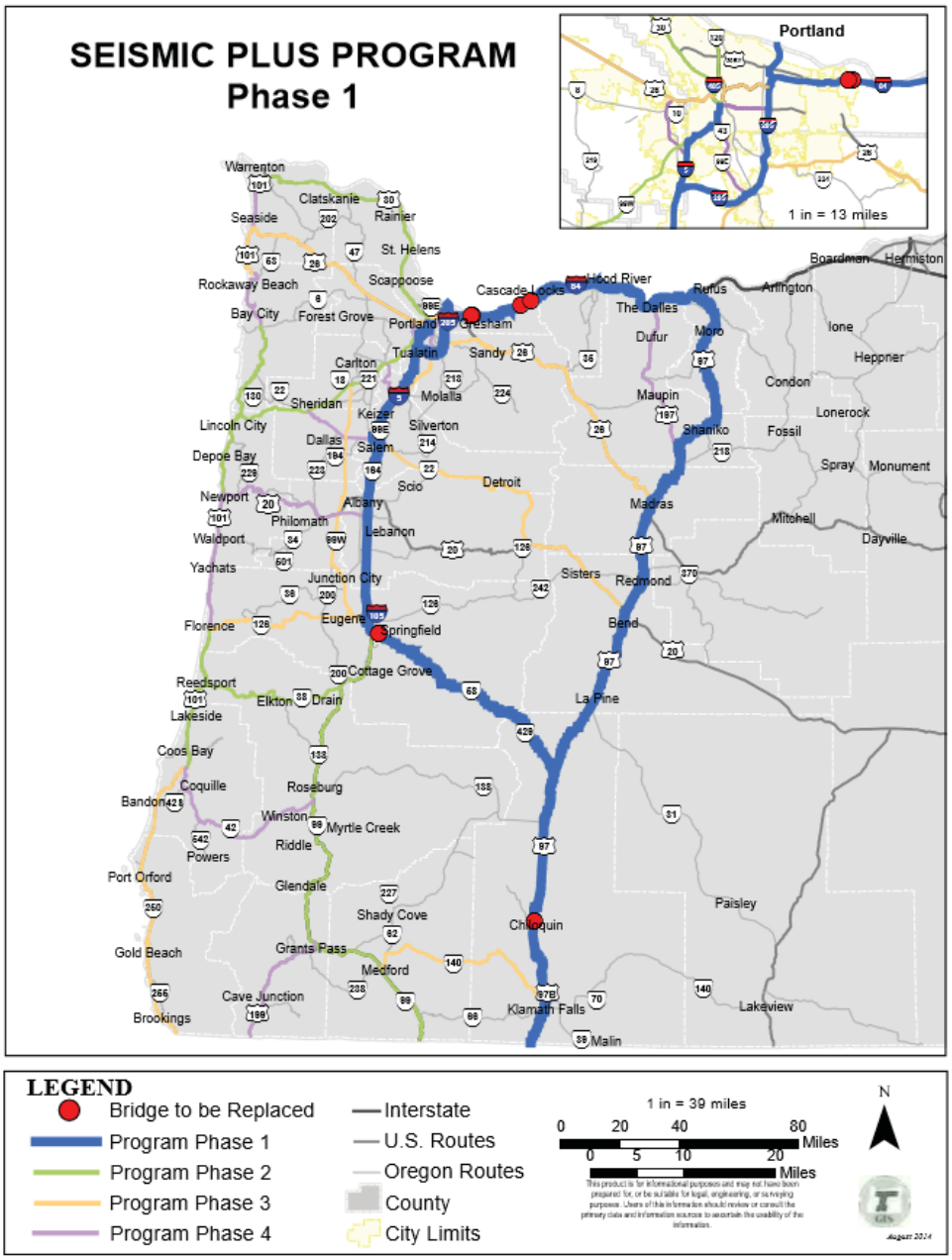
I-205 NB has one of the lowest operating speeds in the region, one of the largest deteriorations of speed during peak hours, and the most congested conditions during the PM peak period. One of the most severe bottlenecks is located NB at the Abernethy Bridge. This reoccurring bottleneck has developed over recent years and is quickly growing. This bottleneck commonly lasts from approximately 3:15 p.m. to 6:15 p.m. (Figure 4). Between 2013 and 2015, this section experienced the second highest

[1] HDR, Cost to Complete Report for the Combined Interstate 205 Abernethy Bridge and Widening Projects, January 2018

[2] Oregon Highways Seismic Plus Report, 2014, http://library.state.or.us/repository/2014/201411130942124/index.pdf

reduction in peak-hour travel speeds, more than seven miles per hour, with a queue that extends approximately nine miles.[3]

Figure 3. Phase 1 Seismic Lifeline Route (per ODOT Seismic Plus Report)

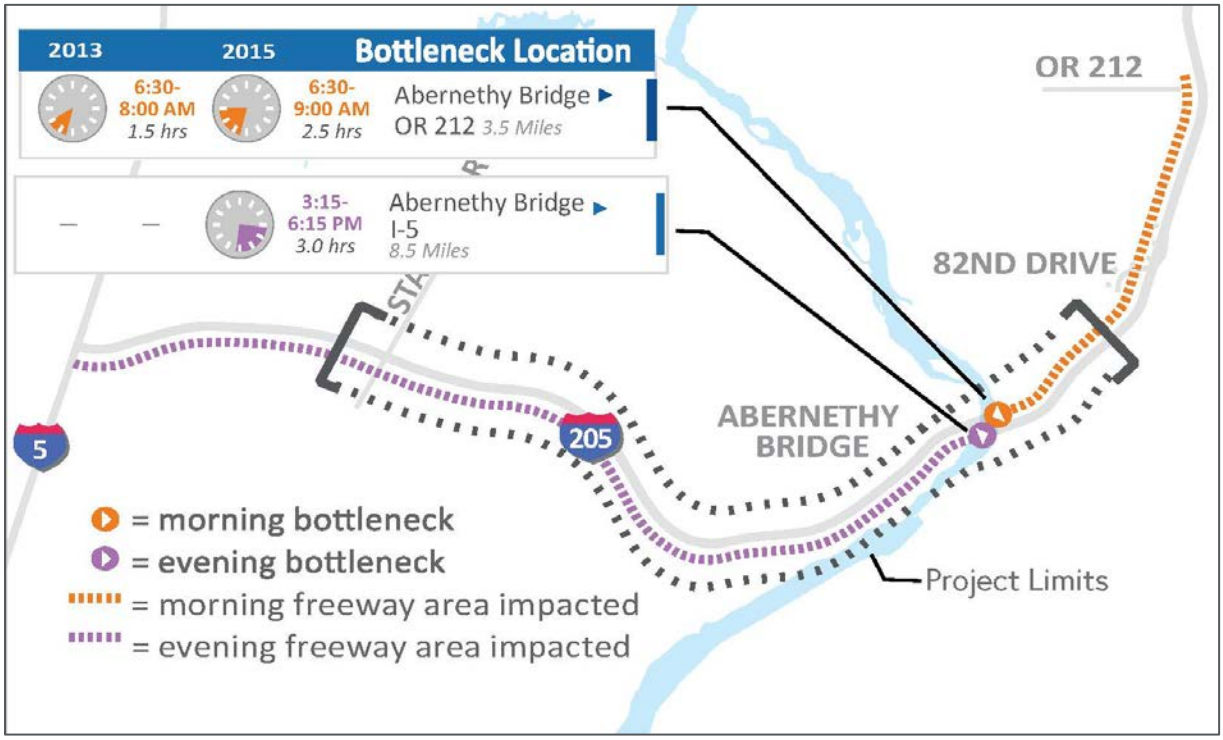


Buffer time is the extra cushion of time a driver includes in their trip to make it to their destination on time. It is a measurement of reliability along the corridor. From 2013 to 2015, there was a 12-minute increase (39.1 percent) in travel time during the p.m. peak for I-205 NB. This additional traffic and congestion makes it more challenging for

[3] 2016 Traffic Performance Report, pg 30, http://www.oregon.gov/ODOT/Regions/Documents/Region1/2016_TPR_FinalReport.pdf

travelers to get to work and appointments on time. Because this corridor serves many of Oregon City and Clackamas industrial areas, the impact of delays on freight and the cost to providing goods and services are also concerns. I-205 has the second highest freight volume in the region, ranging from 7,900 to 13,100 trucks per day.

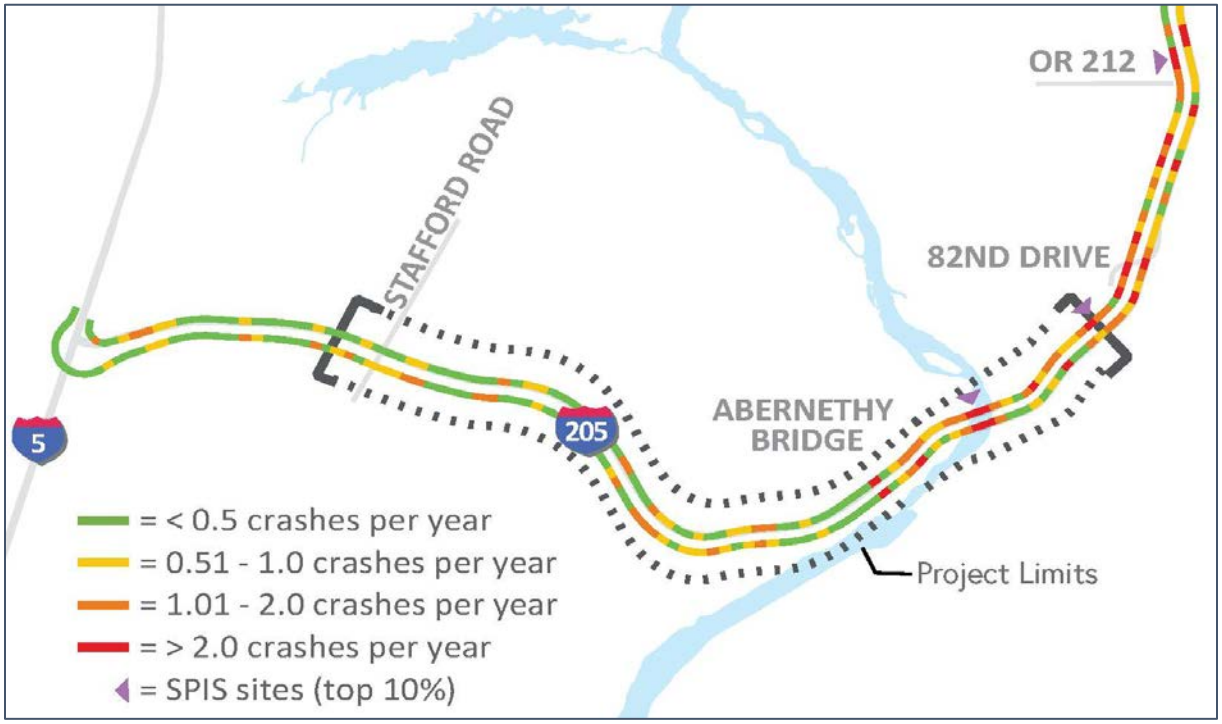
Figure 4. Locations of Recurring Bottlenecks (as of 2016)



1.1.3 Safety

The number of crashes has increased on I-205. There were 702 crashes in 2013 and 906 in 2015, an increase of 29 percent, with the majority of crashes directly contributable to congestion (70 percent rear-end and 18 percent sideswipe and/or overtaking). These types of crashes mainly occurred in the peak commute periods. The Safety Priority Index System (SPIS) is ODOT's systematic scoring method for identifying potential safety problems on state highways based on the frequency, rate, and severity of crashes. There are two sites in the top 10 percent of SPIS sites on I-205 in the Project area, which are in areas of high congestion (Figure 5).

Figure 5. Existing Crash Data per Tenth of a Mile (2011-2015)



1.2 Project Purpose

The purpose of the Project is to:

1. Reduce congestion in the Project corridor by adding an additional through-lane in the NB and southbound (SB) directions between the Stafford Road and OR 99E Interchanges, maintaining the auxiliary lanes in both directions between the OR 43 and OR 99E Interchanges, and adding an auxiliary lane in the NB direction between the OR 99E to OR 213 Interchanges.
2. Improve mobility, travel time reliability, and safety within the corridor. Once the Project is complete, travel times during peak hours are estimated to decrease by as much as 25 percent versus 2016 travel times and more than 50 percent versus anticipated times in 2040.[4]
3. Provide seismic resiliency to ensure the corridor functions as a statewide north-south lifeline route after a major earthquake. This includes seismically retrofitting or replacing each of the vulnerable bridges that carries I-205 or conflicts with the proposed freeway widening.

[4] Project Charter for I-205 Stafford Rd – OR 99E, pg 2, internal document

2 Proposed Solution

2.1 Overall Project Description

This Project consists of a seven mile freeway widening in each direction and includes a Phase II seismic retrofit of the Abernethy Bridge. The Project setting is an urban freeway that includes two existing travel lanes in each direction, with auxiliary lanes on the Abernethy Bridge. North of the Abernethy Bridge, the existing I-205 third general-purpose lane terminates near the OR 99E Interchange.

The Project adds a third general purpose travel lane in each direction, and a new NB auxiliary lane between the OR 99E and OR 213 Interchanges. To conform to the new I-205 widths, the Project will modify the OR 43 and OR 99E interchange ramps. At the OR 43 interchange the project will remove the second northbound freeway entrance ramp to improve safety and traffic flow along I-205, and constructs a new roundabout at the northbound ramp terminal.

The Project will widen and seismically upgrade the Abernethy Bridge to address a.m. and p.m. operational bottlenecks, which have grown to a length of 3.75 hours from 2013 to 2015. Within the Project limits, users currently experience approximately 5.5 hours of congestion, which impacts more than 100,000 daily drivers and 8,900 freight vehicles daily. In addition, the Project will widen and seismically upgrade five other I-205 bridge sites in the Project area, replace eight bridges, and completely remove one bridge. ATM improvements throughout the Project limits are also included.

Figure 6, also provided in Appendix A, shows the proposed improvement locations.

Figure 6. Project Scope

Details of the proposed Project are provided below:

- Add a third I-205 through lane NB and SB between the Stafford Road (MP 2.9) and OR 99E Interchanges (MP 9.6).

- Reconstruct the I-205 SB auxiliary lane from the OR 99E Interchange entrance ramp to the OR 43 Interchange exit ramp (across the Abernethy Bridge).
- Reconstruct and extend the I-205 NB auxiliary lane from the OR 43 Interchange entrance ramp to the OR 99E Interchange exit ramp (across the Abernethy Bridge).
- Construct a NB auxiliary lane from the OR 99E Interchange entrance ramp to the OR 213 Interchange exit ramp.
- Adjust the OR 99E Interchange ramp geometries to conform to the additional freeway lanes.
- Modify the OR 43 Interchange by consolidating the entrance and exit ramps and removing the existing OR 43 Interchange NB entrance slip ramp that connects to the Abernethy Bridge and constructing a new roundabout at the NB ramp terminal.
- Remove the portion of the rock slope adjacent to the I-205 NB direction to support the freeway widening.
- Add ATM elements throughout the Project limits, consistent with the ODOT Region 1 ATM Project Atlas (published April 2016).
- Widen and seismically retrofit the following bridges:
  - I-205 NB over Blankenship Road – MP 5.84
  - I-205 SB over Blankenship Road – MP 5.90
  - I-205 NB over 10th Street (West Linn) – MP 6.40
  - I-205 SB over 10th Street (West Linn) – MP 6.42
  - I-205 over Willamette River (Abernethy) – MP 9.03
  - I-205 SB Connector #2 to OR 43 (West Linn interchange) – MP 9.14
  - I-205 NB Connector #1 to OR 99E (Oregon City interchange) – MP 9.30
  - I-205 over Main Street (Oregon City) – MP 9.51
- Replace the following bridges, which eliminates existing seismic vulnerabilities:
  - I-205 NB over Borland Road – MP 3.82
  - I-205 SB over Borland Road – MP 3.81
  - I-205 NB over the Tualatin River – MP 4.10
  - I-205 SB over the Tualatin River – MP 4.08
  - I-205 NB over Woodbine Road – MP 5.14
  - I-205 SB over Woodbine Road – MP 5.19
  - Sunset Avenue (West Linn) over I-205 – MP 8.28
  - West A Street (West Linn) over I-205 – MP 8.64
- Permanently remove the following conflicting bridges:
  - Broadway Street (West Linn) over I-205 and OR 43 Connector #1 – MP 8.69

- OR 43 NB Connector to I-205 NB (Abernethy Bridge) – MP 9.00

2.2 Project Cost Estimate

2.2.1 Final DAP Total Project Cost Estimate

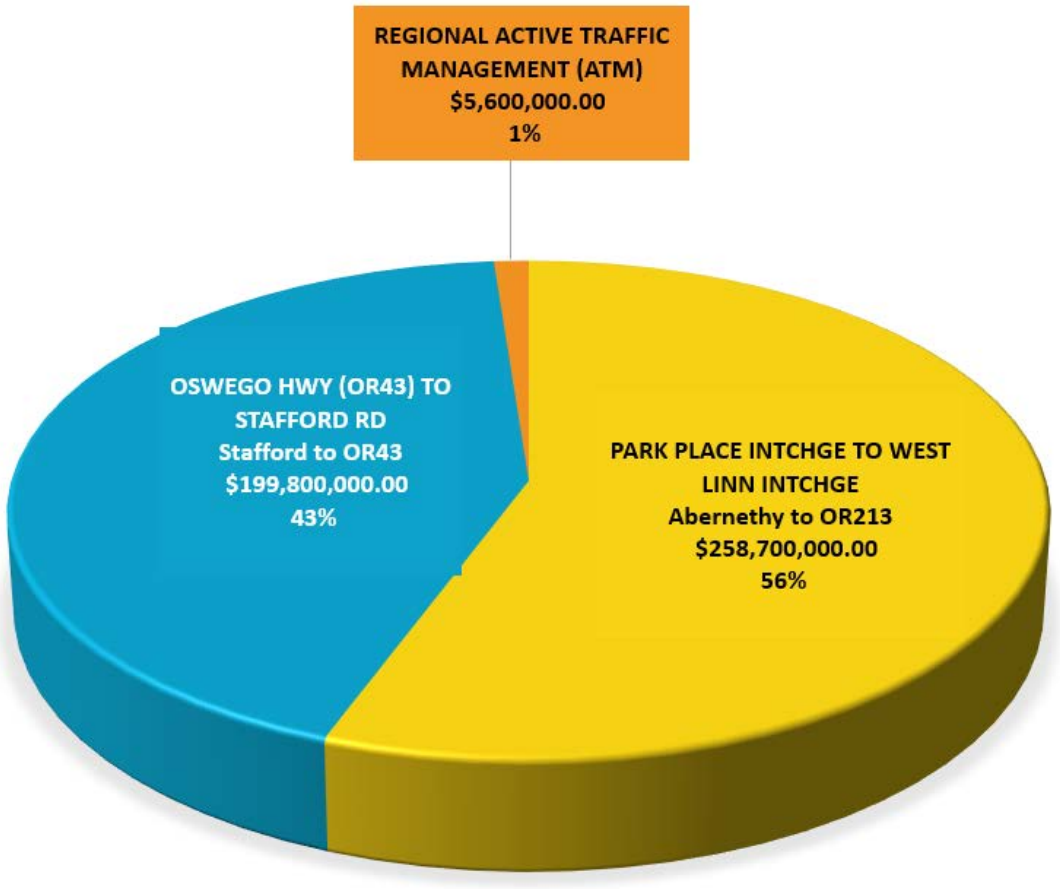
Using the recommended phasing schedule and applying the DBB delivery method, the Project Team developed a detailed Project cost estimate (see Appendix D). The estimate (summarized by cost component in Table 3) resulted in a total Project cost of **$513.1 M**. It was derived using the following guidelines:

- On a per-package basis, approximate quantities and unit costs (in 2018 dollars) were developed for each item of work anticipated.
- To account for cost variability in the estimated quantity or unit cost, a "construction variability" contingency was applied to each item of work. This value ranged from zero to 20 percent, depending on the Project Team's confidence in the unit price or estimated quantity for each item of work.
- An additional 15 percent "unknowns" contingency was included as a line item for all construction items on a per-package basis. As such, the total contingency percentage ranges from 15 percent to 35 percent, subject to the item or work. This results in a cumulative contingency value of 27 percent for the constructed items.
- The construction cost for each package was escalated at a simple, 3 percent rate from 2018 to the mid-point of construction.
- A net 4 percent discount was deducted from each package to account for the sum of the following effects: (1) an anticipated price efficiency resulting from the large construction package sizes (i.e., "economy of scale"); (2) a cost premium for using the "best value" multi-parameter bidding process; and (3) a likely need for out-of-state Prime contractors due to potential local contractor bonding limitations.

Table 3. Project Cost Components

Project phase	Programmatic costs ($ millions)		
Planning + PE	$45.0 M (including DAP phase)		
ROW acquisition	$2.5 M		
Utility relocation	$1.5 M		
Per-Package Costs (See Figure 7) ($ millions)			
Project phase	**Package A (Abernethy Bridge + Interchanges)**	**Package B (I-205 Widening)**	**Package C (ATM Improve.)**
Construction + Other+ CE	$258.7 M	$199.8 M	$5.6 M
Total Project Cost: $513.1 M			

Figure 7. Package Construction + CE Cost Distribution



2.2.2 Final DAP Estimate Comparison to the CTC Report Estimate

In January 2018, ODOT presented CTC Report to the State Legislature that reflected a total Project cost of $500 M. The CTC Report estimate was based on a 15 percent conceptual design that has since been advanced to a 30 percent Final DAP level. A comparison of the two estimates is provided in Table 4.

Table 4. Project Cost Comparison Log

Project-wide Work Item Costs				
Work Item	**Final DAP Estimate ($ millions)**	**CTC Report Estimate ($ millions)**	**Delta ($ millions)**	**Comment**
Section 0200 – Temporary Features	$45.7 M	$47.0 M	- $1.3 M	• Decreased because overall Construction value decreased (Based on percent of construction)
Section 0300 - Roadwork	$12.5 M	$11.7 M	+ $0.8 M	• Increased quantities

Project-wide Work Item Costs				
Section 0400 – Drainage and Sewers; Rock cut	$10.1 M	$9.1 M	+ $1.0 M	• Increased quantities
Section 0500 – Bridges (Except Abernethy)	$50.5 M	$49.7 M	+ $0.8 M	• Steel material unit pricing increase
Section 0500 – Bridges (Abernethy only)	$139.8 M	$129.0 M	+ $10.8 M	• Steel material unit pricing increase
Section 0500 – Retaining Walls / Sound Walls	$3.25 M	$3.0 M	+ $0.2 M	• Increased wall locations and lengths vs CTC Report
Section 0600 – Bases	$6.8 M	$ 4.4 M	+ $2.4 M	• Increased CRCP sections (from 9” to 11”) and CRCP north Abernethy Bridge
Section 0700 – Paving	$38.7 M	$38.8	- $0.1 M	• Decreases quantities
Section 0800 – Perm. Traffic Safety	$3.7 M	$3.8 M	- $0.1 M	• Decreased quantities
Section 0900 – Signal and Lighting	$12.7 M	$10.5 M	+ $2.2 M	• Increased Cantilever Sign Supports from 2 to 13
Section 0900 – NB ATM	$1.6 M	$2.9 M	- $1.3 M	• Decreased quantities
Section 0900 – SB ATM	$0.9 M	$1.0 M	- $0.1 M	• Decreased quantities
1000 – ROW Development & Control	$6.2 M	$8.3 M	- $2.1 M	• Decreased quantities
Unknown contingency	$49.7 M	$47.9 M	+ $1.8 M	• Refined estimate uses a 15 percent value for unknowns
Anticipated Items	$2.8 M	$2.7 M	+ $0.1 M	• Added power hookup
Environmental mitigation	$0.8 M	$1.3 M	- $0.5 M	• Refined understanding of required mitigation
CE	$34.3 M	$36.7 M	- $2.4 M	• Decreased CE % (from 10% to 9%)

Project-wide Work Item Costs				
PE	$45.0 M	$45.0 M	$0	• No change
ROW acquisition	$2.5 M	$1.4 M	+ $1.1 M	• Additional ROW
Utility relocations	$1.5 M	$2.7 M	- $1.2 M	• Decreased utility relocation needs
SUBTOTAL (without escalation or economy of scale effects)	**$469.1 M**	**$457.2 M**	**+ $11.9 M**	• Overall Increase due to items above
Escalation and Economy of Scale Effects	$44.0 M	$42.4 M	+ $1.6 M	• Increased caused by overall Construction value increase (Based on percent of construction)
TOTAL (Includes escalation cost increase and economy of scale cost decrease)	**$513.1 M**	**$499.6 M**	**+ $13.5 M**	• **Total Contingency = 27 percent**

Given the level of design at Final DAP, potential cost and schedule risks exist. A list of these risks, sorted by risk magnitude, is provided in Appendix F.

2.3 Project-wide Attributes of the Proposed Solution Alternative

The following attributes apply to the entire Project.

2.3.1 Pavement Life Cycle and Maintenance Costs

Through the construction of a reinforced concrete overlay pavement, this Project will significantly extend the roadway's serviceable life and reduce the cost and frequency of subsequent maintenance cycles. This results in long-term cost savings for ODOT, as well as reduced user delay costs associated with future projects. CRCP has a maintenance cycle that is typically 2.5 times longer than its equivalent asphalt pavement alternative. It avoids safety risks to the traveling public, ODOT, and construction staff during repaving by eliminating interim projects that asphalt concrete pavement would require.

2.3.2 Traffic Mobility during Construction

With the exception of the Abernethy Bridge main span bridge launches, the Project maintains two lanes of traffic (plus auxiliary lanes where present) on the I-205 mainline during typical weekday and weekend business hours. The transverse launch of the NB

and SB river spans will be conducted using two separate directional weekend freeway closures. Other mobility strategies proposed for the Project are described below:

- Limited use of nighttime or weekend full-closures of I-205 (e.g., for bridge demolition or special rock blasting and cutting operations) and ramp closures (e.g., to shift traffic)
- Multiple nighttime and weekend lane closures (for general construction operations) compliant within pre-approved lane closure periods
- Multiple of 20-minute rolling slow-downs during daytime hours (e.g., to safely perform rock blasting) and nighttime hours (e.g., for bridge girder erection)

At this stage, the Project Team has identified preliminary traffic control strategies and construction staging assumptions for all major activities. The Project Team will continue to coordinate with Agency staff, impacted local agencies, the public, and select stakeholder groups (such as the Mobility Advisory Committee) in the development of the final traffic control strategies for the project. Additional details related to traffic management during construction have been outlined in each of the representative Package sections within this report and covered in detail as part of the draft Traffic Management Plan (Appendix J).

2.3.3 Stormwater Management

The Project is designed to treat or detain stormwater in methods consistent with ODOT and local agency requirements and best management practices. The Project's conceptual stormwater management facilities have been developed to avoid conflicts with other Project needs and meet the Project's stormwater management requirements. Appendix I provides the conceptual stormwater management facilities and associated design parameters assumed for the DAP design.

2.3.4 Contaminated Materials

The 2018 *Level 1 Hazardous Materials Corridor Study and Hazardous Building Materials Paper Survey* was completed within the project area, and recommended installation of soil borings and collection of soil and groundwater samples (if groundwater was encountered). Several sites of concern have had past releases of environmental contaminants, or have the potential to release contaminants from past uses.

Freeway widening requires the removal of approximately 300,000 cubic yards of potentially contaminated materials from the freeway shoulders. The Project assumes the use of on-site disposal of contaminated shoulder materials as a method to reduce hauling and disposal costs. These disposal locations are preliminarily sited on the DAP general construction sheets which are part of Appendix B.

A review of existing project features, such as signals and luminaires for hazardous building materials, such as lead, cadmium, or chromium paint, or asbestos containing materials, has not been completed. Asbestos and lead-based paint surveys are planned for the project area. Special provisions will be developed to appropriately manage hazardous building materials located within the project area.

2.3.5 Active Transportation

There are existing bicycle and pedestrian facilities at the OR 43 and OR 99E Interchanges, as well as a local street network that parallels I-205. The Project maintains these connections at the OR 99E Interchange and enhances them at the OR 43 Interchange between the NB and SB ramp terminals. Bicycles are currently not allowed on the Abernethy Bridge due to the high-speed merges and weaves. No new provisions for bicycles or pedestrian modes are included on the bridge because the same high-speed merging and weaving conditions will remain. South of the OR 43 Interchange, bicycles are permitted on the freeway shoulders between the Stafford Road Interchange and the OR 43 Interchange. The Project will improve this condition by increasing shoulder widths from 10 to 12 feet on this section of I-205. This approach is consistent with Oregon Revised Statute 366.514 (the Oregon Bike Bill).

2.3.6 Design Exceptions

The Project Team developed a Project Design Criteria Sheet consistent with ODOT practices to document the applicable roadway geometric design criteria (see Appendix G). A number of Design Exceptions are anticipated throughout the corridor with varying levels of risk and impact. The majority of these Design Exceptions represent pre-existing conditions that will be maintained or improved by the Project, although there are some new exception conditions created by the proposed improvements.

The Project Team has held several coordination meetings with ODOT Region Staff and Technical Services to facilitate preliminary approval for several of the preliminary exception requests. Based on the current design, the Project Team has identified approximately 40 design exception features or locations throughout the Project that will require Design Exceptions. In addition, a number of local agency deviations requiring City of West Linn approval are outlined in Appendix H. Completed Project Design Exceptions will be submitted as a future deliverable. A complete list of anticipated Design Exceptions and assumed risk ranking is provided in Appendix H.

2.3.7 Aesthetics and Landscaping

ODOT policy directs projects to “avoid expenditures for aesthetic effect that are disproportionate to the project as a whole.” The Project Team has concluded that appropriate, context-sensitive aesthetics include features such as in-kind replacement of trees and ground seeding, low-maintenance landscaping for stormwater facilities, and surface treatments for retaining walls and exposed bridge elements. The Project Team will review similar features during the Final Design phase. A Landscape Design Approach Report is provided in Appendix P.

Additionally, the Clackamas County Transportation System Plan (Section 5.I) designates I-205 west of the Willamette River a Rural Scenic Roadway. Clackamas County's Development and Zoning Ordinances contains vague requirements for improvements of shoulders for bicycles and pedestrians and provisions for turnouts at viewpoints. The Clackamas County standards provide discretion to ODOT to make decisions regarding roadside development. Based on the Project Team's preliminary research, the designation of the Rural Scenic Roadway does not appear to have an impact on the development of the Project.

2.3.8 Adjacent Projects

This Project is just one of many within a wider context of improvements along I-205. The Project Team will consider the following projects during the Final Design and construction phases:

- K20329 OR 43 Multimodal Transportation Project
- K20508 I-205 Abernethy Bridge to SE 82nd Avenue IM Paving Project (Plans, Specifications, and Estimate [PS&E] 10/31/19)
- K20475 I-205 at OR 43 West Linn Operations (PS&E 5/9/19)
- K19651 I-5 Trunnion Replacement Project (anticipated 2019 construction)
- K19721 I-205 NB: MP 13.3 – Sunnybrook (2019 construction may not relevant)
- K20465 I-5: Barbur Blvd NB Connection Bridge (PS&E 6/13/19)
- K20480 I-205 Exit Ramps At SE Division St (PS&E 2/7/20)
- K20486 I-5 Over 26th Avenue Bridge (PS&E 9/27/19)
- K20481 I-405: Willamette River (Fremont) Bridge (PS&E 4/20/21)
- K21157 I-205: Johnson Creek Blvd to Glenn Jackson Bridge (CBOS ATM) (AKA, Corridor Bottleneck) (PS&E 9/24/18)
- K19071 I-5 Broadway / Weidler Interchange Improvements (Rose Quarter) (PS&E 4/13/22)

2.3.9 ROW Impacts and Anticipated Acquisitions

The Project was designed in a manner that avoided or minimized temporary and permanent ROW impacts. As of the Final DAP, ROW acquisition will be required from 12 parcels. Within those parcels, up to three recreational businesses associated with Sportscraft Marina may need to be temporarily relocated. Appendix Q identifies the parcels within the Project footprint that are affected and the anticipated impact type for each (as described further below).

The ROW impact types are categorized as follows:

- Fee acquisitions – There are an estimated three small fee takings at the West A Street overpass on the south side of Abernethy Bridge from two private property owner. These needs are associated with rock cut work in the northbound direction and curb ramp modifications along West A Street in the southbound direction. The design has successfully made efforts to avoid any permanent impact to the cell tower located on this parcel.
- Permanent easements – Subsurface improvements are required at the both the north and south ends of the Abernethy Bridge to strengthen the underground soil. These improvements will be confined within the existing freeway right-of-way on the west side of the Willamette River. However, the limits of the proposed ground improvement on the east side of the Willamette River are anticipated to require permanent easements. There will be special easement language to accommodate

the process and the surface of the ground will be restored to its original state. There are additional Permanent Easements at the aerial bridge bent locations.

- Temporary construction easements – To facilitate construction operations, these temporary construction easements will provide staging areas and construction access.

- Temporary and permanent easements from Parks with Land and Water Conservation Funds – Temporary easements that exceed 180 days may require mitigation through a fee conversion. Conversion is anticipated for work bridge access along the Sportscraft Landing Park adjacent to the Abernethy Bridge.
- Local public agencies and Oregon Department of State Lands (DSL) acquisitions
    - There are three parcels to be acquired from City of West Linn. These parcels include a combination of 4f and 6f designations. Within the 6f designations the Project has found that the conditions of the work do not require a 6f conversion
    - There are two parcels to be acquired from the City of Oregon City. The parcel north of the Abernethy Bridge (designated as a 4f property) will include a combination of a temporary construction easement and permanent easements for subsurface ground improvements and overhead occupancy of the bridge bent cap. The parcel south of the Abernethy Bridge (designated as a 6f property) will include the acquisition of a temporary construction easement, a permanent easement for subsurface ground improvements, and a permanent easement for overhead occupancy of the bridge bent cap. Due to the duration of the occupancy, a 6f conversion is assumed.
    - There is one parcel to be acquired from the DSL. This parcel includes the area over the Willamette River, as well as a portion of the DSL owned parcel is leased to the city of Oregon City, who has an existing sublease agreement with Sportscraft Landing Moorages. The Oregon City leased area is designated 6f parcel. There is one temporary construction easement and one permanent easement required from this parcel. Depending on the length of time the construction will impact the edges of the boat dock and moorings, there may be temporary relocations. These businesses will be interviewed and evaluated for their eligibility. These businesses include the moorage business, one gas station for boats, and a kayak and paddle board rental facility. At this time, the project assumes that the businesses will be provided access during construction and business relocation during construction is not included in the ROW estimate.

The estimated cost for Project acquisitions is $2.5 M. The total estimated ROW cost consists of approximately $1.15 for City of West Linn acquisitions, $0.9 for the City of Oregon City and Department of State Lands property, and $0.45M in private property acquisitions.

2.3.10 National Environmental Policy Act (NEPA) Status

Based on the Project's cumulative effects, early consultation with Federal Highway Administration (FHWA), and the proposed work described herein, the Project Team

expects the Project's NEPA classification to be a Categorical Exclusion (Cat Ex). The Cat Ex approval from FHWA is anticipated in fall, 2018.

2.3.11 Stakeholder Outreach

Through August 2018, the Project Team engaged with numerous stakeholders. These engagements consisted of the following:

- One-on-one meetings with groups and affected stakeholders (throughout the project)
- Presentations to stakeholder organizations and interest groups (fall/winter 2017 and spring/summer 2018)
- Two online open houses (November 13 – December 31, 2017 and June 5 – June 22, 2018)
- Two in-person open houses - approximately 100 attendees (West Linn on June 5 and Oregon City on June 6, 2018)

Tools used to engage stakeholders included:

- A project website
- Distribution of two newsletters mailed to the project area and the stakeholder database
- Email notifications submitted to the stakeholder database
- Social media posts, print advertising and press releases.

The project has received a total of 246 written comments or questions from the public since the project's inception. Key comment themes include:

- **Noise** – Complaints about current and future noise levels and interest in adding sound walls for mitigation.
- **Cut-through traffic** – Concerns about traffic diverting to local streets, particularly as a result of construction delays or to avoid potential future tolls.
- **Funding** – Concerns about lack of funding; hope for funding.
- **Tolling** – Various opinions about how or if tolling should be implemented on I-205.
- **OR 43 Interchange** – Concerns about traffic backing up on Willamette Falls Drive, even with the proposed roundabout; concerns that the proposed stop sign and roundabout will make traffic worse.

In January 2019, the project team plans to conduct outreach and a voting process with property owners and tenants that will benefit from the proposed sound walls.

3 Package A (I-205: Park Place Interchange to West Linn Interchange Sec) Description

Figure 8. Package A – Work Limits

3.1 General Information

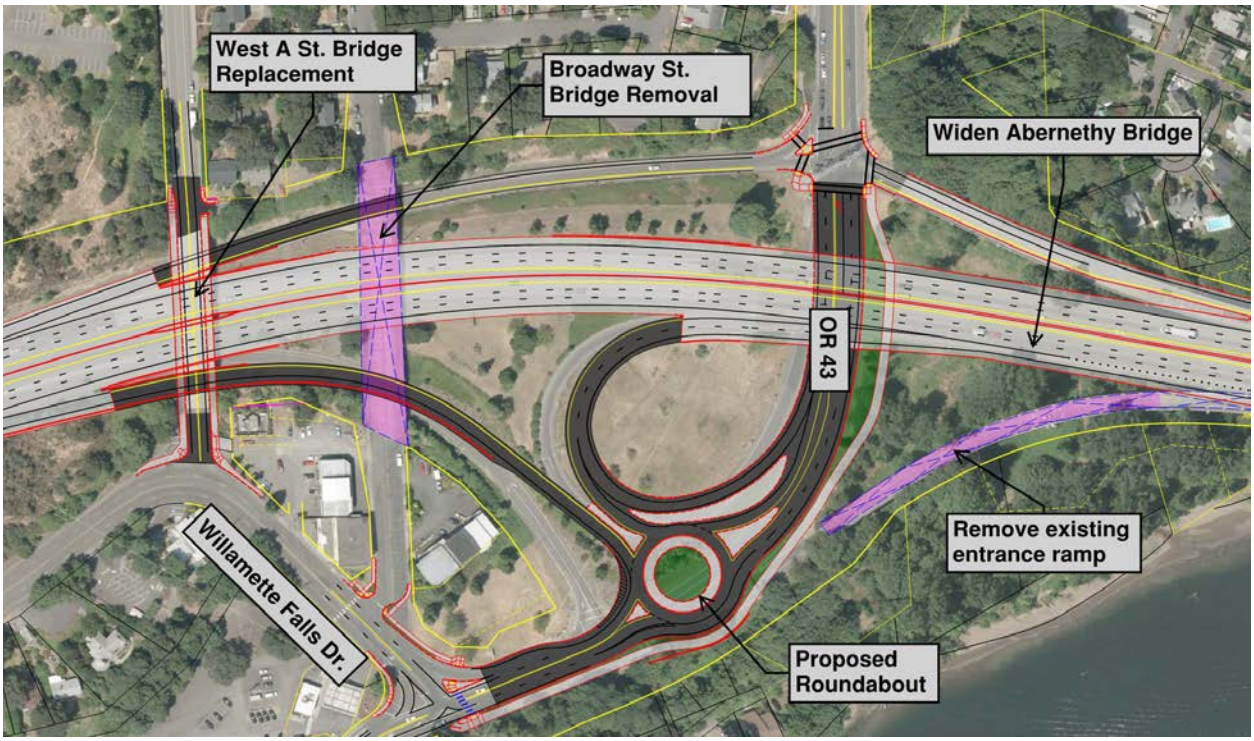
Package A begins at MP 8.80 south of the Abernethy Bridge and extends to the easterly end of the Project (MP 10.24). This package generally consists of the Abernethy Bridge widening and retrofit, OR 43 and OR 99E Interchange improvements, the Main Street Bridge widening and retrofit, and construction of the NB auxiliary lane between the OR 99E to OR 213 Interchanges (Figure 8). The Package A plans are provided in Appendix B.

Package A's attributes include the following:

- The existing Abernethy Bridge consists of two general-purpose lanes in each direction, an existing auxiliary lane in each direction between the OR 43 and OR 99E Interchanges, a nominal six-foot median, and six-foot right shoulders in each direction. Package A widens the Abernethy Bridge structure to add a third general purpose lane and maintain the auxiliary lanes between the OR 43 and OR 99E Interchanges. The package also improves the existing six-foot right shoulders to a proposed 10-foot-width, which meets the standard width for an auxiliary lane. The Project will maintain the existing six-foot median width that does not meet the standard median shoulder width for a three-lane freeway. The Project Team is seeking a Design Exception for median shoulder width.
- Package A will reconfigure the OR 43 Interchange to consolidate the entrance and exit ramps into a single location (Figure 9). The Project Team examined multiple ramp intersection types, including roundabouts, signalized intersections, and stop controlled intersection designs. After consideration of traffic operations, the Project

Team selected a single roundabout at the I-205 NB ramp terminal and removal of the existing NB slip ramp.

Figure 9. OR 43 Interchange with Proposed Roundabout

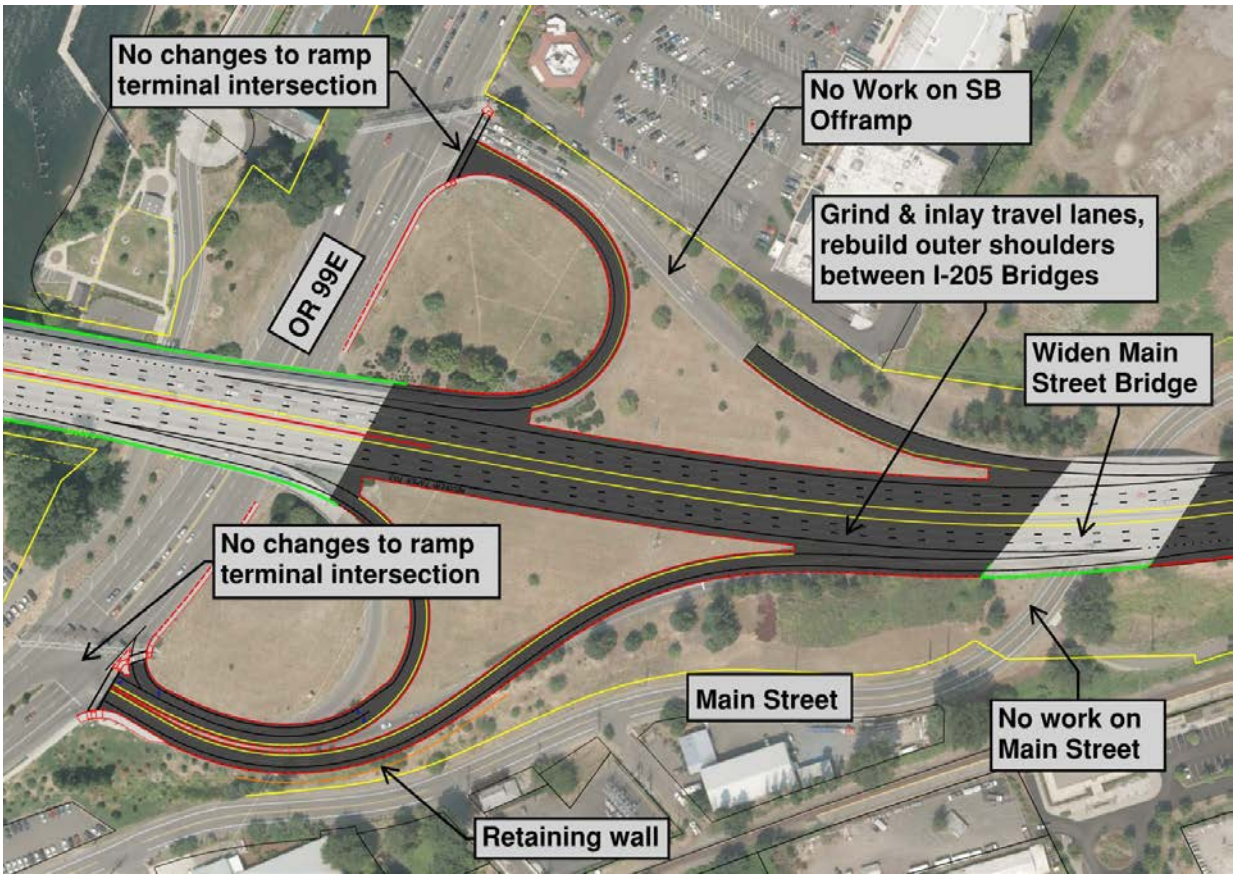


Compared to the other alternatives, a single roundabout satisfies the key criteria of having sufficient capacity for the forecasted movements onto the freeway at both the a.m. and p.m. peak volumes; a minimized Project footprint; and will not worsen operational conditions to adjacent local streets as compared to the existing condition. Other benefits of the roundabout design include the following:

- Less rework on the OR 43 Interchange and Willamette Falls Drive.
- Improved safety for bicycles and pedestrians due to a wider intersection (reduced conflicts with turning movements and the SB drop lane on the OR 43 Interchange at Willamette Falls Drive).
- Reduced number and severity of crashes and their severities compared to signalized intersections.

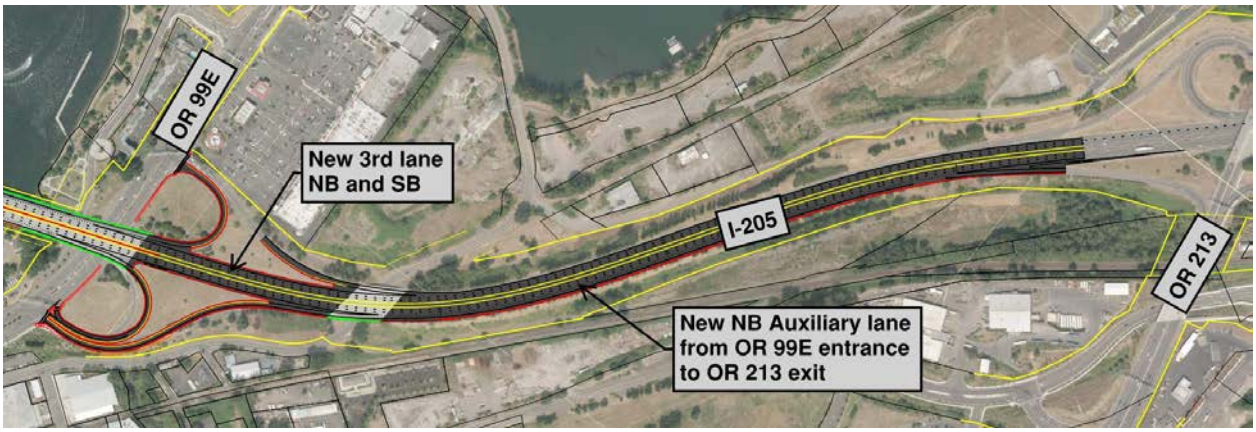
- Package A connects the OR 99E Interchange ramps with the widened Abernethy Bridge (Figure 10). The added third mainline travel lanes are carried through the OR 99E Interchange and tie into the three existing through lanes north of the OR 99E Interchange. No work is included to increase capacity on the ramps; therefore, no ramp widening is included other than to meet geometric standards. Ramp meter locations will be adjusted during Final Design if there is an advantage to do so. The Project does not include any improvements on OR 99E; therefore, the ramp terminals will remain in their existing locations on OR 99E. The Project will construct a retaining wall between the OR 99E Interchange NB entrance ramp and Main Street to eliminate impacts to Main Street and avoid any ROW acquisition.

Figure 10. OR 99E Interchange Improvement Layout



- Package A constructs a NB auxiliary lane that connects the OR 99E Interchange NB entrance ramp to the OR 213 Interchange NB exit ramp (Figure 11). Between the two interchanges, I-205 NB will have three through lanes plus a 1,500-foot-long auxiliary lane. The Project widens the NB side of the freeway by 12 feet. Without the proposed NB auxiliary lane, traffic operations after completion of construction would fail and a bottleneck would remain. The Project Team performed an operational analysis of the auxiliary lane between the OR 99E and OR 213 Interchanges and a safety assessment based on the National Cooperative Highway Research Program *Report 687: Guidelines for Ramp and Interchange Spacing*. Including a NB auxiliary lane between the OR 99E and OR 213 Interchanges is expected to reduce the total number of crashes and the number of fatal and serious injury crashes within the segment by approximately 20 percent.

Figure 11. NB Auxiliary Lane be OR 99E to OR 213 Interchanges



- Package A will upgrade both the Abernethy Bridge and Main Avenue Bridge to meet current seismic design standards.

3.2 Cost Estimate

The construction cost for Package A, including CE, is estimated to be $258.7 M (see Appendix D).

3.3 Roadway Improvements

Within the limits of Package A, the I-205 freeway widening will maintain the existing freeway centerline alignment, with the widening occurring symmetrically to the outside in both directions.

The Project Team elected the widening strategy to achieve the objectives:

- Limit the Project footprint to avoid or minimize impacts to ROW and environmentally-sensitive features
- Minimize the modification of entrance and exit ramps at the interchanges
- Minimize retaining walls, illumination relocations, and camera and/or radar site relocations
- Minimize the amount of freeway reconstruction work on the north side of the Abernethy Bridge to reduce cost
- Minimize the amount of OR 43 and OR 99E crossroad and interchange improvements while ensuring that current I-205 ramp work does not preclude future external improvements on adjacent local roadways, OR 43, or OR 99E.

The Project provides a standard outside shoulder for I-205 throughout the Project limits: 12 feet adjacent to three through lanes and 10 feet adjacent to an auxiliary lane.

The revised I-205 mainline and interchange geometries are established based on the following considerations:

- Maintaining the existing I-205 horizontal, vertical, and super-elevation geometries to the maximum extent possible

- Eliminating Design Exceptions, where feasible, by implementing geometric improvements. For some roadway design elements, the Project Team will seek Design Exception approvals.
- Maintaining existing driveway connections where possible. A number of existing driveways within the areas of West A Street and Willamette Falls Drive will require modification to connect to the proposed improvements. Driveways along OR 43 are not impacted by the proposed work. No driveway closures are assumed.
- The Abernethy Bridge widening resulted in the reduction of the existing vertical clearance on OR 43. The Mobility Advisory Committee indicated that because this is not a designated freight route and that the proposed reduction in vertical clearance to OR 43 and the NB exit ramp is acceptable. Although the vertical clearance on the NB edge of pavement would be less than 15 feet, there is enough clearance in the adjacent lane to permit higher loads to pass.
- The point of the minimum vertical clearance over OR 99E is 17'-8" at the exterior lane line in the NB direction (below the NB exit ramp). While the Abernethy Bridge is being widened, the lowest vertical clearance at this location is not reduced. This is because the realignment of the OR 99E NB exit ramp results in less total bridge width at the constraining location. There will be spot reductions in the vertical clearance along the remaining lanes along OR 99E,, however, these lanes are all above the 17'-4" minimum vertical clearance and the Abernethy Bridge does not act as the existing pinch point for OR 99E. The changes to vertical clearance have been reviewed and approved by the Mobility Advisory Committee.

3.4 Construction Staging and Maintaining Traffic

The assumed construction staging sequence and maintenance of traffic are provided in the Draft Traffic Management Plan in Appendix J and is generally described below. The project plans and construction schedule are provided in Appendix B and Appendix E.

3.4.1 Abernethy Bridge (Construction Sequence)

The Abernethy Bridge construction sequencing assumes that multiple bridge sections will be under construction simultaneously. Early work includes foundation improvements on the western approach spans, which will be accessed from outside of the ordinary high water line. There are several key widening areas at existing gore points near the OR 43 Interchange NB entrance and the OR 99E Interchange NB exit ramps. To access these areas, traffic will be shifted to the median shoulder. Weekend ramp closures may be required to access and complete closure pours required to accommodate later phases of work.

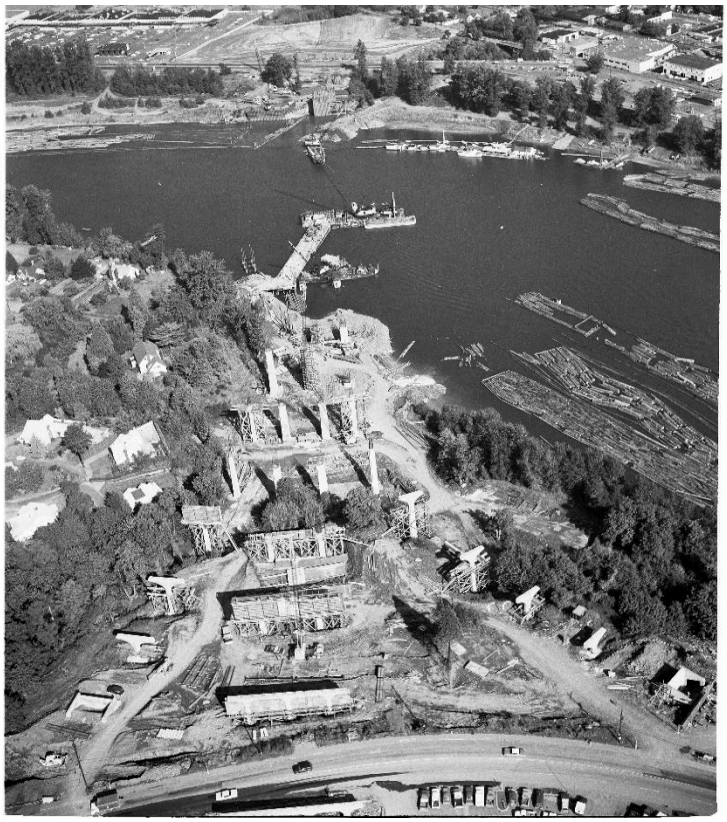
The majority of the first two construction seasons will focus on foundation improvements and substructure work. During the first in-water work season, the contractor will install temporary work bridges, which will allow continued access to the foundations. As the approach structure foundations are completed, the contractor will widen the roadway to the outside with limited directional night or weekend lane reductions, or directional closures during girder placement and closure pour work.

The main span of the Abernethy Bridge will be widened using a technique of transversely sliding the existing box girders approximately 8-feet toward the outside, one direction at a time, under a weekend closure. This activity could be completed in as little as one night; however, weekend closures are currently proposed to accommodate any approach transitions or traffic control shifts that may be required prior to opening to traffic. After the transverse slide, the contractor will continue the cantilever widening (left and right shoulders) for each independent main span structure. Much of this work will be performed after traffic has been moved to the opposing shoulder. Additional details can be found within Appendix N.

3.4.2 Abernethy Bridge (Construction Access)

Gaining access to the bridge substructure and working beneath the bridge will be challenging. When the original bridge was built, there were no physical obstructions or traffic that impeded construction activities. There was unlimited headroom for the large, tall equipment to construct the bridge (Figure 12). Now, however, the existing bridge, boat ramps, docks, parks, and the McLean House Park pose restrictions on construction access locations. (Figure 13).

Figure 12. Abernethy Bridge Construction



c. 1968

Work platforms located on both sides of the bridge will access the main river span. The work bridge decks need to be 30 to 35-feet-wide to accommodate cranes and other large equipment. They will be elevated above the ordinary water surface to allow for the seasonal rises in the river. This only leaves 35 to 40 feet of headroom for large equipment.

Due to the access difficulties beneath the existing bridge to strengthen the existing substructure and foundations at Piers 3–6, these supports will be replaced with a “superbent.” The superbent consists of new drilled shaft foundations and columns located outside the edge of the deck of the widened bridge, along with a new bent cap that will span between the columns to support the bridge. The drilled shaft and columns will be located sufficiently away from the bridge to avoid the tapered steel pile foundations of the existing bents. Pier 3 is located adjacent to a boat ramp (an identified 6(f) resource) and Abernethy Creek, which feeds into the

Willamette River next to the south column of this bent. Footing construction will impact the creek because the new replacement bent column lands within the creek. The creek will be permanently diverted around the new column.

The Project is also investigating a similar “super bent” concept for several of the land approach piers due to the sizable footprint associated with the micropile foundation retrofit concept. Locations such as Piers 2, 7 and some portions of the southbound OR 43 exit ramp are constrained by existing features and providing contractor access to the existing pile caps, which are in some cases 20 to 30 feet below existing grade, is particularly problematic. As part of the Project design refinements, additional locations will be investigated for substructure replacement over a retrofitting of the existing foundations.

Figure 13. View of the Abernethy Bridge and Sportscraft Landing Park with Boat Ramp from the East Bank

The Willamette River water levels vary significantly. The majority of foundation work will be performed from work bridges that will accommodate the fluctuation in river elevations. The Willamette River sees seasonal elevations that commonly reach between 25 and 29 feet.

The contractor will maintain public access to the existing boat ramp and privately rented boat docks throughout construction. Construction access options are still under investigation and will continue to be a primary focus as the foundation design solutions are refined.

3.4.3 Main Street Bridge

The Project will widen and seismically retrofit the Main Street Bridge. The median shoulders are not wide enough to accommodate traffic shifts needed for construction. Because of this, the selected seismic retrofit components are limited to those that can be constructed beneath the bridge. To perform the substructure work, traffic on Main Street must be limited to a single lane. A temporary traffic signal will be used to control traffic on

Main Street through the construction zone. The widening work on the NB side of the bridge can be completed by shifting traffic toward the median with a temporary barrier on the right shoulder. Additional bridge details are provided in Appendix N.

3.4.4 OR 43 Interchange

The OR 43 Interchange construction sequence will be directly affected by the West A Street and Broadway Street construction activities. To minimize the duration of the temporary reduction in allowable high loads, the OR 43 Interchange ramp reconfiguration and removal of the Broadway Street Bridge will have interim completion dates. The temporary reduction in vertical clearance allows for the OR 43 Interchange widening and lane modifications, as well as the entrance loop reconstruction to occur before or with the work on the West A Street and Broadway Street structures. If a temporary reduction in vertical clearance for NB traffic is not permitted, sequencing alternatives may be considered that have other overlapping work or alternative local circulation options. Over-height loads will access the interchange ramps using the new roundabout.

The majority of the reconstruction of the OR 43 Interchange NB entrance ramp can be completed without impacting access to the existing entrance ramp. Some of the work requires a weekend ramp closures to complete portions of the ramp that overlap with the existing loop ramp. Additionally, weekend ramp closures may be required to reconstruct the proposed I-205 NB to the OR 43 Interchange exit ramp. The Project also proposes a two to three week closure of southbound and northbound traffic between Willamette Falls Drive and the I-205 southbound ramp terminal to complete the construction of the roundabout and OR 43 reconstruction. During this period, traffic will be rerouted; however, access from OR 43 southbound to I-205 northbound (which is the primary movement within the interchange area) will be maintained. For additional information related to construction staging, see Appendix J.

3.4.5 OR 99E Interchange NB Exit Ramp

The first 300 feet of the OR 99E Interchange exit ramp is located on the Abernethy Bridge. To keep the exit ramp open during construction, it will be temporarily relocated. The Project will shift the existing freeway travel lanes toward the existing median barrier to provide a work area for widening the southernmost approach span. This will accommodate a temporary loop exit ramp to carry traffic for the remaining widening and exit ramp reconstruction.

3.4.6 NB I-205 Auxiliary Lane

Construction of I-205 NB auxiliary lane will widen the pavement to the outside. Traffic will be maintained by shifting lanes toward the median barrier. A temporary concrete barrier will separate the work area from traffic. A nighttime ramp closure is necessary to make the connection to the OR 213 Interchange exit ramp.

3.5 Pavement Type

3.5.1 OR 43 and OR 99E Interchanges

Where widening or grade modifications are required, ramps will be reconstructed with a new asphalt structural section comparable to the existing section.

3.5.2 North of the Abernethy Bridge

Because of the proximity of the Abernethy Bridge and Main Street Bridge, a structural overlay is not feasible for the lanes not impacted by the widening. The existing travel lanes and median shoulder will receive a 2-inch grind and inlay. The new through travel lane between Main Street and the Abernethy Bridge will be reconstructed with concrete pavement and an asphalt wearing course, similar to the existing travel lanes. This pavement section is not consistent with the Preliminary Pavement Design Memorandum for “Bridge Approaches” as provided in Appendix O On-going coordination with ODOT Pavement Services and revised sections will be provided as part of the 60% plans. The new right shoulder and NB auxiliary lane will also be constructed with asphalt concrete and asphalt wearing course pavement section consistent with the “auxiliary lane” section provided in the preliminary Pavements Design Memo.

3.5.3 South of the Abernethy Bridge

The roadway section immediately south of the Abernethy Bridge (approximately 800 linear feet) will consist of reconstructed, full-depth concrete pavement consistent with the “Bridge Approach” section provided in the preliminary Pavement Design Memo. It will then transition into the concrete overlay section consistent with Package B. The project team is investigating design options to grind a portion of the existing 2.25” ACP wearing course in this transition area to limit the extent of full depth reconstruction while providing sufficient coverage for the new 9” concrete overlay. Initial discussions with Pavement Services has identified a 1” ACP bond-breaker section as preliminary guidance for the minimum ACP section between existing and new CRCP. This transition section will continue to be refined with 60% plans.

3.6 Stormwater

Based on preliminary quantities, Package A adds approximately 3.2 acres of contributing impervious area (CIA) to the 23.0 acres of existing freeway CIA. The Project design will include best management practices to meet the ODOT and Oregon City stormwater design criteria for water quality and, where applicable, detention for the new total CIA of 26.2 acres. Management of the stormwater runoff with water quality and quantity control (e.g., detention) facilities are proposed where the stormwater is conveyed in a non-ODOT system or through non-ODOT property that does not directly outfall into the Willamette River, Clackamas River, or Abernethy Creek. Water quality-only facilities are proposed in areas that directly discharge into the Willamette River, Clackamas River, or Abernethy Creek via an ODOT or non-ODOT stormwater conveyance system per Oregon City requirements. Additional details can be found in Appendix I.

Within the extent of the NB auxiliary lane, there is an existing stormwater conveyance system. From a conceptual level of analysis, it appears the system discharges the roadway runoff into the adjacent ROW without providing treatment. The Project proposes to meet the stormwater management requirements with biofiltration swales, bioslopes, and detention ponds located with the existing ODOT ROW.

At the OR 99E Interchange, the widening and retrofit construction will not change the existing drainage patterns with the exception of additional CIA. Based on preliminary sizing, the existing OR 99E Interchange collection system will be utilized where possible, but retrofits and improvements will be necessary to meet current stormwater standards and the increased flows.

The existing OR 43 Interchange stormwater collection system discharges directly into the Willamette River. The Project will include treatment facilities for the runoff volume for the entire interchange and the portion of OR 43 that drains to the Project area, including a portion from Package B. Existing inlets and drainage pipes will be utilized where possible, but additional inlets and pipes are proposed to meet the design criteria. Based on the preliminary design, there is available ROW to accommodate the construction of the stormwater management facilities where the existing NB entrance ramp is being removed.

3.7 Traffic Improvements

Traffic Improvements consist of signing, lighting, signalization, and ATM and/or intelligent transport systems (ITS) improvements.

3.7.1 Signing

The Project updates I-205 SB signing to match the new lane configuration for the OR 99E Interchange (Exit 9) and to meet current Manual on Uniform Traffic Control Devices (MUTCD) standards. The Project updates signs outside the Project limits, including signs north of the OR 213 Interchange impacted by the new lane configuration. The Project proposes two new signs for the existing sign bridge just north of Exit 10: “EXIT 9” – “99E/Oregon City/Gladstone/ ¾ MILE” and “EXIT 10” – “213 SOUTH/Oregon City/Molalla/EXIT ONLY.” Additional SB signing will match the new lane configuration. NB signs will be updated to meet current MUTCD standards. The lane-widening and configuration changes will affect the signage of I-205 throughout the limits of Package A. With upgrades to the OR 99E Interchange, sign support structures and signage may be impacted and require replacement. See Appendix K for sign structure locations.

The Abernethy Bridge widening will require two new sign bridges. The new sign bridges will be constructed on the new pier caps that will minimize bridge loading on the widened structure and will allow the new overhead signs to be installed prior to the bridge launch. Ultimately, this will accommodate overhead signing to be maintained at all stages of construction.

The Project will modify overhead signing in the area of OR 99E NB to the OR 213 auxiliary lane. The proposed design will improve existing sign spacing and will accommodate new signing in the SB direction, as well as the NB direction for the auxiliary lane. These proposed improvements include two new sign bridges with the

removal of one sign bridge, two cantilevers, and one butterfly support. Updated NB signing will include the auxiliary lane to Exit 10 with new “EXIT ONLY” signs.

On OR 99E, existing overhead signs mounted to the Abernethy Bridge will be replaced on new structure mounts, as required by the bridge widening. The existing sign bridges at the I-205 northbound and southbound ramp terminals (along OR 99E) will remain with no change to the overhead signing. Along OR 43, the Project will construct a new cantilever sign structure for northbound OR 43 approaching the new roundabout. The existing signs and structure mounts on the Abernethy Bridge will be replaced with new overhead signs. The existing sign bridge at the southbound I-205 ramp terminal will remain and the signage for the southbound OR 43 lane drop (at the northbound entrance ramp) will be replaced. For additional signing details, see Appendix K.

3.7.2 Lighting

Based on discussions with ODOT Lighting Design staff, the existing lighting systems along the I-205 mainline and interchange areas are at the end of their useful life. These systems consist of older high-pressure sodium cobra head-style luminaires (typically 400 watts). Poles consist of single and twin luminaire mountings and are located along the freeway’s median and outside shoulders. The Project will replace the existing lighting systems that are older than 5-years-old throughout the mainline and within the OR 43 and OR 99E Interchange areas. Additionally, the Project will replace the navigation lighting and underdeck lighting beneath the Abernethy Bridge and existing freeway illumination on the Abernethy Bridge. The replacement systems will include new base-mounted service cabinets, conduits, wiring, poles, foundations, and light-emitting diode (LED) luminaires. Additional lighting design information is provided in Appendix M.

3.7.3 Signalization

Package A improvements include minor modifications to the pedestrian push buttons at the traffic signals at the OR 99E Interchange and the OR 43 Interchange SB ramp. The existing traffic signal at the OR 43 Interchange NB ramp terminal will be removed and replaced with a roundabout. To accommodate pedestrian access to the new multiuse path along OR 43, a new rectangular rapid flashing beacon (RRFB) will be constructed at the pedestrian crossing along OR 43 at the Willamette Falls Drive intersection. Ramp meters will also be modified or replaced at each entrance ramp for the OR 43 and OR 99E Interchanges, subject to findings during Final Design. The ramp meter at the OR 43 Interchange NB entrance ramp will be removed. Additional signal and ramp meter details can be found in Appendix B.

3.7.4 ATM and ITS

Package C will construct the majority of the ATM improvements prior to the construction of this package. Because Package A widens the freeway and adds an auxiliary lane, it is anticipated that some of the temporary ATM conduits placed to power and communicate with Package C equipment will need to be reconstructed within Package A. Some additional ITS restoration is also required due to Project impacts. This includes fiber optic communications, cameras, cabinets, or any other impacted equipment. Additional detail related to the temporary infrastructure needs will be developed with Preliminary Plans.

3.8 Bridge and Geotechnical Improvements

Within Package A, two bridges will be widened and retrofitted: the Abernethy Bridge and I-205 over Main Street (in Oregon City). The scope for these bridges was determined based on the following (summarized in Table 5). For more detailed information, the Bridge TS&L Reports are provided in Appendix N.

- The cost to widen and retrofit the bridges is significantly less expensive than to replace them.
- The traffic, environmental, and construction impacts associated with widening and retrofitting are far less severe than those for replacement are.

Table 5. Package A Bridge Scopes

Bridge Name	MP	Scope
Br. 09403 I-205 over Willamette River (Abernethy Bridge)	9.03	Widen and seismically retrofit
Br. 09403A OR 43 NB Conn to I-205 NB (Abernethy Bridge)	9.00	Permanently remove
Br. 09403C I-205 SB Conn #2 to OR 43 (West Linn interchanges) (Abernethy Bridge)	9.14	Widen and seismically retrofit
Br. 09403R I-205 NB Conn #1 to OR 99E (Oregon City interchange) (Abernethy Bridge)	9.30	Widen and seismically retrofit
Br. 09702 I-205 over Main Street (Oregon City) (Main Street Bridge)	9.51	Widen and seismically retrofit

3.8.1 Abernethy Bridge

The existing Abernethy Bridge is a 2,717-foot-long, 104-foot minimum wide, 15-span steel girder and box girder bridge that conveys I-205 over the Willamette River, as well as OR 43 and OR 99E. The SB exit ramp bridge (Bridge No. 09403C), is a 5-span, 510-foot-long, 38-foot-wide steel girder bridge. The NB entrance ramp bridge (Bridge No. 09403R) is a 6-span, 615-foot-long, 28-foot-wide steel girder bridge (Figure 14).

The Abernethy Bridge will be widened to provide an additional through lane and a wider outside shoulder in both the NB and SB directions, resulting in an additional 16 feet of roadway width in both directions. The river span widenings will consist of steel member cantilevers from the existing main span box girders (Figure 15).

The approach span widening will be achieved through the addition of multiple steel girder lines. These new girders will be connected to the existing girders through new crossframes at existing interior cross frame locations and will support a deck extension

and a new Type “F” barrier. The open longitudinal joint between the two superstructures will be retained.

The bridge seismic retrofit includes nearly all existing columns and crossbeams. These elements will require enlargement or alternative seismic retrofit measures to resolve seismic deficiencies. Similarly, additional foundation elements, including drilled shafts and micropiles, will be needed at a number of bents to resolve seismic deficiencies. These additional foundation elements will be tied to the existing structure through enlargement and strengthening of the pile cap. At some bents, the new foundations and columns constructed to widen the structure will be tied to the existing substructure at the crossbeam level, which will help to resist seismic loading. At Piers 3–6, replacement of the existing substructure with an outrigger bent is currently the preferred alternative. This approach involves a few minor constructability issues, which are currently being examined.

The Abernethy Bridge has existing seismic retrofit measures that were designed to prevent superstructure unseating. These measures include shear keys, cable restrainers, shock transmission units, and seismic restraint brackets. In addition, original vulnerable bearings have been replaced with standard elastomeric or isolation bearings in several locations. Some end diaphragms and lateral bracing elements have also been replaced or strengthened in order to increase the lateral load resistance of the superstructure. To construct the crossbeam enlargements and widen the bridge as required, many of these existing retrofit measures will need to be removed and reinstalled or replaced. Where retrofits are removed, steel rocker bearings will be replaced with elastomeric bearings.

Ground improvement is also needed to reduce the potential effects of liquefaction and lateral spreading. The soil profile beneath the bridge varies significantly over the length of the bridge. The alluvium and gravel soils over the bedrock are susceptible to both liquefaction and lateral spreading. A preliminary assessment of lateral spreading has been completed and has determined that ground improvements will be required on both riverbanks. Preliminary analysis results indicate that the subsurface soils at Piers 1 through 10 can move between 4 and 6 feet toward the middle of the river. The initial assessment of these movements indicates that they are too large for the existing foundations to resist. Therefore, ground improvements consisting of deep soil mixing or jet grouting are included in the initial seismic retrofit strategy. The precise limits of ground improvement will be determined after further geotechnical explorations are performed in the summer, 2018.

A preliminary analysis of the C3 ramp indicates that this structure experiences generally better behavior than the main spans due to the positive effects of the previously installed isolation bearings. Nonetheless, based on comparison with similar details found in the isolated portions of the mainline structure, it is anticipated that seismic retrofit measures, including column enlargements and pile cap enlargements with micropiles, will be required for this structure.

Figure 14. Rendering of the Existing Abernethy Bridge

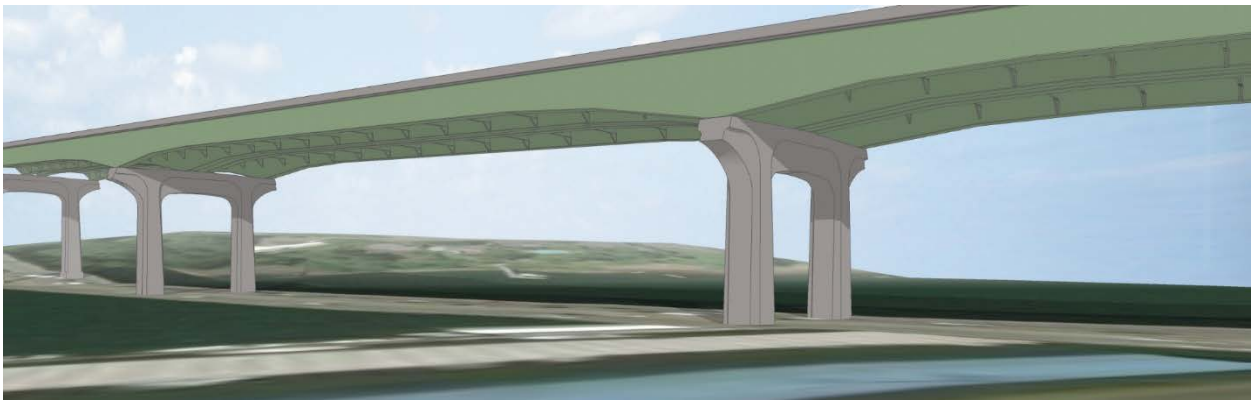
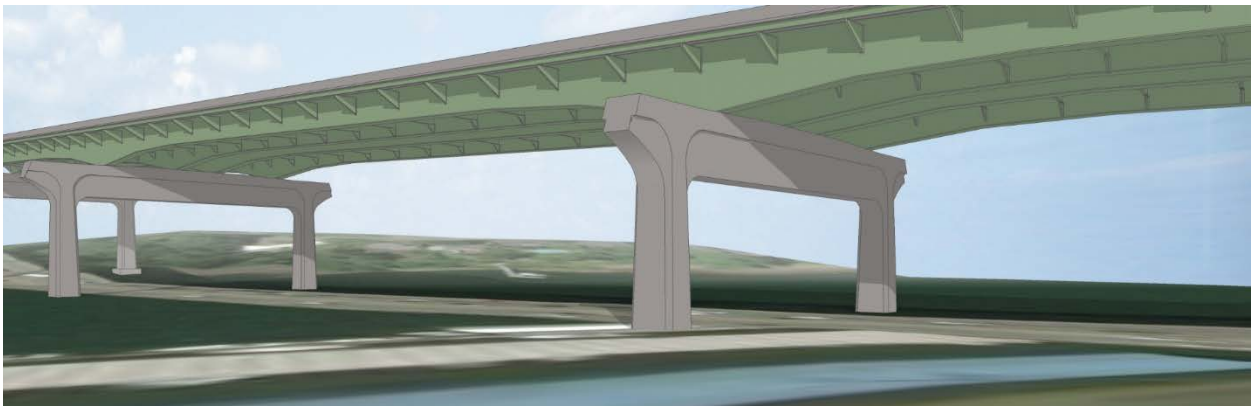


Figure 15. Rendering of the Future Widening and Pier Replacement of the Abernethy Bridge



3.8.2 Main Street Bridge

The existing Main St Bridge consists of a 214'-0" long, 129'-0" to 144'-0" wide three-span reinforced concrete box girder (RCBG) superstructure and was constructed in 1972. The bridge alignment is on a curve, which results in a curved north edge of deck. The centerlines of the individual girder webs are straight, but girder centerlines are flared relative to one another to accommodate the bridge's variable width. Bents 1, 2, and 3 are parallel to each other and skewed approximately 55 degrees to the box webs. Bent 4 is out of alignment with the other bents by about 8 degrees, resulting in it being skewed approximately 47 degrees to the box webs.

The bridge seismic retrofit involves installing micropiles, footing overlays, and in-fill walls between the existing columns. The connection between the top of the in-fill wall and the existing bent cap would perform best if it were pinned because this would prevent shear failure in the existing crossbeam and flexural failure in the superstructure. However, the existing columns are fixed at the top, at least until they experience enough demand to cause pullout of the main bars.

One option discussed with ODOT technical staff involves modifying the existing top-of-column connection by cutting bars to create a pinned connection. This approach was

approved as a viable solution to facilitate the elastic behavior of the columns under the Cascadia Subduction Zone event. Additionally, the concept of modifying the backwall by cutting the vertical bar and a portion of the concrete to reduce the shear capacity of the backwall to less than that of the timber piles was also discussed and approved by ODOT technical staff as an economical solution to protecting the existing timber piles. This “fuse” will result in minor damage to the backwall and abutment joint area, but will preserve the pile substructure.

The existing bridge will be widened approximately 14'-0" to accommodate the addition of a third lane on I-205. Since this widening is small compared to the size of the existing bridge, the ideal alternative is to widen the structure in-kind with a parallel RCBG. This provides comparable structure stiffness and aesthetics next to the existing structure. There is sufficient clearance over Main Street to construct the cast-in-place widening on falsework without needing to move the completed structure into place after casting. At the interior bents, the widening will be supported by the newly constructed pier wall over a reinforced concrete pile cap supported by micropiles. At the end bents, the additional bridge width will be supported by a concrete seat abutment on drilled shaft foundations. While the existing foundations at the end bents are timber, widening the foundation in-kind is impractical and would add cost to the Project without a commensurate benefit. A standard end panel will be cast behind both end bents.

3.9 Retaining Walls

Retaining walls will be required in various locations within the Project limits due to the widening and/or realignment of the mainline I-205 and associated ramps. Two locations within Package A are identified below with discussions on the wall type alternatives and recommendations on the preferred alternatives. Retaining walls locations are depicted within the DAP plans in Appendix B.

3.9.1 Retaining Wall A1 & A2 (OR 99E Interchange Entrance Ramp Wall)

Retaining Wall A1 is proposed to be located in the "pinch point" between the OR 99E northbound entrance ramp and Main Street. This wall will be utilized to retain the fill required to realign the entrance ramp by approximately 24 feet. The wall will be approximately 320-feet-long. There is an existing semi-cantilever wall running behind a sidewalk along Main Street. There is a large steel plate culvert (22 feet in diameter) carrying Abernethy Creek through the interchange directly under the proposed wall. As this evaluation has been completed prior to geotechnical exploration work at the proposed wall, this assessment was completed using the most likely geotechnical conditions based on existing information. Additional wall analysis will be completed with Preliminary Plans. The four evaluated alternatives are described below.

3.9.1.1 Replacement of the Existing Wall with a Custom Cast-in-Place Semi-Gravity Wall and a Tiered Mechanically Stabilized Earth Wall – Preferred Alternative

This alternative is similar to the soil nail wall replacement with a tiered mechanically stabilized earth (MSE) wall alternative except the existing wall would be replaced with a custom cast-in-place semi-gravity wall (Wall A1) and an upper tier MSE wall (Wall A2).

The cast-in-place wall would be a maximum of approximately 18-feet-high and most of its footing would be located along the existing retaining wall paralleling Main Street. This is viewed as the most practical of the alternatives to construct and the lowest cost; therefore, it is the preferred alternative.

3.9.1.2 Total Replacement with an MSE Wall

This alternative would remove the entire existing wall and would replace it with an MSE wall. The MSE wall would retain both the existing and widening fill. This alternative was dismissed because the required excavation would extend into the existing ramp unless significant shoring was constructed.

3.9.1.3 Replacement of the Existing Wall with a Soil Nail Wall and Addition of a Tiered MSE Wall

This alternative would replace the entire existing wall with a soil nail wall located slightly closer to the ramp. A tiered MSE wall would then be constructed on the soil nail wall and backfilled to support the widening. This was discussed with the Project Team geotechnical engineers and was viewed as undesirable due to the lack of embedment depth for the piles over the culvert and the mobilization cost of the drilling equipment for the piles and anchors.

3.9.1.4 Reinforcement of the Existing Wall and Addition of a Tiered MSE Wall

This alternative is similar to the soil nail wall replacement alternative except the existing wall would be retained and would be reinforced with soil nails or tie-backs installed through the wall face to support the tiered MSE wall as described above. This was discussed with the Project Team geotechnical engineers and was viewed as undesirable due to the structural limitations of the existing wall and the mobilization cost of the drilling equipment for the piles and anchors.

3.9.2 Retaining Wall A3 (Roundabout Wall)

Retaining Wall A3 is proposed to be located at the proposed roundabout located at the OR 43 Interchange NB ramp terminal. This wall will be utilized to retain the fill required to widen for the roundabout. The wall will be approximately 170-feet-long. The roadway construction adjacent to the proposed wall is primarily fill and there is adequate clearance to construct an MSE wall at this location without significant shoring. For these reasons, and because MSE walls are generally considered a low cost option, an MSE wall is selected as the preferred alternative.

3.10 Sound Walls

The justification for and locations of the proposed sound walls are described in the Final Noise Technical Report (HDR). Potential wall locations and elevations are based on a combination of DOGAMI LiDAR and actual field survey. As part of the initial wall assessment, all wall heights assumed top-of-wall height relative to the assumed existing ground elevation at the base of the potential wall. Additional topographic survey and refinement of the preliminary wall heights was developed based on initial design layouts for the potential sound walls and considered in the final analysis. The effectiveness for

noise abatement was evaluated based on these conceptual wall locations and sizes. The resulting noise modeling analysis concluded that no sound wall locations within Package A met the requirements for effective mitigation. Information related to the assessment and findings of this analysis is provided in the Final Noise technical Report. Sound walls under evaluation as part of Package B are included in Section 4.11 of this report.

3.11 Traffic Structures

Future traffic movements differ from the existing conditions and require new and modified signage from MP 0.0 (entrance ramp from I-5) NB to MP 11.7 to adequately direct drivers to the appropriate lanes carrying their intended movement. Signage will be mounted on individual overhead galvanized steel sign structures meeting ODOT standard designs as noted below or attached to existing or new vehicular bridges as necessary. Existing sign structures that will remain in place but will have new static signing have been evaluated and are determined to have sufficient capacity to carry the proposed new signs.

Due to varying site constraints, the Project Team anticipates the use of both spread footings and drilled shaft foundations. When drilled shafts are required, they are generally deep; therefore, it is recommended to use Cross Sonic Log Tubes and subsequent testing on each deep shaft in order to verify the integrity of the concrete in the shaft. Additional geotechnical investigations and recommendations will be required to finalize the design because the existing boring log information is not near the sites and the nearby historical geotechnical reports do not address all proposed sites and structures. Based on experience, this stretch of highway is one of the most inconsistent areas in the Willamette Valley, changing rapidly from one soil group to another. The foundations will encounter silty fines to sandy gravels with cobbles to exposed basalt bedrock. All these soil types are generally acceptable for both drilled shaft and spread footing foundations but economics and constructability should be considered as part of the foundation selection. The adjacent slopes, groundwater, slope stability, traffic impacts, and constructability will be considerations in the foundation type, size, and depth. In addition, if the majority of the foundations tend to be one type, consideration about making them all the same type will be discussed.

The sign structures will be designed in accordance with the following specifications, as applicable to the structure type:

- The American Association of State Highway and Transportation Officials (AASHTO) *Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals*, 5th Edition, with all current interim revisions, will govern the structural design of the new sign structures.
- ODOT Geotechnical Design Manual
- ODOT Traffic Structures Manual
- ODOT Bridge Design and Drafting Manual

3.11.1 New Truss Sign Bridges & Cantilever Structures

- MP 9.95 – SB and NB guide signs on a new sign bridge spanning the I-205 NB and SB lanes. Remove existing sign cantilever #19294 and existing butterfly #19455

nearby. The estimated span length is 162 feet with a new concrete barrier protecting the ends. Because of the steep embankment slopes on each end, drilled shafts are expected for foundations.

- MP 9.60 – SB and NB guide signs on a new sign bridge spanning I-205 NB and SB lanes. Remove nearby existing sign cantilever #19454 and existing sign bridge #0M396 nearby. The estimated span length is 162 feet with new concrete barrier protecting the ends. Because of the steep embankment slopes on each end, drilled shaft foundations are expected for foundations.
- MP 9.22 – SB and NB guide signs on a new sign bridge spanning I-205 NB and SB lanes. Remove the existing sign bridge on the existing Abernethy Bridge. The estimated span length is 152 feet with the bridge rails protecting the ends. The supports will be mounted to the top of the new Pier 3 Abernethy Bridge Pier Cap.
- MP 9.07 – SB and NB guide signs on a new sign bridge spanning I-205 NB and SB lanes. Remove the existing Sign Bridge on the existing Abernethy Bridge. The estimated span length is 152 feet with the bridge rails protecting the ends. The supports will be mounted to the top of the new Pier 6 Abernethy Bridge Pier Cap.
- MP 11.31 (OR 43) – NB guide signs on a new cantilever sign support are proposed at the new roundabout located at the I-205 NB ramp terminal. The cantilever sign support is assumed to be founded on a spread footing.

3.11.2 New Structure Mounts to Existing Bridges

Signage will be mounted on steel frames mounted to the existing concrete decks on the existing bridges with resin-bonded anchors.

- MP 10.24 – Existing Bridge #09750 (OR 213 connection over I-205): Replace SB and NB guide signs. Use existing mounts if feasible, but many new frames are anticipated. The existing bridge is a 122-foot-long main span RCBG with post-tensioning. The sign support frames will be mounted to the edge and underside of the concrete deck overhangs.
- MP 9.30 – Existing Bridge #09403R (I-205 NB connection to OR 99E): Replace SB and NB guide signs. Use existing mounts if feasible, but many new frames are anticipated. The existing bridge is a 78-foot-long steel deck girder. The sign support frames will be mounted to the edge and underside of the concrete deck overhangs.
- MP 8.69 – Existing Bridge #09703 (Broadway Street over I-205 and OR 43 connection): Replace SB and NB guide signs. Use existing mounts if feasible, but many new frames are anticipated. The existing bridge is a three-span (129 feet, 146 feet, 99 feet) RCBG with post-tensioning. The sign support frames will be mounted to the edge and underside of the concrete deck overhangs.

3.11.3 New Sign Mounts on Existing Sign Bridge

The existing sign bridge located just north of OR 213 was evaluated for the proposed sign configuration.

- MP 10.33 SB – Existing Sign Bridge #19257: Place new SB and NB guide signs on new structure mounts. It is anticipated that all the steel vertical supports attaching the

guide sign to the truss sign bridge will be replaced along with the new signs. The existing sign bridge was evaluated for the proposed sign configuration and has sufficient capacity without structural retrofit or replacement. New signage will be mounted on new steel vertical frames mounted to the existing sign bridges:

3.11.4 Remove Signs and Sign Support Structures

Remove the following sign supports and their foundations completely or to 3 feet below grade:

- MP 9.99 NB – Existing cantilever #19294
- MP 9.95 SB – Existing butterfly #19455
- MP 9.71 NB – Existing sign bridge #OM396
- MP 9.60 SB – Existing cantilever #19454
- MP 9.22 NB/SB – Existing sign bridge on bridge #09403 (Abernethy)
- MP 9.03 NB/SB – Existing sign bridge on bridge #09403 (Abernethy)

3.12 Utility Impacts and Anticipated Relocations

The following major utilities have been identified within Package A. Major utilities are defined as those with potential reimbursable impacts or have the potential to affect Project schedule or scope.

- A 24-inch City of West Linn water line is suspended from the Abernethy Bridge. It will be protected during construction. Relocation costs are not anticipated. The portion of the water line attached to the Abernethy Bridge is not anticipated to be reimbursable. Costs associated with temporary connections and accommodation will continue to be refined and coordinated with the City of West Linn.
- An existing 24” City of West Linn sanitary sewer line is in conflict with the proposed foundation retrofits of Bents 8 and 9. Bent 8 will likely consist of a drilled shaft foundation, which would allow the pipe to be protected in place. Bent 9 foundation improvements are currently in conflict with the existing pipe. If relocation is required, this work is anticipated to be reimbursable.
- A submarine communications cable is located in the Willamette River beneath the Abernethy Bridge. The exact location of the cable is unknown. Coordination with CenturyLink (the utility owner) indicates this facility is currently in the process of being decommissioned and the project will not be required to protect the existing line in place. Costs for decommissioning and re-routing the signal to existing infrastructure are estimated at $10,000.
- ODOT has an existing fiber optic communication line and empty conduits on the Abernethy Bridge for future use.
- The Project Team does not anticipate any major utilities to be impacted by construction activities within the OR 43 interchange. There are several minor reimbursable adjustments anticipated along OR 43.

- Within the limits of the OR 99E Interchange, there are two utilities that may be impacted. One is a City of West Linn 24-inch waterline located within the NB exit ramp to OR 99E towards 17th Street. This is deemed potentially critical to the Project schedule and/or cost. NW Natural has a 4.5-inch steel line on the eastern side of OR 99E that is also within the NB exit ramp to 17th Street. Relocation may be necessary for both utilities depending on changes to the current ramp geometry. There are many other utilities adjacent to the work, mostly along OR 99E and Clackamette Drive that are not anticipated to be impacted during construction.
- On I-205 north of Abernethy Bridge, there are anticipated conflicts with the utilities located at the back of sidewalk along Main Street, due to the excavations for the bridge footings. Oregon City, CBX, and Comcast all have fiber along the eastern side of Main Street, likely in a joint trench. Oregon City is reimbursable for this relocation work, however, CBX and Comcast are not. Although CBX is not reimbursable, the relocation cost form them will be high as they have 720 count fiber at this location.
- Other minor utilities exist and potentially reimbursable utilities are accounted for in the Project estimate.

3.13 Environmental Impacts

The key environmental elements for Package A consist of visual, culverts, noise, endangered species, in-water work, archaeological, river navigation, historic, environmental justice, and 4(f) and 6(f) resources.

3.13.1 Environmental Permit Summary

Environmental permits and NEPA clearance will be obtained for the entire Project. The following permits and approvals are anticipated for Package A:

- Oregon Department of Fish and Wildlife Fish Passage Plan approval
- US Coast Guard approval
- National Marine Fisheries Service (NMFS) approval of Federal-aid Highway Program Programmatic Endangered Species Act Consultation (FAHP) for deviations from the fluvial design standard and the in-water-work period to allow work within drilled shaft cans outside the in-water-work window
- Archaeological and Historic Section 106 approval
- Section 4(f) temporary Occupancy and *de minimis* findings
- Section 6(f) resolution
- USACE Section 404 permit
- DSL Fill/Removal Permit

In addition, occupancy of the parks will require voter approval through the City of Oregon City and the City of West Linn.

3.13.2 Visual

The Abernethy Bridge is not a listed historic resource. As such, changes to the structure resulting from the retrofit and widening are not regulated for visual effects from an environmental permitting perspective. The proposed project will maintain the existing aesthetic character of the existing highway.

3.13.3 Culverts

Except for the Abernethy Creek culvert, there are limited small culverts running below the freeway within the limits of Package A at which the proposed temporary and permanent work will not trigger the Oregon fish passage statute. However, the Abernethy Creek culvert is a 20-foot-diameter, approximately 650-foot-long concrete culvert that begins east of Main Street and empties near where Abernethy Creek flows into the Willamette River. The culvert crosses beneath Main Street, the I-205 NB entrance and exit ramps, OR 99E, and Clackamette Drive before emerging adjacent to the Sportscraft Landing Park parking lot beneath the Abernethy Bridge. Abernethy Creek is considered fish habitat and has documented use by coho, fall chinook, and winter steelhead salmon. Due to construction impacts, the Project will need to relocate the portion of the creek between the culvert outfall and the Willamette River, and in doing so will eliminate existing low fish passage barriers.

3.13.4 Wetlands

The work in Package A is not anticipated to impact any wetlands.

3.13.5 Noise

Based on preliminary noise analysis results, the FHWA cost-benefit threshold for noise mitigation was not satisfied for any location within Package A.

3.13.6 Endangered Species

The Willamette River and Abernethy Creek contain Endangered Species Act federally listed Upper Willamette River Chinook and Steel and Lower Columbia River Chinook, Coho, and Steelhead species. The Project is expected to utilize the existing FAHP to obtain coverage for potential impacts to listed species.

The FAHP requires the removal of vacant structures to below total scour depth. Vacant structures are those that are "unused, unnecessary, or abandon piece of roadway or bridge that no longer fulfils its intended purpose". Piers 3 through 7 of the Abernethy Bridge are within the general scour prism and will be considered vacant structures after the new bridge piers and caps replace the function of the existing piers. Removal of the vacated bridge foundations would require large cofferdams and extensive construction. Given the expense, construction challenges, and resource impacts associated with the removal of the vacated foundations, the Project will continue with negotiations with NMFS to eliminate this requirement.

Peregrine falcons are known to use the Abernethy Bridge for reproduction. This is not considered a design risk at this time. The Project will coordinate with the Animal and

Plant Health Inspection Service and the Audubon Society as the design progresses to determine an appropriate strategy to avoid or minimize harm.

3.13.7 In-Water Work

In-water work will be restricted to the in-water work window from July 1 through October 31. Pile driving will only be permitted from July 15 through October 15. It is anticipated work within drilled shaft casings will be permitted through November and from February 1 through March 31 as long as the area remains isolated from the actively flowing channel.

Abernethy Creek, currently located adjacent to Sportcraft Landing Park, will be relocated to accommodate the large diameter (currently designed as 12' diameter drilled shafts and columns) that would be placed within the existing creek alignment. As shown in Appendix B, the creek will be relocated under the bridge. Temporary water management and fish passage will be required for the creek realignment.

McLean Creek will likely be impacted by the expansion of the pier footing. Its work area, however, will be isolated from the actively flowing channel if water is present and impacts will be mitigated. As such, no creek relocation is planned.

3.13.8 Archaeological

There are known archaeological sites in the vicinity of the Abernethy Bridge on both banks of the Willamette River. Subsurface archaeological investigations have been completed and SHPO has concurred with the Section 106 finding of "No-Adverse Effect" for archaeological resources.

3.13.9 River Navigation

Along with maintaining access to the boat ramp at Sportcraft Landing Park, the Project is required to maintain safe passage for recreational and commercial boat traffic in the Willamette River. The main navigation channel will maintain horizontal and vertical clear zones to facilitate the passage requirements of Oregon State Marine Patrol and the US Coast Guard; however, there will be temporary and permanent modifications to the regulated navigation channel. A bridge permit amendment and construction plan approval will be required from the US Coast Guard. Additional coordination with the US Coast Guard and Oregon State Marine Patrol will be required to determine additional mitigation measures that will mitigate any impacts to boater safety.

3.13.10 Historic

There are several buildings determined to be eligible for listing on the National Register of Historic Places and others that may be eligible for listing. These are located to the west of the Willamette River near the OR 43 Interchange modifications. SHPO has concurred the project will have "No-Adverse Effect on Historic Properties."

3.13.11 Environmental Justice

The Environmental Justice Technical Memorandum noted one block group within Package A that contains a minority population that is meaningfully greater than the

reference population. Project public outreach determined the only likely population within the API with the potential to be impacted are isolated populations located in the immediate vicinity of the OR 43 Interchange. The Project is not anticipated to disproportionately adversely affect the environmental justice communities located near the OR 43 Interchange. The Project will use standard mitigation measures to minimize impacts and will maintain access to critical services throughout construction.

3.13.12 4(f) and 6(f) Resources

The parks located on east bank of the Willamette River that are considered 4(f) resources are Jon Storm Park and Sportscraft Landing Park. The Project expects any impacts to the Jon Storm Park, owned and managed by Oregon City Parks and Recreation, will be temporary, will not disrupt the functions of the park, and will be processed utilizing the FHWA 4(f) *de minimis* process (Figure 16).

Abernethy bridge foundation installation will require temporary occupancy for more than 180 consecutive days of a portion of Sportscraft Landing Park (Figure 17). Along with the protections afforded by 4(f), Sportcraft Landing Park utilized Land and Water Conservation Funds and is protected by the 6(f) regulations. Coordination with both Oregon Parks and Recreation and National Park Service determined the temporary occupancy will require a conversion. The Project will have a *de minimus* “use” of the park, as defined by 4(f), by constructing temporary access bridges so the boat ramp can remain functional for the duration of the Project.

Figure 16. Jon Storm Park on the East Bank of the Willamette River

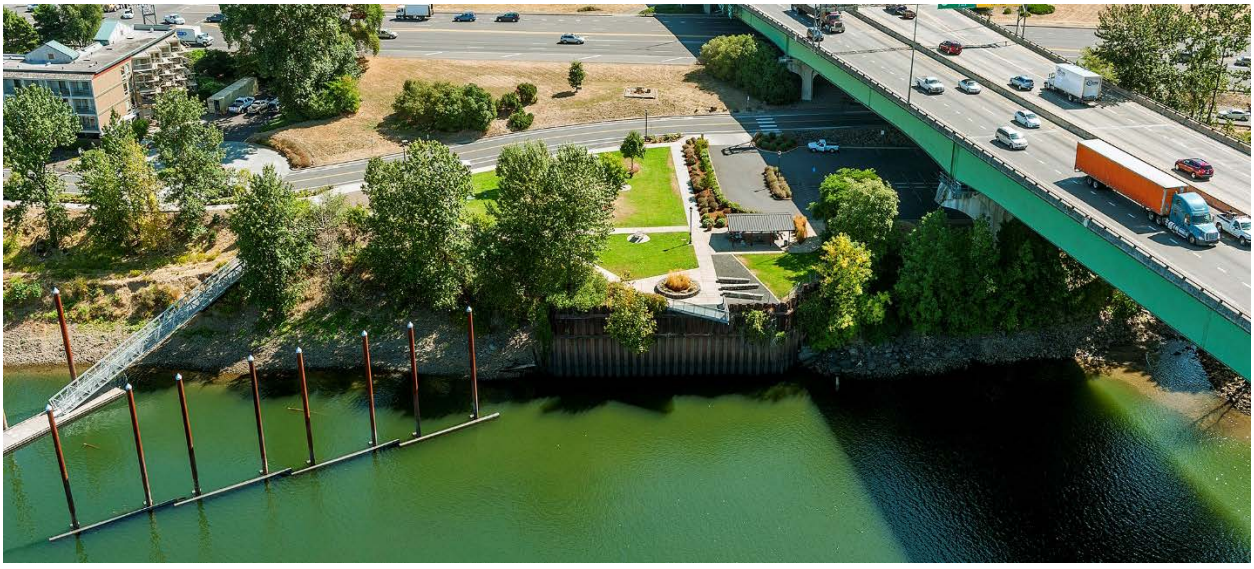


Figure 17. Sportscraft Landing Park and Boat Ramp

On the west side of the Willamette River, the City of West Linn Parks and Recreation owns and operates West Bridge Park (a 4(f) resource) and the McLean House (a historic 4(f) and 6(f) resource). The Project will temporarily occupy West Bridge Park with a construction access road. The Project will improve the existing road through the McLean House property and utilize the road for construction personnel access for more than 180 consecutive days. Access impacts will be temporary, will provide a long-term benefit, and are unlikely to affect the limited recreational use of the property. A small, undeveloped portion of the McLean House and Park property will be occupied for less than 180 days to facilitate crane operations necessary to set bridge beams on the OR 43 exit ramp. In addition to the parks, a Willamette Greenway Trail traverses the park and ODOT ROW under the Abernethy Bridge. The Project will maintain bicycle and pedestrians access under the bridge during construction. A 4(f) finding of temporary occupancy has been acknowledged by the official with jurisdiction over the noted 4(f) resources.

3.14 Other Key Package Risks, Unknowns, or Assumptions

The other key package unknowns or assumptions are presented below. Appendix F contains a list of risks and decisions for the Project.

3.14.1 Willamette Falls Drive Intersection with OR 43

No modifications to the stop-controlled intersection of OR 43 and Willamette Falls Drive are included in the Project. This intersection is beyond the Project limits required to reconnect the NB entrance and exit ramps to the OR 43 Interchange. The Project is anticipated to reduce cut-through traffic that uses this intersection and it does not preclude future improvements to this intersection, such as another roundabout, if a local public agency desires to construct it.

3.14.2 OR 43 Operations and Arch Bridge Queuing

The Project Team has identified an existing operational deficiency associated with the signalized intersection at the south end of the Oregon City Arch Bridge. This condition results in reoccurring backup of SB traffic that extends across the Arch Bridge and occasionally through the Willamette Falls Driver and I-205 NB ramp terminal intersection. Based on input received from Oregon City and West Linn staff and several field observations, this condition is experienced during the p.m. peak hour conditions. While operational improvements at the Arch Bridge signal are outside the scope of the Project, the potential impacts of reoccurring queuing into the roundabout have been assessed to confirm no fatal flaws would result in the operating conditions of the roundabout if queuing extends into the roundabout. The project used a traffic simulation tool, VISSIM, to replicate a southbound queue from the Arch Bridge and concluded that the resultant impacts to the I-205 ramps would not significantly affect queuing or spillback onto of ramp traffic onto the freeway. This result is comparable to existing conditions experienced on OR 43.

3.14.3 Geotechnical Hazard Mitigation

The east bank of the Willamette River consists of deep alluvium over bedrock. The alluvium may experience significant lateral spreading during an earthquake, which would endanger the pile foundation of the Abernethy Bridge supports on this side of the river. Subsurface investigations are complete and the analysis to evaluate the potential for this occurrence is underway. Preliminary results substantiated the need for geotechnical hazard mitigation. Additional geotechnical investigations will occur in summer, 2018, and changes to the assumed mitigation may occur based on the updated information, potentially leading to a cost reduction.

The Abernethy Bridge in-water pier foundations are covered with rock backfill. The as-constructed plans indicate the rock extends 30 feet outside the footings in all directions. If the rock actually extends beyond those limits, it would interfere with sheet pile installation for the cofferdams and additional costs would be incurred to remove the rock by clamshell excavation.

The Abernethy Bridge seismic analyses are ongoing and will conclude in summer, 2018. The retrofit costs contained in this report, therefore, are based on preliminary results only and changes to the assumed seismic retrofit may occur leading to a potential cost variation.

3.14.4 OR 99E Interchange Ramp Terminal Operations

The existing ramp terminals are operating at or above standard volume-to-capacity ratios. The existing single turn lanes and freeway ramp meters result in traffic queues from the SB and NB entrance ramps extending back onto OR 99E during peak hours. The Project will not address this operational issue, but it will be designed to accommodate future improvements to OR 99E.

3.14.5 Main Street Bridge

At the Main Street Bridge, the potential for liquefaction of a deep soil layer (at approximately a 75-foot-depth) has been identified. This potentially liquefiable layer is below the tips of the existing foundation piles at the southern end of the bridge and the bridge could experience some differential settlement between adjacent bents. A decision regarding the need to mitigate this risk is required by ODOT.

3.14.6 Local Agency Approvals

There are no Local Agency design deviations anticipated for Package A. There are several locations where City of Oregon City permits or approvals may be necessary to reestablish impacted roadway features. Initial coordination has occurred and the Project Team believes that these approvals will be obtained.

4 Package B (I-205 Oswego Highway (OR 43) to Stafford Road Sec) Description

Figure 18. Package B – Work Limits

4.1 General Information

Package B begins at MP 2.73, just south of the Stafford Road Interchange entrance and exit ramps, and continues to MP 8.80, just south of the Abernethy Bridge (Figure 18). This package generally consists of the I-205 freeway widening from the Stafford Road Interchange to the Abernethy Bridge; upgrading freeway signing; rock cut excavations required to widen the freeway between Sunset Avenue to the OR 43 Interchange; replacing and/or widening and retrofitting all bridges that carry I-205 or conflict with the proposed rock cut; and adding a small retaining wall. The Package B plans are provided in Appendix B.

Package B's attributes include the following:

- The Package B freeway centerline alignment meanders slightly compared to the existing alignment. The subtle changes utilize the existing terrain to avoid obstacles, lessen earthwork costs, and minimize environmental, ROW, and utility conflicts. See Section 4.3 for a more detailed description of the alignment adjustments.
- I-205 freeway widening (western Project limit start to the 10th Street Interchange) – This freeway section experiences recurring congestion in each direction, particularly in the NB direction where three travel lanes are reduced to two travel lanes near the Stafford Road Interchange. The extension of the third travel lane is anticipated to eliminate this recurring congestion. The current and projected 2045 freeway and ramp volumes for the area between the Stafford Road and the 10th Street Interchanges do not require any additional auxiliary lanes.
- I-205 freeway widening (the 10th Street Interchange to Abernethy Bridge) – The area between the 10th Street Interchange and the Sunset Avenue overcrossing will

transition from the inside widening, which occurs from the Stafford Road Interchange to the 10th Street Interchange, to widening entirely towards the Willamette River just prior to the Sunset Avenue overcrossing. The south side widening will extend to the Abernethy Bridge section where the proposed 12-foot median shoulders will transition back to match the existing median shoulder width of 6 feet on the Abernethy Bridge.

- Rock slope removal and cutting – The rock cut slopes (4V:1H) will be similar to the existing rock surface and will range in height from 20 to 70 feet over a distance of more than a quarter mile. To limit impacts, the extent of rock cut and widening is limited to support the three-lane construction in each direction. However, the Sunset Avenue and West A Street bridge supports are located beyond the cut to avoid conflicting with future auxiliary lanes if ODOT desires them during the bridge's 75-year design life.

4.2 Construction Cost Estimate

The construction cost for Package B, including CE, is estimated to be $199.8 M (see Appendix D).

4.3 Roadway Improvements

Within the limits of Package B, the Project widens I-205 by slightly altering the freeway centerline alignment and widening in the directions shown in Table 6.

Table 6. I-205 Mainline Widening Locations and Directions

Location	I-205 (NB Direction)	I-205 (SB Direction)
Between MP 2.83 (Start of Project / south of Stafford Rd) and MP 6.75 (north of 10th St)	Widen toward the inside median	Widen toward the inside median
Between MP 6.75 (east of 10th St) and MP 8.00 (south of Sunset Ave):	Widen toward the inside median	Widen toward the outside shoulder
Between MP 8.00 (south of Sunset Ave) and MP 8.65 (West A St):	Widen toward the outside shoulder	Widen toward the inside median
Between MP 8.65 (West A St) and MP 8.75 (south of Abernethy Bridge):	Widen toward the outside shoulder	Widen toward the outside shoulder

The Project will establish 12-foot outside shoulders for I-205 throughout the Package B limits to maintain a safe space in the event of vehicular breakdowns (Figure 19).

Figure 19. Rendering of a Typical Example of Future Roadway Improvements

The Project Team established the I-205 mainline geometry based on the following factors:

- Maintain or adjust the existing I-205 horizontal, vertical, and super-elevation geometries in a manner that to minimizes the Project cost. In general, only slight alterations to the freeway geometry are made. This includes raising the highway profile by 9 inches to construct a CRCP overlay section. The replacement bridges will conform to the new freeway profile and the widened and retrofitted bridges will match the revised vertical profile. The bridge raising activity reduces the overall Project cost by eliminating the costly full-depth approach roadway reconstruction that would otherwise be required if the bridges remained at their previous elevations.
- Implement slight geometric improvements to minimize the need for Design Exceptions, where feasible. For the majority of the Project elements, the proposed improvements will conform to the design standards. For some elements, the Project Team will request Design Exceptions for approval.
- As a major benefit, the Project increases the NB vertical clearance by 1'-7" (from 17'-5" to 19'-0") for at least one travel lane and increases the SB direction's vertical clearance from 18'-2" to 19'-0" for at least one travel lane (including up-and-over routing at the Stafford Road Interchange). Both exceed ODOT's minimum vertical clearance requirement of 17'-4".
- In an effort to promote safety for ODOT staff, the construction contractor, and the travelling public, staging will utilize crossovers to the maximum extent possible. Where crossovers are not feasible, primarily between Sunset Avenue and the Abernethy Bridge, the available traffic width during construction will be at least

28 feet with barrier-separated work zones to protect both contractor staff and the traveling public. This is consistent with current ODOT mobility requirements and was successfully implemented during the prior I-205: I-5 to Stafford Road widening project. To avoid modal conflicts during construction, bicycles will be prohibited from using the freeway shoulders (bicycles on freeway shoulders is currently permitted between I-5 and the 10th Street Interchange).

- There is a large wooded area in the median between the Tualatin River Bridges and the 10th Street Interchange. With the inside widening, some of the vegetation and trees require removal. Additional guardrail and/or drainage curbs will be constructed to minimize tree removals.

4.4 Rock Cut Excavation and Containment

The area beginning approximately 500 feet south of Sunset Avenue and continuing to the OR 43 Interchange includes existing, nearly vertical rock slopes. The existing rock slopes were constructed with a fallout area approximately 24-feet-wide extending beyond the edge pavement. The rock slopes were excavated on slope angles of approximately 4V to 1H. During the 2006-2007 I-5 to Stafford Road widening project, rock scaling was performed within this area (Figure 20).

Figure 20. View of an Existing Project Rock Cut Area

Rock slope angles of 4H to 1V, similar to the existing cut slopes in this section, are proposed. Based upon the FHWA *Rockfall Catchment Area Design Guide* (November 2001, FHWA-OR-RD-02-04), the Project Team proposes a 10-foot containment area for rock heights less than 40 feet, transitioning to a 20-foot containment area for rock heights of up to 70 feet, both with a concrete shoulder barrier as additional mitigation for potential rock rollout. The Project Team is evaluating the geophysical survey information for the existing rock bluff and additional explorations were completed in summer, 2018. Preliminary recommendations of those findings support the preliminary design for rock slope angle and rockfall catchment. Final recommendations will be provided prior to Preliminary Plans. The proposed alignment does not affect or improve the northern rock face. For rock cut information, see Appendix L.

4.5 Construction Staging and Maintenance of Traffic

There are generally two major independent work zone sections within the Package B work limits (from Stafford Road Interchange to Sunset Avenue and from Sunset Avenue to the Abernethy Bridge). The assumed construction staging sequence and maintenance of traffic are provided in the Draft Traffic Management Plan in Appendix J and is generally described below. The project plans and construction schedule are provided in Appendix B and Appendix E.

4.5.1 Section between the Stafford Road Interchange and South of Sunset Avenue

This section of Package B is generally independent of any construction activities occurring within the Package A work limits. The roadway is a divided roadway with an existing median. The assumption for traffic maintenance includes widening the existing roadway and utilizing temporary crossovers. The construction staging is anticipated to include the following stages:

- Stage 1 – Construct the widening and interim roadway improvements in the NB direction. This requires shifting NB traffic to the existing right shoulder and then grading and partially constructing the new NB widening (to support traffic under Stage 2). The NB-direction bridge widenings and replacements will provide additional width to support temporary crossover traffic. Traffic will run at the existing roadway grade (e.g., no concrete overlays will have been constructed).
- Stage 2 – Using the crossovers, shift the SB traffic onto the widened roadway and structures completed in Stage 1. This allows the contractor full access to the SB roadway to complete all bridge and roadway work, including the final CRCP overlay over the existing travel lanes and shoulders and construct the SB bridge replacements.
- Stage 3 – Using the crossovers, shift traffic (in both the SB and NB directions) onto the newly widened SB travel lanes. Complete the NB CRCP overlay and raise the widened and retrofitted bridges to their final elevation.
- Stage 4 – Relocate traffic (in both the SB and NB directions) into the final configuration and remove any temporary facilities.

4.5.2 Section between Abernethy Bridge and South of Sunset Avenue

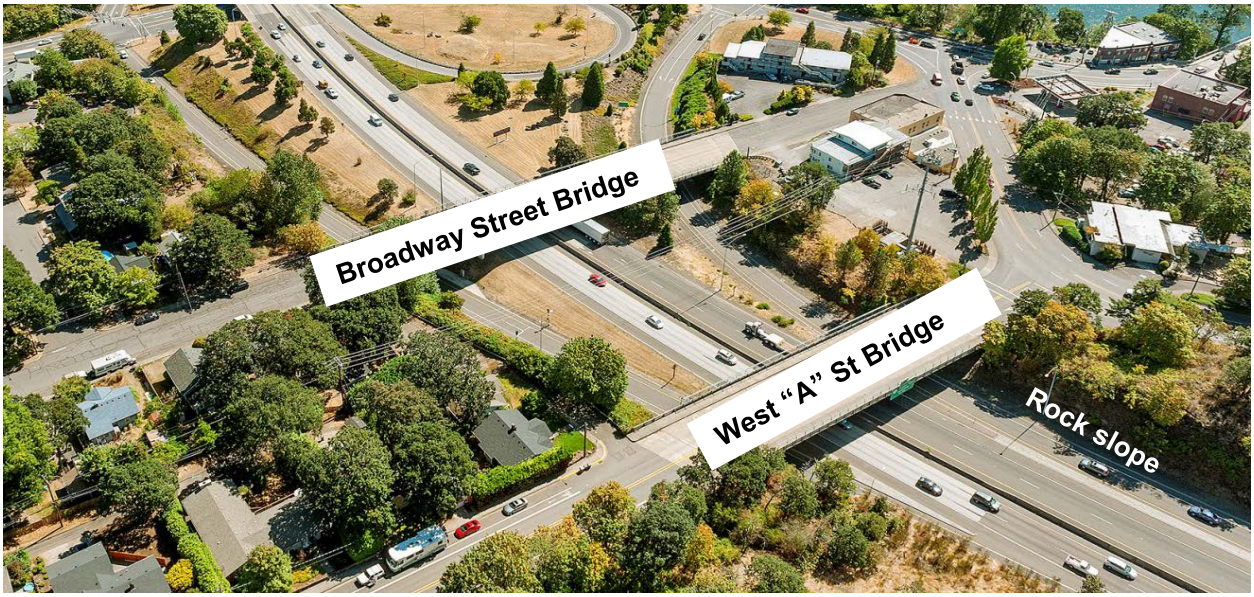
Many factors, including the Sunset Avenue and West A Street overcrossing replacements sequence, the rock cut and pavement widening, and the freeway pavement rehabilitation, influence the construction staging sequence within this section (see Figure 21 for existing conditions). The construction sequencing and traffic staging of Package A also influences the construction sequence of this section. Based on a number of design requirements and considerations (i.e., vertical clearance, maintaining traffic, ease of construction, and staging between contractors), the Project Team developed the following conceptual construction sequence for this segment:

- Package A work (prior to beginning Package B work) – Complete the OR 43 Interchange improvements and the NB auxiliary lane extension between the OR 43 and OR 99E Interchanges.
- Package B key activities for work north of Sunset Avenue
  - Construct the Sunset Avenue and West A Street overcrossing replacements
  - Perform rock cut work via blasting and conventional ripping
  - Perform freeway pavement rehabilitation and widening

This high-level strategy provides maximum contractor access with minimal traffic control stages. The existing Sunset Avenue, West A Street, and Broadway Street bridges act as traffic obstructions for the rock cut and pavement operations. Because of this, they will be reconstructed first. Once the existing structures are removed and their new columns are placed, there is a wider range of staging options available to maintain freeway operations.

To maintain local access, the Sunset Avenue replacement must be completed in phases. Initial work includes a partial demolition of the existing structure and a temporary freeway widening in order to accommodate traffic. Once the new overcrossing is built, Sunset Avenue traffic shifts onto the new structure and the existing bridge is removed. The removal of the existing bridge footing allows space to shift freeway traffic away from the rock cut area during rock blasting and removal operations.

Figure 21. Photograph of Broadway Bridge (to be removed), West A Street Bridge (to be replaced), and the Rock Slope area (to be cut back)

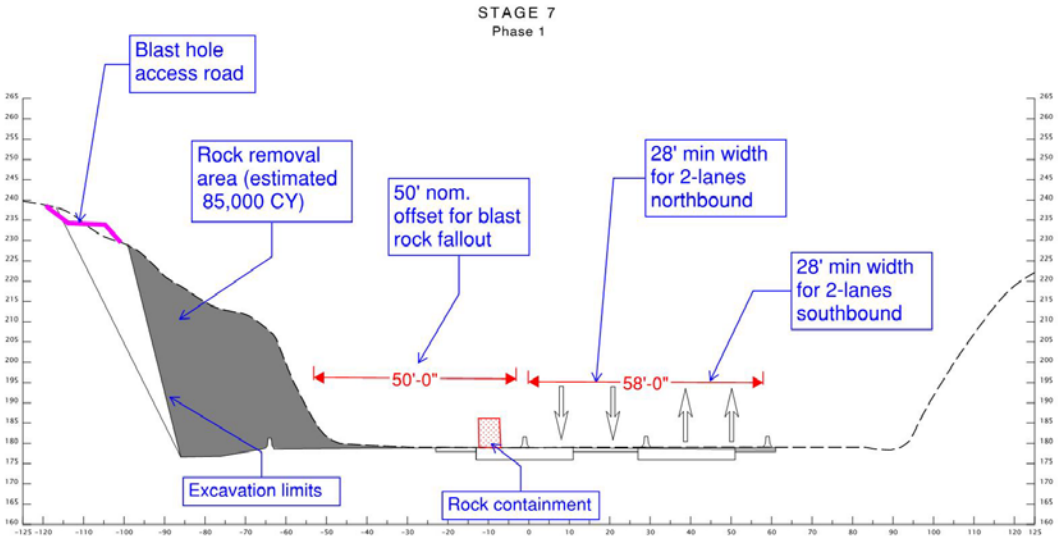


West A Street Bridge will be reconstructed in stages with traffic primarily detoured to OR 43 via McKillican Street, which has a signalized intersection with OR 43. A one-lane, one-way traffic pattern for vehicles traveling southbound on West A Street will be maintained during construction. This allows for egress of vehicles from the adjacent West

Linn High School, as well as provides a more suitable route during inclement weather. A secondary local access detour route is via Broadway Street. During demolition activities, portions of the rock cut work will be concurrent with the bridge replacement work.

After the demolition of the existing overcrossings, the remaining rock excavation and blasting will be performed (Figure 23). The project will implore 20-minute rolling slowdowns during rock blasting activities. At the completion of each blast, traffic will resume operations. Due to the noise impacts associated with the rock blasts, and to safely perform the work associate with the blasts, this work will be conducted during select timeframes during daytime hours. The Project is also considering the use of performance specifications to ensure the safe and efficient performance of this rock excavation while minimizing impacts to the traveling public.

Figure 22. Typical Traffic Control Section for Rock Cut area between Sunset Avenue and West A Street



After the completion of the rock excavation, the remaining pavement and drainage improvements will be performed. Traffic will be staged to construct the roadway improvements in approximately one-third widths, maintaining two travel lanes in each direction. Interim the OR 43 Interchange ramp connections are required and may necessitate a series of weekend closures.

4.6 Pavement Type

The I-205 pavement section from the Stafford Road Interchange to the Abernethy Bridge generally consists of a sacrificial 2-inch layer of asphalt wearing course over 8 inches of CRCP. The original CRCP section was constructed in the late 1960s and was most recently repaved the summer of 2017. While the existing CRCP is more than 50 years old and is nearing its end of life, the sacrificial asphalt layer has generally protected the lower CRCP from studded tire wear and has helped to extend its design life. The pavement has had good service to date, but is aging. To optimize the design, ODOT Pavement Services considered several design variations for both asphalt and concrete

pavement types. To maximize cost savings, the various pavement sections assumed a reuse of the existing pavement as part of the final pavement section. Construction for both the CRCP and the asphalt overlay options assumed normal methods and both were found to provide a good return on investment due to efficient staging and reuse of the existing CRCP as a structural element.

ODOT Pavement Services performed a life cycle cost analysis (LCCA) for both asphalt and CRCP overlay options. A LCCA is a process for evaluating the total economic worth of a useable project segment by analyzing the initial costs and discounted future costs and considering aspects such as maintenance, reconstruction, rehabilitation, restoring, and resurfacing costs over the life of the Project. FHWA requires an LCCA to evaluate both initial cost and a standardized Equivalent Uniform Annual Cost (EUAC). Together, these findings represent a combined present versus future value associated with maintaining the highway in a state of good repair. Based to the cost data and the LCCA results, CRCP has a higher initial cost than asphalt, but has lower future maintenance costs because it requires less frequent maintenance and preservation cycles. Table 7 provides the findings from the analysis.

Table 7. Pavement LCCA Results

Pavement Option	Initial Cost ($ millions, in 2018)	Equivalent Uniform Annual Cost (EUAC) ($ millions)
Asphalt Overlay Section	$34.5 M	$2.36 M
CRCP Overlay Section	$60.3 M	$2.52 M

The higher initial cost for the concrete overlay is a function the much higher cost for supplying and constructing CRCP. This cost difference is exacerbated by the fact that Oregon constructs many more asphalt concrete pavement projects than concrete and the Project Team found only a few projects of similar size and complexity to this Project. This resulted in reduced confidence in the unit pricing assumed, thereby increasing its contingency value.

The LCCA also showed that the annualized initial and future costs for each option are very similar (i.e., over the analysis period of the life of the pavement, the costs were nearly the same). Therefore, in accordance with ODOT Design Guidance, a type selection meeting to discuss factors besides cost was held with Region 1 Management, ODOT leadership, the Project Team, and ODOT Pavement Services. The other factors discussed included the following:

- User delay costs
- Future maintenance needs
- Future preservation projects for the corridor
- Safety of workers (exposure to traffic)
- Initial and future construction complexity
- Repair and maintenance familiarity with the materials
- Material and contractor availability

- Project phasing

The Project Team recommended proceeding with the CRCP option for two primary reasons, with both options providing opportunities to reduce live traffic exposure risks to ODOT and contractor employees:

1. Based on construction history data from ODOT's pavement management system, the asphalt option requires a recurring, 12-year rehabilitation or preservation cycle until the section is ultimately replaced. In contrast, the CRCP option extends the rehabilitation or preservation recurrence to a 30-year cycle.
2. The asphalt option requires a partial replacement at periodic intervals, which causes two issues: 1) increased user delays and 2) increased worker exposure to the paving activities.

The Project estimate (Appendix D) includes the costs for the CRCP overlay alternative. Figure 23 is a rendering of the typical pavement for this portion of the Project.

Figure 23. Rendering of Typical Future Improvements to Project Roadway

The Project Team will continue to refine the details associated with the final pavement design sections for Package B. While the majority of the project accommodates a 9-inch CRCP overlay without modification, several locations require additional paving details to support the proposed roadway geometry. Areas near the Borland Road, Tualatin River and Johnson Road Bridges will consist of full depth CRCP construction due to either a change in horizontal or vertical alignment. The Final DAP cost estimate assumes these areas to be constructed using the "Bridge Approach" pavement section.

Additionally, portions of the existing roadway include inadequate roadway cross slope for the additional travel lane. In these locations, design options are being evaluated to perform a variable depth grind of the existing ACP wearing course in the proposed outer

travel lane and shoulder as to provide additional pavement cross slope. Lastly, the details associated with the transition between the proposed CRCP overlay and the previously constructed ACP overlay on top of the rubblized CRCP roadbed are still under further evaluation. During the prior widening project (from I-5 to Stafford Road) performed a thickened ACP overlay atop the rubblized concrete pavement, with a 400-foot ACP wedge to transition back to the existing 2.25-inch ACP wearing course. The paving details associated with transitioning back to the prior overlay, as well as the downstream widening that parallels the prior rubblization will be refined as part of the development of Preliminary Plans.

4.7 Stormwater

Based on preliminary quantities, Package B adds approximately 28.1 acres of CIA to the 67.0 acres of existing freeway CIA. The Project design will include best management practices to meet the ODOT and Clackamas County stormwater design criteria for water quality and, where applicable, detention for the new total CIA (i.e., 95.1 acres). Management of the stormwater runoff with water quality and quantity facilities is proposed where the stormwater is conveyed in a non-ODOT system or through non-ODOT property that does not directly outfall into the Willamette or Tualatin Rivers. Water quality-only facilities are proposed in areas that directly discharge into the Willamette or Tualatin Rivers via an ODOT stormwater conveyance system.

The Project modifies the existing stormwater facilities located within the ODOT ROW south of the Tualatin River to meet current stormwater requirements. Stormwater management for the remainder of this package will utilize a combination of bioslopes, vegetated swales, bio-retention, and underground detention tanks, where ROW is limited. This package will construct stormwater facilities within the median and adjacent to the roadway, within ROW.

From Sunset Avenue to the OR 43 Interchange, stormwater treatment is challenging due to the shallow depth to bedrock. The Project will convey the stormwater runoff from this section east along the north side of the highway and discharge into the Willamette River. The Project proposes to incorporate stormwater treatment from Package B into the Package A facility located on the south side of the OR 43 Interchange (within existing ODOT ROW) before discharging it into the Willamette River.

4.8 Traffic Improvements

Traffic Improvements consist of signing, lighting, signalization, and ATM and/or ITS improvements as further described below.

4.8.1 Signing

The proposed lane changes will affect the signage of I-205 NB before the Stafford Road Interchange. The Project will update NB signing to replace the three signs mounted on cantilevers with “EXIT ONLY” designations. The Project will upgrade I-205 SB diagrammatic signs to “Overhead Arrow-per-Lane" signs to remain consistent with ODOT’s current use of the sign type. The proposed signs are larger than the existing diagrammatic signs, so the existing sign structures have been assessed to confirm they

have adequate capacity for the larger signs. Ground-mounted signs will remain in place unless modifications are needed to meet current standards or address physical impacts. The Project will construct major signage using either cantilever, sign bridges, or bridge mounts, whichever is most cost-effective and provides the appropriate siting. See Appendix K for sign structure locations.

The Project proposes a new cantilever advanced guide sign “EXIT 8” – “43/West Linn/Lake Oswego/1 MILE” for the NB direction just west of the viewpoint. It also proposes a NB cantilever to replace the existing cantilever structure at I-205 NB Exit 8. This structure will support a new exit direction sign “EXIT 8” – “43/West Linn/Lake Oswego/ (Type A arrow)”. Eleven other new cantilever support structures for SB and NB exit direction guide signs will be added to replace existing ground mounted signs on the mainline. See Section 4.12 for additional information.

4.8.2 Lighting

Based on discussions with ODOT Lighting Design staff, the existing lighting systems along the I-205 mainline and interchange areas are at the end of their useful life. These systems consist of older high-pressure sodium cobra head-style luminaires (typically 400 watts). Poles consist of single and twin luminaire mountings and are located along the freeway’s median and outside shoulders. The Project will replace the existing lighting systems that are older than 5-years-old throughout the mainline and within the Stafford Road and West Linn (10th Street) Interchange areas. The replacement systems will include new base-mounted service cabinets, conduits, wiring, poles, foundations, and LED luminaires. Additional lighting design information is provided in Appendix M.

4.8.3 Signalization

Package B improvements include ramp meter modification or replacement at each entrance ramp between the Stafford Road and 10th Street Interchanges.

4.8.4 ATM and ITS

Package C will construct the majority of the ATM improvements prior to the construction of this package. For Package B, variable advisory speed (VAS) signs for both directions will be attached to the reconstructed Sunset Bridge to avoid the unnecessary construction of independent sign structures. Once installed, these signs will be integrated with the ATM installed as part of Package C. Because Package B widens the freeway, it is anticipated that some of the temporary ATM conduits placed to power and communicate with Package C will be reconstructed within Package B. Some additional ITS restoration is also required due to Project impacts. This includes fiber optic communications, cameras, cabinets, or any other impacted equipment. Additional signal and ramp meter details can be found in Appendix B.

4.9 Bridge and Geotechnical Improvements

The Project replaces, widens, and seismically retrofits thirteen bridges. Originally, all of the bridges between MP 3.81 (Borland Road) and MP 8.64 (10th Street) were included in the widening and seismic retrofitting scope. However, during the preliminary analysis process, it was determined to be more cost-effective to replace the Borland Road,

Tualatin River, and Woodbine Road bridges. Replacement is preferred to retrofitting for these bridges for the following reasons:

- Borland Road and Woodbine Road Bridges – The replacement cost of each bridge is lower than the widening and retrofit cost. This is due to the significant complexities with constructing the retrofitting and the cost of rebuilding bridge roadway approaches versus overlay.
- Tualatin River Bridges – The replacement cost for each bridge is within 20 percent of the retrofit cost (i.e., they had an 80 percent retrofit-to-replace cost ratio). If a retrofitted bridge were constructed, the Tualatin River would also need to be widened to mitigate the hydraulic effects of more columns in the river. Replacing these structures allows the new NB bridge to be reconstructed during a single in-water work season and significantly reduces the overall duration of Package B construction.
- All bridges will be designed to remain operational after the anticipated Magnitude 8+ Cascadia Subduction Zone Earthquake and to avoid collapse after a 1,000-year return period earthquake.
- The Project achieves cost savings for approach roadway reconstruction by raising the profile grade of each replacement bridge. Raising the bridge profile allows the approach roadway sections to be cost-effectively overlaid rather than requiring a complete freeway removal and reconstruction.
- The Project will reconstruct the Borland Road and Tualatin River Bridges by permanently relocating the NB bridge alignment into the median. This eliminates the need for a temporary freeway bridge to maintain traffic, shortens the overall construction schedule, and is safer than a staged construction operation (the relocation acts to protect workers and traveling public by separating live traffic from the construction zone).

Other benefits that come with replacing each bridge include the following:

- Longer service life (i.e., the design code is based on a 75-year-minimum service life) as the existing bridges are each more than 45 years old.
- Will meet all current safety and maintenance standards for bridge rails, clearances, bridge deck concrete condition, scour deficiencies, and more.
- Lower life cycle costs because of improved materials that come with modern design standards.
- More reliable seismic behavior and performance after seismic events because each bridge has modern materials.

Table 8 lists the scopes for the thirteen bridges within the limits of Package B. For more information on these bridges, see the Bridge TS&L Reports provided in Appendix N.

Table 8. Package B Bridge Scopes

Bridge Name	MP	Scope
Br. 09738 I-205 NB over Borland Road	3.82	Replace

Bridge Name	MP	Scope
Br. 09738A I-205 SB over Borland Road	3.81	Replace
Br. 09737 Tualatin River, I-205 NB	4.10	Replace
Br. 09737A Tualatin River, I-205 SB	4.08	Replace
Br. 09735 I-205 NB over Woodbine Road	5.14	Replace
Br. 09735A I-205 SB over Woodbine Road	5.19	Replace
Br. 09734 I-205 NB over Blankenship Road	5.84	Raise, widen, and seismically retrofit
Br. 09734A I-205 SB over Blankenship Road	5.90	Raise, widen, and seismically retrofit
Br. 09728 I-205 NB over 10th Street	6.40	Raise, widen, and seismically retrofit
Br. 09728A I-205 SB over 10th Street	6.42	Raise, widen, and seismically retrofit
Br. 09724 Sunset Avenue over I-205	8.28	Replace
Br. 09704 West A Street over I-205	8.64	Replace
Br. 09703 Broadway Street over I-205	8.69	Permanently remove

Key characteristics of the various bridge scope types are as follows:

- All bridges will be designed to remain operational after the anticipated Magnitude 8+ Cascadia Subduction Zone Earthquake and to avoid collapse after a 1,000-year return period earthquake.
- The Project widens all I-205 bridges by approximately 18 feet to provide a new minimum clear width of 60 feet.
- The new Sunset Avenue Bridge accommodates the additional I-205 width and has a width consistent with City of West Linn standards for the existing roadway classification. This includes 8-foot sidewalks (wider than City standard), 6-foot shoulders, and two 12-foot travel lanes, resulting in a bridge slightly narrower than the existing bridge section but still wider than the roadway approaches. To maintain traffic during construction and optimize the bridge dimensions, the Project also slightly realigns Sunset Avenue to the south.
- The West A Street and Sunset Avenue bridges will be constructed such that at least one lane can achieve a 19'-0" minimum vertical clearance for mobility. Both bridges will also be constructed as 2-span structures with additional lateral clearance for future widening.
- The Project removes the existing Broadway Avenue Bridge overcrossing.
    - To understand the existing traffic operations and demands, the Project Team obtained traffic counts for several facilities within the project area (including West A Street and Broadway Street). The counts indicate very low usage of the Broadway Street Bridge. Subsequent traffic analyses demonstrated that no detrimental impacts occur after shifting the traffic volumes from the Broadway Street Bridge to the West A Street Bridge.

  - In fact, the elimination of this bridge improves the OR 43 Interchange operations and improves the non-standard intersection between Broadway Avenue and Willamette Falls Drive.

- Due to the limited funds for the initial design, foundation recommendations and geotechnical design parameters for the bridges west of Sunset Avenue are based on existing boring logs and other geotechnical data. While previous boring data is typically representative of adjacent conditions, additional geotechnical hazards may be identified as part of future investigations, resulting in added cost. To mitigate the possible risk associated with geotechnical unknowns, the Project Team will perform additional geotechnical investigations in spring, 2018.

4.9.1 Borland Road Bridges

The existing SB and NB three-span bridges will be replaced with a single span, precast prestressed reinforced concrete deck girder (RCDG) bulb-T (BT) girder bridge. The SB and NB overall structure lengths will decrease from 265'-0" and 228'-0", respectively, to 150'-0". The replacement structures will have a 63'-1" out-to-out structure width to accommodate new 60'-0" roadway. The structure length was decreased to optimize the bulb-T girder section, minimize height of new vertical abutments, and provide a minimum 16'-0" vertical clearance over Borland Road.

4.9.2 Tualatin River Bridges

The existing SB and NB bridges will be replaced with five-span, BT90 precast prestressed concrete girder bridge of approximately the same length as the existing structures. The roadway width will be 60'-0" and the total superstructure width would be 63'-1". No staged construction would be required as the new NB bridge would first be built in the median and will then carry both directions of traffic during the removal and reconstruction of the SB bridge. Compared to the existing bridges, the replacement structures will reduce the number of bents in the Tualatin River.

4.9.3 Woodbine Road Bridges

The existing SB and NB bridges will be replaced with a single span, precast prestressed RCDG BT bridge. The overall structure length will decrease from 208 feet to 180 feet to optimize the BT girder section and minimize the height of the new vertical abutments. The provided out-to-out structure widths will be 63'-1" and 69'-1" for SB and NB bridges, respectively. The NB structure is slightly wider to accommodate staged bridge construction methods. The minimum vertical clearance over Woodbine Road will be slightly reduced, but a clearance in excess of 25'-0" will still be provided.

4.9.4 Blankenship Road Bridges

Constructed in 1970, both bridges are single-span, post-tensioned RCBG bridges that are 136'-0" long and 44'-3" wide. The Project will widen and seismically retrofit the bridges to provide a roadway width of 60'-0" in each direction. This will result in 18'-10" of new structure width on each structure. The Project also raises the bridge superstructure by 9 inches to provide adequate clearance below the widening.

The widening will be with an in-kind post-tensioned RCBG. This will provide compatible structural performance between the widening and existing structure. Further, the existing structure has a unique parabolic haunch. By using a cast-in-place structure, a uniform aesthetic will be achieved.

The proposed retrofit strategy is to replace in a manner that adequately mobilizes passive resistance from the abutment soil to limit displacements. It will be designed to prevent lateral load transfer into the abutment. This breaks the load path in the longitudinal direction to the piles and utilizes the abutment backfill to provide longitudinal restraint.

4.9.5 10th Street Bridges

Constructed in 1970, the single-span post-tensioned RCBG bridges are 141'-0" and 137'-0” long, respectively. Both bridges are 44'-3" wide. The Project will widen and seismically retrofit the bridges to provide a roadway width of 60'-0" in each direction. This results in 18'-10" of new structure width on each structure. The Project also raises the bridge superstructure by 9 inches to provide adequate clearance below the widening.

The widening will be with an in-kind post-tensioned RCBG. This will provide compatible structural performance between the widening and existing structure. Further, the existing structure has a unique parabolic haunch. By using a cast-in-place structure, a uniform aesthetic will be achieved.

The proposed retrofit strategy is to replace in a manner that adequately mobilizes passive resistance from the abutment soil to limit displacements. It will be designed to prevent lateral load transfer into the abutment. This breaks the load path in the longitudinal direction to the piles and utilizes the abutment backfill to provide longitudinal restraint.

4.9.6 Sunset Avenue Bridge

The existing Sunset Ave Bridge will be replaced with a two-span, steel girder bridge on a new alignment to the south of the existing bridge. The new alignment will slightly reduce the skew and required length of the bridge and diminish the impact of construction staging. The new bridge will be constructed without disrupting use on the existing bridge.

The new bridge is a 220'-0" long (120'-0", 100'-0"), 54'-0" wide two-span continuous steel girder structure with end panels on each end of the bridge. The cross section consists of a 12'-0" lane, a 6'-0" shoulder, an 8'-0" sidewalk, and a 1'-0" combination pedestrian fence and bridge rail in each direction. The south end of the bridge is on a slight curve where the bridge feeds into the newly realigned intersection of Willamette Falls Drive and Sunset Avenue. All bents are founded on drilled shafts and are parallel to each other. They involve variable skews due to the curved bridge centerline.

4.9.7 West A Street Bridge

The existing West A St Bridge will be replaced with a two-span, steel girder bridge on the same alignment as the existing bridge. To accommodate the traffic control needs out of West Linn, its reconstruction will be staged to provide only single-directional use (towards OR 43), bike, and pedestrian access during the construction of the initial stages

of the new bridge. Other traffic will be detoured to McKillican Street and Broadway Street. During the lane closures, portions of the existing structure will be demolished and the rock cut adjacent to the I-205 NB exit ramp will be completed. This will allow the necessary width to move the mainline and ramp traffic during construction.

The new bridge is a 225'-0" long, 60'-0" wide, two-span structure with end panels on each end of the bridge. The spans are continuous over the interior bent. The total length of the new bridge is slightly shorter than the existing bridge. This reduced length was selected to accommodate a 2-span structure depth that maximizes the vertical clearance over the freeway, while still accommodating flexibility in the future travel lane configuration to allow for the addition of auxiliary lanes or shoulder transit operations. As a result, the new northern bridge abutment will be located prior to the existing rock face, requiring an abutment wall. The cross-section consists of 12'-0" lanes, 6'-0" shoulder/bike lanes, an 8’-0” parking lane in the northbound direction, 7'-0" curb and sidewalk, and a 1'-0" combination pedestrian fence and bridge rail in each direction. The structure will have a single bent located in the I-205 median with vertical abutment walls. The bridge is currently assumed to be founded on drilled shafts and bents are skewed approximately 11 degrees to the “WA3” line on the bridge.

4.10 Retaining Walls

Retaining walls will be required in various locations within the Project limits due to the widening and/or realignment of the mainline I-205 and associated ramps. Two locations within Package B are identified below with discussions on the wall type alternatives and recommendations on the preferred alternatives. Retaining walls locations are depicted within the plans in Appendix B.

4.10.1 Retaining Walls B1 and B2 (Median Walls)

These two retaining walls are located in the median of I-205. The walls are designed to retain the fill required to widen for the new lanes on the freeway in selected locations. Walls B1 and B2 will be approximately 400-feet-long and 2,965–feet- long, respectively, and will retain soil heights of approximately 2.5 feet or less. Precast median barriers are a cost-effective method to provide both a low-height wall and the required protection from traffic; they are selected as the preferred alternative. If there are segments where the required wall height exceeds what can be retained by the median barrier, cast-in-place gravity wall segments can be incorporated.

4.11 Sound Walls

The detailed evaluation and locations of the potential sound walls are described in the Final Noise Technical Report (August 12, 2018). A general description of the sound wall locations and type are summarized below. The Final DAP represents locations that meet ODOT noise policy mitigation requirements for reasonableness and feasibleness. Consistent with ODOT’s noise policy, a public voting process for those locations were criteria have been met will be conducted in the fall of 2018. This voting process will conclude which locations will be carried into final design and construction.

4.11.1 Sound Wall near West A Street (Noise Technical Report Wall 8)

The Draft Noise Technical Report (February 16, 2018) identify a potential sound wall to be located on or near the top of the existing rock cut extending from West A Street to the existing cul-de-sac near Amy Street along the I-205 SB entrance ramp from OR 43. The wall was evaluated at a minimum of 4 feet from the existing freeway ROW to allow wall construction to be completed without the use of temporary construction easements. A terrestrial topographic survey was performed in the vicinity of potential sound wall between the existing right of way line and the face of rock cut. This survey improved upon the original aerial LIDAR imagery which was used for the preliminary sound wall analysis and more accurately defined the required sound wall height. As part of the Final Noise Technical Report, the revised sound wall was evaluated and failed to meet the abatement measure cost effectiveness criteria outlined in the ODOT Noise Manual and therefore will not be carried forward.

4.11.2 Sound Wall SW B1 (Draft Noise Technical Report Wall 7)

Sound wall SW B1 is proposed to be located along I-205 SB just north of Sunset Avenue. The wall will be on or near the top of the existing rock cut (Figure 24). The length of this wall is approximately 974 feet. This wall was originally evaluated 4 feet from the existing freeway ROW; however, after additional coordination with the Project Team, the wall was relocated to a minimum of 10 feet from the existing ROW to accommodate future maintenance access and constructability of the wall. An alternative wall location that follows the existing terrain near a large rock outcropping near the middle portion of the wall is also under evaluation and will be considered as part of the Final Noise Report evaluation.

Figure 24. View from Sunset Avenue near sound wall SW B1.

The assumed height of the wall included in the Final Noise Technical Report was 14 feet above the existing ground, but the wall height was increased by an average of 1-foot in order to account for grading and accommodate the future maintenance needs while maintaining the same top elevation assumed in the Final Noise Technical Report. The resultant maximum structural height is approximately 16.5 feet. An ODOT standard masonry block sound wall (Dwg. BR730) is recommended for this wall because the height is within the allowable range, the individual blocks allow for flexibility in matching the changing foundation elevations, the narrow continuous strip footing can be fit in the available space, and it will maintain a consistent architectural appearance throughout the corridor. The Final DAP cost estimate assumes this recommendation.

4.11.3 Sound Wall SW B2 and SW B2a (Draft Noise Technical Report Wall 6a & 6b)

Sound Wall SW B2 was evaluated along the north side of I-205 SB beginning near Sunset Avenue and continuing south. The wall was assessed near the top of the existing rock cut and along the side of a hill. Wall SW B2 extends approximately 3,695 feet south to an existing drainage way. The height of the wall was originally assessed as 10 feet above the existing ground and located 4 feet from the existing ROW. After additional coordination with the Project Team, the wall location was modified to 10 feet from the existing ROW line to accommodate maintenance access and allow for the wall construction without the use of temporary construction easements. Because of this wall

realignment, the proposed sound walls were increased to an assumed height of 11 feet, with an average structural height of approximately 13 feet.

An ODOT standard masonry block sound wall or a precast panel wall system are feasible wall alternatives for this location. The Final DAP cost estimate assumes the cost of a precast panel wall. Additional considerations for wall SW B2 include the need to accommodate the existing drainage, overhead utilities, wetland impacts, and construction and maintenance access. Drainage currently sheet flows from the adjacent private properties onto ODOT ROW. The wall design will need to accommodate systematic drainage over the length of the wall in order to prevent trapping existing runoff from the adjacent parcels. There is an existing overhead utility line located above wall SW B2. Although there appears to be sufficient clearance for the wall in its final configuration, overhead clearance during construction may influence the wall type selection. There are multiple delineated wetlands located adjacent to the preliminary sound wall alignment, which would be impacted by the construction of wall SW B2.

Wall SW B2a was evaluated beginning near an existing drainage way near the southern limits of wall SW B2 and continued for approximately 1160 feet. Similar to wall SW2, the wall was assessed at a location 10’ offset from the existing ROW limits at a height of 11 feet. The western most portion of wall SW B2a was located along an existing, steep terrain, which would require significant benching and grading as part of the construction and maintenance access needs. Prior to the Final Noise Report, a terrestrial topographic survey was performed in the vicinity of Sound Wall SW B2a. This survey improved upon the ground elevations from the original aerial LIDAR imagery which was used for the preliminary sound wall analysis. The higher quality terrestrial survey data was used to more accurately define the required sound wall height. The revised sound wall was evaluated and failed to meet the abatement measure cost effectiveness criteria outlined in the ODOT Noise Manual. Wall SW B2a will not be carried forward.

4.11.4 Sound Wall SW B4 (Draft Noise Technical Report Wall 3)

Sound Wall SW B4 is proposed to be located west of 10th Street on the south side of I-205 (adjacent to NB traffic). The wall would be located along an existing berm, which runs along the shoulder of the road. The wall would be located approximately 30 to 40 feet off the proposed roadway in order to accommodate space for stormwater features, signing, and other highway uses. The length of this wall is approximately 2,150 feet with the height of wall ranging from 12 to 16 feet above the existing ground. The maximum structural height is approximately 18 feet.

An ODOT standard masonry block sound wall or precast panel wall system are feasible alternatives for this location. The DAP cost estimate assumes a precast panel wall for this location. The Project Team will finalize the selected wall type and design parameters as part of the Final Design phase.

4.11.5 Sound Wall SW B5 (Draft Noise Technical Report Wall 4)

Sound Wall SW B5 is proposed to be located between 10th Street and Blankenship Road on the north side of I-205 SB. The wall would be located along an existing berm, which runs along the shoulder of the road. The wall would be located approximately 30 to 40 feet off the proposed roadway in order to accommodate space for stormwater

features, signing, and other highway uses. The wall is approximately 1,520 feet in length with a height of 10 feet above the existing ground and a maximum structural height of approximately 11 feet.

An ODOT standard masonry block sound wall or precast panel wall system are feasible alternatives for this location. The DAP cost estimate assumes a precast panel wall for this location. The Project Team will finalize the selected wall type and design parameters as part of the Final Design phase.

4.11.6 Sound Wall SW B6 (Draft Noise Technical Report Wall 2)

Sound Wall SW B6 is proposed to be located adjacent to Blankenship Road on the north side of I-205 SB. The wall is located along the side of a hill and on relatively flat ground. The length of this wall is approximately 2,070 feet. The height of the wall is 12 feet above the existing ground with a maximum structural height of 14 feet.

An ODOT standard masonry block sound wall or precast panel wall system are feasible alternatives for this location. The DAP cost estimate assumes a precast panel wall for this location. The Project Team will finalize the selected wall type and design parameters as part of the Final Design phase.

4.12 Traffic Structures

For additional discussion regarding the overhead structure types, foundations, and design codes for traffic structures, refer to Section 4.8.

4.12.1 New Monotube Cantilever Sign Structure

New monotube cantilever structures will be provided at the following location(s):

- MP 8.55 NB – NB guide signs on new cantilever spanning the OR 43 exit ramp lane. Remove the existing sign cantilever #19452 nearby. The estimated span length is 36 feet with new concrete barrier protecting the support. A spread footing foundation is anticipated. This assumption will continue to be refined because of upcoming geotechnical explorations and validation of rock removal limits.
- Eleven (11) new cantilever support structures for new SB and NB guide signs will be added on the mainline and one (1) new cantilever support structure for a new guide sign on OR 43 for the roundabout guidance. The estimated span length is 36 feet with new concrete barrier protecting the supports. A spread footing foundation is anticipated. This assumption will continue to be refined because of upcoming geotechnical explorations and validation of rock removal limits.

4.12.2 New Structure Mounts to New Bridge

Signage will be mounted on steel frames mounted to the existing concrete bridge decks of the existing bridge with resin-bonded anchors.

- MP 8.3 NB and SB – New Sunset Bridge (number to be determined)
    - NB and SB VAS signs on the existing Sunset Avenue overcrossing. The new Sunset Avenue Bridge will be a steel girder bridge with a cast-in-place concrete

deck. The sign support frames will be mounted to the edge and underside of the concrete deck overhang. The electrical conduits will be mounted to the underside of the deck overhang and concrete wingwalls.

4.12.3 New Mounts to Existing Monotube Cantilever Structures or Sign Bridges

The existing sign bridges or cantilevers have been evaluated for structural capacity and are deemed adequate to accommodate the new proposed sign sizes. New signage will be mounted on new steel vertical frames mounted to the following existing sign bridges or cantilevers:

- MP 2.86 NB – Existing sign monotube cantilever #20341
- MP 2.28 NB – Existing sign monotube cantilever #20343
- MP 2.00 SB – Existing truss type sign bridge #20346
- MP 1.70 NB – Existing sign monotube cantilever #20342
- MP 1.50 SB – Existing truss type sign bridge #20347
- MP 0.58 SB – Existing truss type sign bridge #20348

4.12.4 Remove Sign Support Structures

Remove sign supports and the foundations or down to 3 feet below grade as directed.

- MP 8.64 NB and SB – Remove signs on bridge
- MP 8.52 NB – Existing cantilever #19452

4.12.5 Additional Overhead Sign Support Evaluation

Based on a recommendation from ODOT, an evaluation of existing ground-mounted guide signs in Package B was performed to determine the need, if any, to upgrade sign supports to overhead structures. The evaluation included thirteen signs in Package B, beginning with the western-most advanced guide sign for Stafford Road (I-205 NB) and ending with the eastern-most advanced guide sign for OR 43 (I-205 NB). The evaluation used section 2A.17 of the MUTCD for guidance on factors that indicate overhead mounting may be beneficial. The primary reasons to consider use of overhead signs for the two interchanges on this segment include high-speed traffic, three-lane sections, and a large percentage of trucks. Consistency of sign message location could also apply if there is a desire to be consistent with the OR 99E and OR 213 interchanges. Factors that do not apply include complex interchange design, closely spaced interchanges, multi-lane exits, and traffic volumes. In addition, the exit ramps in question do not include drop lanes from mainline.

Although the MUTCD is not specific about the type of signs to be mounted overhead, Section 2A.17 does mention locations “where some degree of lane-use control is desirable.” Based on this guidance, the interchange distance signs (Signs 22 and 23) could remain ground-mounted. In addition, if funding limits the ability to install signs

overhead on new structures, the priority would be to provide exit direction signs (Signs 18, 20 and 21) overhead for each exit ramp gore.

This evaluation resulted in the following possible overhead sign structures and cost increases versus the recommendations provided in the CTC Report, as shown in Table 9.

Table 9. Summary of Evaluation of Existing Ground Mounted Guide Signs within Package B

Interchange	Direction	Evaluation Summary	Sign Type	Existing Support	Preferred Sign Support	Potential Future Cost Increase
Stafford Road	I-205 NB	Sign 7	Advance Guide	Cantilever	Cantilever	$ -
		Sign 5	Advance Guide	Cantilever	Cantilever	$ -
		Sign 4	Exit Direction	Cantilever	Cantilever	$ -
	I-205 SB	Sign 21	Exit Direction	Multi-post Breakaway	Cantilever	$225,000
		Sign 23	Post Interchange Distance Sign	Multi-post Breakaway	Multi-post Breakaway	$ -
		Sign 24	Advance Guide	Multi-post Breakaway	Cantilever	$225,000
		Sign 25	Advance Guide	Multi-post Breakaway	Cantilever	$225,000
10th Street	I-205 NB	Sign 22	Post Interchange Distance Sign	Multi-post Breakaway	Multi-post Breakaway	$ -
		Sign 18	Advance Guide	Multi-post Breakaway	Cantilever	$225,000
		Sign 19	Advance Guide	Multi-post Breakaway	Cantilever	$225,000
		Sign 20	Exit Direction	Multi-post Breakaway	Cantilever	$ 225,000
	I-205 SB	Sign 18	Exit Direction	Multi-post Breakaway	Cantilever	$225,000
		Sign 19	Advance Guide	Multi-post Breakaway	Cantilever	$225,000

Interchange	Direction	Evaluation Summary	Sign Type	Existing Support	Preferred Sign Support	Potential Future Cost Increase
		Sign 20	Advance Guide	Multi-post Breakaway	Cantilever	$225,000
OR 43	I-205 NB	Sign 3	Advance Guide	Multi-post Breakaway	Cantilever	$225,000
		Sign 17	Advance Guide	Multi-post Breakaway	Cantilever	$225,000
Total Cost with Markups						$2,700,000

As shown, the total cost to upgrade the guide sign supports shown from ground-mounted to overhead, not including interchange distance signs, is approximately $2.7 M. The Final DAP cost estimate incorporates the additional recommended overhead sign structures listed above.

4.13 Utility Impacts and Anticipated Relocations

South of 10th Street, Package B contains many utilities that are nearby or cross under or over I-205. For this freeway section, there are no anticipated reimbursable utility impacts.

North of 10th Street, the Project could impact multiple utilities (Figure 25 including a Verizon cell tower, a Portland General Electric power pole, and NW Natural gas pressure reduction station. These facilities are located on top of the rock cut between the West A Street and Broadway Street overcrossings, immediately east of the OR 43 Interchange NB exit ramp and are outside the existing public ROW. The Project does not anticipate permanent impacts to the cell tower by the proposed rock cut operation, but additional evaluation is required as the rock cut limits are better defined. A temporary mitigation cost has been included in the DAP cost estimate.

Although the existing Portland General Electric power pole is outside the final rock cut line, the Project may impact the power pole during the rock cut and widening operations. A relocation costs has been included in the estimate. The NW Natural reduction station is outside the proposed rock cut limits. The Project Team has coordinated with the utility owner and has confirmed that the service may be shut off for a period during rock blasting and removal, but measures will be required during construction to ensure no permanent damage to the existing infrastructure.

Figure 25. Photograph of Potential Rock Cut and Blasting Impacts along I-205

Other major utility relocation costs include the relocation of a utility duct bank currently residing in the Broadway Bridge, which is to be removed with this Project. Other utilities include a gas main and water line that serve City of West Linn residents. The Project will relocate the existing utilities to the West A Street Bridge as part of the bridge replacement process.

4.14 Key Environmental Elements

The key environmental elements for Package B consist of visual, wetlands, noise and vibration, endangered species, in-water work, archaeological, recreational activities, historic, and environmental justice.

4.14.1 Environmental Permit Summary

Environmental permits and NEPA clearance will be obtained for the entire Project. The following permits and approvals are anticipated for Package B:

- Oregon Department of Fish and Wildlife Fish Passage Plan approval
- NMFS approval of the FAHP
- Archaeological and Historic Section 106 approval.
- USACE 404 Permit
- DSL Fill/Removal Permit

4.14.2 Visual

Package B runs through the Clackamas County designated Rural Scenic Roadway. The existing I-205 median east of the Tualatin River contains a dense grove of vegetation and trees. These trees are considered contributing elements to the scenic character of the corridor. The Project will preserve these trees to the maximum extent feasible.

4.14.3 Culverts

While there are many small culverts under the freeway within the limits of Package B, the proposed temporary and permanent work does not trigger the fish passage statute.

4.14.4 Wetlands

The Project components of Package B will impact less than 1.5 acres of jurisdictional wetlands of the state and the US. The majority of the wetlands to be impacted are located within the median of I-205 and would not be considered high value wetlands. The Project will utilize wetland mitigation bank credits to mitigate for any impacts. Work has not been completed to determine the applicable Water Environment Services habitat conservation areas or water quality resource area buffers, but it is assumed any applicable Water Environment Services mitigation requirements will be met on-site.

4.14.5 Noise and Vibration

Based on preliminary noise analysis results, the FHWA cost-to-benefit threshold for noise mitigation will be exceeded. The findings of the Noise Technical Report indicate five walls meet the feasible and reasonable criteria and will be advanced to allow the benefited receivers to vote to determine if the walls continue to be included in Package B. The walls proposed to be taken to a vote on the north side of I 205 are located from the Sunset Avenue bridge northeast past the end of Maple Avenue; the Sunset Avenue bridge southeast to approximately Radcliffe Court, approximately 13th Street to the Blankenship overcrossing, and from the Blankenship overcrossing to the end of Margery Street. There is one wall located from Blankenship overcrossing to 13th Street on the south side of I-205 proposed to be advanced to a vote by the benefited receivers. After comparing these areas against ODOT's guidelines for reasonableness and feasibility, an allocation for potential sound walls has been included in the cost estimate.

Rock blasting will create noise and vibrations that could impact adjacent structures. Based on preliminary noise and vibration analyses for the small charge sizes anticipated, the noise and vibrations are not anticipated to have a negative impact on any structures.

4.14.6 Endangered Species

There are known populations of listed plants within Package B. The Project will avoid impacts to listed plants and have no impact to Endangered Species Act listed plants or wildlife.

4.14.7 In-Water Work

Work below the ordinary high water delineation of the Tualatin River will be obligated to the regulated in-water work period and will follow the design guidelines of the FAHP for temporary and permanent installations, which includes providing a fully functional floodplain by spanning 2.2 times the active channel width and removing abandoned bridge elements. The replacement of these structures will trigger the Oregon State Fish Passage Rule and will require approval from Oregon Department of Fish and Wildlife.

4.14.8 Archaeological

Package B contains areas with a high probability of archaeological deposits. Initial archaeological review of the project area has not identified any intact deposits within the Project API and SHPO has concurred with the Section 106 finding of “No-Adverse Effect” for archaeological resources.

4.14.9 Recreational Activities

The Tualatin River is used for recreational boating. Any temporary work bridges to support its reconstruction will be required to maintain recreational navigation. The proposed placement of any new permanent piers will not create a navigational hazard.

4.14.10 Historic

The Project will avoid an adverse effect to the potentially historic structures located near West A Street. SHPO has concurred with the Section 106 finding of “No-Adverse Effect” to historical resources.

4.14.11 Environmental Justice

The Project is not anticipated to adversely affect disproportionally environmental justice communities potentially located in the vicinity of Package B. The Project will use standard mitigation measures to minimize impacts and will maintain access to critical services throughout construction.

4.14.12 4(f) and 6(f) Resources

There are no known 4(f) and 6(f) resources within the limits of Package B.

4.15 Other Key Package Unknowns or Other Key Package Risks, Unknowns, or Assumptions

The other key package unknowns or assumptions are presented below. Appendix F contains a list of risks and decisions for the Project.

4.15.1 Rock Cut Catchment Area and Constructability Impacts

A detailed evaluation of the potential blasting impacts to adjacent properties and the existing cell tower are still required to accurately capture the effect of the proposed cut. Two existing buildings are located within 100 feet of the proposed rock cut area.

Evaluation of the existing structural condition and potential mitigation measures may be required to confirm that the Project will not impact these structures. The Project Team has developed memorandums outlining preliminary findings of the rock characteristics and blasting methods that are within industry best practices, however the specific blasting plan and a detailed building survey is typically a responsibility of the Contractor. If blasting activity were to results in permanent displacement, there is the potential for more than $3 M in ROW acquisition and relocation expenses. However, the initial rock exploration work and assumed blasting parameters are not anticipated to result in permanent damage to adjacent infrastructure. These assumptions, analysis and project specification will continue to be refined as part of the final design phase, in addition to a more rigorous construction staging analysis for the blasting operation.

4.15.2 Traffic Operations during Rock Blasting

The Project Team has developed a construction staging approach that utilizes a series of 20-minute rolling slowdowns to conduct the rock blasting activities. These blasts are anticipated to occur over a series of 10 to 15 blasting groupings, each of which will include a pre-split blast and production blast. While it is anticipated that these rolling slowdowns may occur during daytime off-peak periods, additional evaluation is required to quantify the impact and significance of these roll slowdown activities, which fall outside the standard operating hours for freeway rolling slowdowns.

4.15.3 On-Site Processing and Handling of Blasting Spoils

The Project currently assumes that material generated during rock blasting activities will be hauled to an on-site material processing location where the oversized rock may be crushed and stockpiled to be used later as part of the Project. The Project Team has identified a location near the existing ODOT Maintenance facility located less than two miles from the blasting activities. This would allow the contractor to minimize hauling expenses and expedite the rock removal process, which generally drives the overall duration of the blasting work. The Project Team will coordinate on the material characterization to determine if the blasting spoils may be suitable for reuse as aggregate base materials, which represent an opportunity cost to the project by offsetting the import expense of additional aggregate base. If on-site processing is not permitted at the proposed location due to the effect of the material handling and processing (such as noise and dust generation), the contractor would be required to identify another site for material processing or potentially accept a higher burdened cost for disposing of the oversized material. As an alternative to on-site use, ODOT Maintenance and the City of West Linn have expressed interest in retaining the blasting materials. The Project Team identifies the potential impact of this risk to be between 10 and 40 percent of the overall rock removal cost, which would quantify this risk impact in the range of approximately $0.5M to more than $2M. This risk will continue to be monitored through final design.

4.15.4 Local Agency Approvals

There are several locations where City of West Linn approvals are necessary. A list of these is provided in Appendix G. Initial coordination has occurred, and the Project Team believes that these approvals will be obtained. Some of the more impactful approvals include the requirement to provide turnarounds at dead-end streets (Broadway Street)

and geometric design approvals for horizontal curves and intersection geometry at Sunset Avenue. Final design exception approval documents will be submitted to the local agencies after Final DAP.

4.15.5 Unit Price Variability Associated with Concrete Pavement

The CTC, Draft, and Final DAP cost estimates were developed using unit prices coordinated with ODOT Technical Services as part of the pavement life-cycle-cost evaluation. Oregon has a very narrow range of comparable data points associated with concrete paving on this scale over the last five-year bid history. In addition, concrete paving pricing is often directly influenced by contractor staging and is typically priced more favorably when work is isolated from traffic with long continuous stretches of paving. While those conditions generally exist within Package B, interchange access and other major activities (e.g. rock blasting, bridge reconstruction, and other bridge improvements) could cause production variables that translate into increased unit pricing. Similarly, based on the significant volume of paving work being performed with Package B there is a potential opportunity for additional reduction in bid item unit pricing.

5 Package C (I-205 Regional Active traffic Management (ATM) Description

Figure 26. Package C – Work Limits

5.1 General Information

Package C includes ATM improvements from MP 0.95 (in the NB direction) to MP 11.68 (in the SB direction), as shown in Figure 26 and listed in Table 10 and Table 11. It should be noted, however, that advisory signs mounted to the Sunset Avenue Bridge and the permanent relocation of some ATM structures that conflict with the ultimate Package B improvements, will be constructed with Package B.

The Project's ATM types are based on the 2016 ODOT Region 1 ATM Atlas. The Project Team revised the proposed locations, in collaboration with ODOT, to take into account the proposed I-205 widening. The recommended ATM locations, types, and structural supports within Package C are provided in Table 10 and Table 11. The Package C plans are provided in Appendix B.

Table 10. ATM Type and Location – NB Direction

Location	ATM Type	Support type
MP 0.95	2 Variable Message Speed (VMS) signs; 4 VAS signs	New sign bridge
MP 3.15	3 VAS	Mount to existing Stafford Road Bridge overcrossing
MP 4.26	1 VMS	New monotube cantilever (over NB lanes only)
MP 7.60	1 VMS and 3 VAS	New sign bridge (over NB lanes only)

Table 11. ATM Type and Location – SB Direction

Location	ATM Type	Support type
MP 10.18	3 VAS	New sign bridge structure
MP 11.70	Replace existing VMS	Existing sign bridge

The ATM improvements include both VAS and VMS. The NB queue warning VMS east of Stafford Road Interchange (MP 4.26) provides queuing warnings near the 10th Street Interchange. The NB VMS north of 10th Street provides queuing warnings near the OR 43 Interchange area. The SB VMS north of the OR 213 Interchange at MP 11.70 provides queuing warnings near the OR 99E Interchange. The combination of VMS and queue warning VMS is expected to improve travel time reliability and reduce crashes caused by queuing. The VAS signs on the new Sunset Avenue bridge overcrossing at approximately MP 8.25 (as part of Package B) completes the NB and SB operational segments and provides additional benefits for crash reduction.

Figure 27. Example of VMS within Project

Because Package C will be constructed before any other Project work, the ATM system will provide real-time communications to the traveling public during construction of Packages A and B (such as the example in Figure 27).

5.2 Construction Cost Estimate

The construction cost for Package C, including CE, is estimated to be $5.6 M (see Appendix D).

5.3 Construction Staging and Maintenance of Traffic

The assumed construction staging sequence and maintenance of traffic are provided in the Draft Traffic Management Plan in Appendix J and is generally described below. The project plans and construction schedule are provided in Appendix B and Appendix E.

The Project assumes all proposed ATM features will be constructed without daytime lane closures. For some of the sign structure installation and sign mounting, 20-minute rolling slowdowns or nighttime lane restrictions may be utilized.

5.4 Utility Impacts and Anticipated Relocations

Package C contains many utilities that are nearby or cross under or over I-205. However, no utilities are anticipated to be impacted during construction. The Project will adjust ATM equipment locations to avoid utility impacts. Power service and communications will be

provided for each location from existing ODOT communications assets, existing ODOT power sources, and new power sources identified by PGE.

5.5 Key Environmental Elements

5.5.1 Environmental Permit Summary

There are no unique permits required for Package C. NEPA clearance will be obtained for the entire Project. The installation of ATMs will not trigger the stormwater requirements of the FAHP and will not result in an impact to any Endangered Species Act listed species or historical or archaeological resources.

5.6 Traffic Structures

The following elements will be constructed as part of Package C. These structure locations are also shown on Appendix K.

5.6.1 New Sign Bridges

New sign bridges will be constructed at the following locations:

- MP 10.18 – NB and SB VAS on a new monotube sign bridge spanning the SB and NB lanes. The estimated span length is 141 feet with new thrie beam guardrails protecting the ends. Spread footing foundations are anticipated.
- MP 7.6 – NB VAS and full matrix VMS for queue warning on a new monotube sign bridge spanning the NB lanes only. The estimated span length is 80 feet with thrie beam guardrails protecting the ends (existing guardrail on south shoulder median currently). Spread footing foundations are anticipated.
- MP 0.95 – NB full matrix VMS on new truss type sign bridge spanning the NB lanes only. The estimate span length is 129 feet with thrie beam guardrails protecting the ends. Spread footing foundations are anticipated.

5.6.2 New Monotube Cantilever Sign Structure

New monotube cantilever structures will be provided at the following location(s):

- MP 4.26 – NB full matrix VMS on new monotube sign bridge spanning the new NB lanes only. The estimate span length is 45 feet with thrie beam guardrails protecting the end. Spread footing foundations are anticipated

5.6.3 New Structure Mounts on Bridges

Signage will be mounted on steel frames mounted to the existing bridge with resin-bonded anchors at the following locations:

- MP 3.16 NB – Existing Stafford Rd Bridge # 09739
- NB variable speed signs on the existing Stafford Road Bridge – The sign support frames will be mounted to the edge and underside of the concrete deck overhangs.

The electrical conduits will be mounted to the underside of the deck overhang and concrete wingwalls.

5.6.4 New Mounts on Existing Sign Bridges

A new Type 1 VMS will be mounted on new steel vertical frames mounted to the existing sign bridges or cantilevers. The existing sign bridge does have sufficient capacity for the new VMS. The new VMS will be mounted higher to maximize the clearance of approximately 18'-6" from the bottom chord of the horizontal bridge to the pavement underneath.

- MP 11.68 SB – Existing truss type sign bridge #20310

5.7 Other Key Package Risks, Unknowns, or Assumptions

The other key package unknowns or assumptions are presented below. Appendix F contains a list of risks and decisions for the Project.

- Per ODOT's current practice, multiple "state-furnished materials" must be procured by the Technical Services ITS Standards Engineer in advance of construction award. These include cabinets and other hardware. The timing and process for these materials have not been defined at this point, and could delay the construction completion date if not obtained in a timely manner. The Project Team will coordinate with the ITS Standards Engineer throughout the design phase to mitigate this potential schedule risk. This risk is anticipated to be very low based on the input and responsiveness of the ITS Standards Engineer on past projects.
- Technology could change or complimentary ITS upgrades could impact the design and budget of some ATM sites. It is common for ODOT maintenance to request small additions to enhance the functionality at a given ITS site. Items like additional cameras, radar sensors, weather sensors or communications upgrades may be requested. Under the current cost model, these would be covered by the Contingency allocation.
- As part of the cost reduction strategy, advanced procurement of sign structure material is being considered for Package C. This strategy is both to control the construction schedule duration and potential cost increases due to increasing inflation and material costing.

Appendix A.
Proposed Solutions

September 6, 2018

PROPOSED **SOLUTIONS**

I-205 WIDENING & SEISMIC IMPROVEMENTS

Stafford Road to OR 213

SEISMIC UPGRADES

The project upgrades the **Abernethy Bridge and the eight other I-205 bridges** in the project area to withstand a major earthquake. I-205 is designated as a **statewide north-south lifeline route**, which means it must be operational quickly after a disaster renders other roadways unusable or impassable. This critical route will provide supplies and services to the region.

I-205 WIDENING

- The project **adds a third lane** in each direction on the seven-mile stretch of I-205 between Stafford Road and OR 99E. It also adds a northbound auxiliary ("entrance-to-exit") lane between OR 99E and OR 213.
- Widening I-205 requires **blasting in order to remove the rock** from the rock slope located in West Linn on the northbound side of I-205 between the Sunset Avenue overcrossing and just south of the OR 43 interchange. We will conduct additional analyses next year to determine impacts of the blasting, potential mitigations and duration of the work.

INTERCHANGE IMPROVEMENTS

In order to improve safety and travel-time predictability on I-205, the project makes changes to **on- and off-ramps and intersections around interchanges**.

- **OR 43 interchange:** the project removes the current I-205 northbound on-ramp from OR 43 northbound. Northbound traffic will instead use a new left turn to access the existing on-ramp loop to I-205 northbound. Consolidating these two separate northbound access points eliminates the merging and weaving that currently occurs and reduces rear end crashes. The Broadway Street bridge overcrossing will also be removed. See inset below.
- Analysis is still underway for other intersection improvements at OR 43 and OR 99E. We will present these findings later in the design process.

BRIDGE REPLACEMENTS

Widening I-205 requires **rebuilding West A Street and Sunset Avenue**, which cross over I-205. The Tualatin River, Borland Road and Woodbine Road bridges will also be replaced.

TRAVELER INFORMATION SIGNS

The project includes **ODOT RealTime traffic information signs** to help travelers get to where they're going more safely and efficiently. These signs can display traffic flow information, roadway conditions and advisory speeds limits.

Oregon Department of Transportation

www.I205Corridor.org

Appendix B. Plans

See additional files

September 6, 2018

Appendix C. Specifications

September 6, 2018

2018 STANDARD SPECIFICATIONS

BID BOOKLET and SPECIAL PROVISIONS DOCUMENT ASSEMBLY

Manual Document Assembly Process

When preparing project special provisions, follow the requirements described in the Specification and Writing Style Manual. The manual is available on the web at:

www.oregon.gov/ODOT/HWY/SPECS/pages/manuals_forms_etc.aspx

Some general rules to follow for manual document assembly:

- *Fill in this document assembly by checking all the sections needed for the project, then download all required files from the ODOT Specifications website.*
- *To Begin a new project special provisions document, open the Bid Booklet Cover (SP00002_BB_Cover.docx), save the file as the project name, then assemble the remaining document using the "insert" command (DO NOT USE COPY OR PASTE). Using this method preserves all the default and formatting settings.*
- *After assembly, turn on "Track Changes" before editing the project special provisions document. If inserting a section into an existing document, turn off "Track Changes", "Insert" the additional section(s), and turn "Track Changes" back on.*
- *If you need to insert a section that has already been edited with "Track Changes", be sure to turn off "Track Changes", "Insert" the edited version into the document, then turn "Track Changes" back on.*
- *<u>Do not</u> remove any blank pages. Removing blank pages will corrupt the header and footer settings.*

Automated Document Assembly Tool

Note: The automated special provision assembly tool requires that macros be enabled in MS Word. If macros are disabled, or the below tools are not operational, check with your system administrator to enable macros.

Document Settings

Reset Form **Check All Boxes**

Real-Time Specification Referencing (RTSR):
RTSR is an optional feature that automatically checks for required specification references every time a box is checked. If RTSR finds a required specification reference that is not checked, the box will be checked and a message box will inform the user of the action.

Enable Real-Time Referencing **Disable Real-Time Referencing**

Document Assembly

The document assembly tool creates a new Bid Booklet and Special Provision Booklet document using the form field and check box information in this document. Prior to assembly, the tool will check all required specification references, displayed a message for each unchecked boxes that is required, and include them in the final document.

Assemble Document

Date AUGUST 31, 2018 **Funding** ☒ **Federal** ☒ **State**

Scope of Work GRADING, DRAINAGE, STRUCTURES, PAVING, SIGNING

Project Name I-205: PARK PLACE INTCHGE TO WEST LINN INTCHGE SEC.

Highway Name EAST PORTLAND FREEWAY

County CLACKAMAS **EA No.** C6035200

Anticipated Bid Date November, 2020 **Key No.** 19786

Construction Project Manager: TBD
(For ODOT administered projects, enter the Construction Project Manager's name only. Contact the project Team Leader for this information. For Consultant or Local Agency administered projects, enter The Consultant or Local Agency Construction Project Manager's name, address, and phone number.)

Managing ODOT Project Manager: TOM HAMSTRA
(For ODOT administered projects the Managing ODOT Project Manager is usually the Construction Project Manager. For Consultant or Local Agency administered projects, this is the ODOT person that is assigned to the project during construction. Enter the name of the ODOT Managing Project Manager, ODOT CPM, or ODOT Local Agency Liaison as appropriate. Contact the project Team Leader for this information.)

BID BOOKLET

	FILE NAME	SECTION NAME
☒	00002_BB_COV	Bid Booklet - Cover Page and Description of Work Page

SPECIAL PROVISIONS

	FILE NAME	SECTION NAME
☐		Transmittal Letter ***(Contact appropriate Region for Transmittal Letter)***
☒	00004_SP_COV	Special Provisions - Cover Page and Description of Work Page
☒	SP00010 TOC FED	Table of Contents ***(Use on Federal funded projects. Requires SP00030_DBE.)***
☒	SP00012 TOC STA	Table of Contents ***(Use on State funded projects)***
☒	SP00030_DBE	Assigned DBE Contract Goal ***(Use on Federal funded projects)***
☒	SP00044_IN_GOAL	Indian Goals and Compliance Fee ***(Use on Federal funded projects when Umatilla or Grand Ronde TERO applies to the project.)***

☒ SP00054_MWESBSDV Assigned MWESBSDV Aspirational Target
(Use on State funded projects when a MWESB Aspirational Target is required. Check with ODOT's Civil Rights Section.)

☐ SP00058_RRS Other Railroad Contractor Requirements Without Insurance
(Use when railroads are involved & RR insurance is NOT required)

☐ SP00060_RR_BNSF Burlington Northern Santa Fe Railway Contractor Requirements and Exhibits
(Use when Burlington Northern Santa Fe Railway is involved)

☐ SP00061_RR_CBRL Coos Bay Rail Link
(Use when Coos Bay Rail Link is involved)

☐ SP00062_RR_CORP Central Oregon & Pacific Railroad Contractor Agreement and Exhibits
(Use when Central Oregon & Pacific Railroads involved)

☐ SP00066_RR_PNWR Portland & Western Railroad Company Contractor Agreement and Exhibits
(Use when Portland & Western Railroad is involved)

☐ SP00068_RR_UPRR Union Pacific Railroad Company Contractor's Agreement and Exhibits
(Use when Union Pacific Railroad is involved)

☒ SP00084_PAINT 36 Coating System Warranty and Performance Bond
(Use when 36 month coating system warranty is required in 00594.75.)

☒ SP00088_SIG Signature Page

GENERAL REQUIREMENTS

☒ SP00092_002 Special Provisions - Page 1 (Work to be Done)

☒ SP00110 Organization, Conventions, Abbreviations, and Definitions

☒ SP00120 Bidding Requirements and Procedures

☒ SP00130 Award and Execution of Contract

☒ SP00140 Scope of Work

☒ SP00150 Control of Work ***(Requires SP00810 when Extra for Hand Dug Guardrail Post Holes is required.)***

☒ SP00160 Source of Materials ***(Requires SP00235 when Agency-furnished material sources are used.)***

☒ SP00165 Quality of Materials

☒ SP00170 Legal Relations and Responsibilities

18 SPLIST (2018 Specifications: 06-01-18)

☒ SP00180 Prosecution and Progress

☒ SP00190 Measurement of Pay Quantities

☒ SP00195 Payment

☒ SP00196 Payment for Extra Work

☒ SP00197 Payment for Force Account Work

☒ SP00199 Disagreements, Protests, and Claims

TEMPORARY FEATURES AND APPURTENANCES

☐ SP00205 Field Laboratory, Weighhouse, Etc.

☒ SP00210 Mobilization

☒ SP00220 Accommodations for Public Traffic

☒ SP00225 Work Zone Traffic Control

☐ SP00230 Temporary Detours

☒ SP00231 Temporary Access Road

☒ SP00235 Agency Provided Material Sources and Disposal Sites ***(Requires SP00335 when a blasting consultant or blasting monitor is required.)***

☐ SP00240 Temporary Drainage Facilities

☒ SP00245 Temporary Water Management

☐ SP00250 Temporary Bridges (Contractor provided) ***(Requires SP00230 when temporary detours are required. Requires SP02520 when steel pipe piles are required.)***

☐ SP00251 Agency Provided Temporary Bridges ***(Requires SP00230 when temporary detours are required.)***

☒ SP00252 Temporary Work Bridges

☒ SP00253 Temporary Work Access and Containment

☐ SP00256 Temporary Retaining Walls

☐ SP00270 Temporary Fences

☒ SP00280 Erosion and Sediment Control

☒ SP00290 Environmental Protection ***(Requires SP00245 when temporary water management is required. Requires SP00253 when a temporary work access/containment system is required.)***

☐ SP00293 Decommission Underground Storage Tanks ***(Requires SP00294)***

☒ SP00294 Contaminated Media

☒ SP00295 Asbestos Materials ***(Requires Pollution Liability Insurance in 00170.70. Requires Asbestos Liability Insurance in 00170.70 if materials containing more than 1% of asbestos will be disturbed.)***

☒ SP00296 Paint and Painted Materials ***(Requires lead liability insurance in 00170.70.)***

☐ SP00297 PCB and Mercury Containing Equipment ***(Requires SP00950.)***

☐ SP00298 Well Preservation and Abandonment ***(Require SP00294 when contaminated soil or groundwater will be encountered.)***

☐ SP00299 Decommission Underground Injection Control Systems ***(Requires SP00294 when contaminated soil or groundwater will be encountered.)***

☐ SP00299A Decommission Septic Tanks

ROADWORK

☒ SP00305 Construction Survey Work ***(Requires SP00150 to establish survey responsibilities)***

☒ SP00310 Removal of Structures and Obstructions

☒ SP00320 Clearing and Grubbing

☒ SP00330 Earthwork ***(Require SP00235 when using Agency-furnished disposal sites.)***

☒ SP00331 Subgrade Stabilization

☐ SP00333 Aggregate Ditch Lining

☐ SP00334 Preparation of Shoulders

☐ SP00335 Blasting Methods and Protection of Excavation Backslopes

☐ SP00340 Watering

☒ SP00344 Treated Subgrade

☒ SP00350 Geosynthetic Installation

☐ SP00360 Drainage Blankets

☐ SP00370 Finishing Roadbeds

☐ SP00380 Roadwork, Hourly Rate Basis

18 SPLIST (2018 Specifications: 06-01-18)

☒ SP00390 Riprap Protection

☐ SP00396 Shotcrete Slope Stabilization ***(Requires SP02690)***

☐ SP00398 Rock Slope Stabilization and Reinforcement

DRAINAGE AND SEWERS

☒ SP00405 Trench Excavation, Bedding, and Backfill ***(Requires SP02690)***

☒ SP00406 Tunneling, Boring, and Jacking

☐ SP00410 Common Provisions for Pipe Lining

☐ SP00411 Pipe Bursting and Slip Lining

☐ SP00412 Cured-In-Place Pipe Lining

☒ SP00415 Video Pipe Inspection

☐ SP00420 Salvaging Pipe

☒ SP00430 Subsurface Drains ***(Requires SP02690 when granular drain backfill material is required.)***

☐ SP00435 Prefabricated Vertical Drains

☒ SP00440 Commercial Grade Concrete

☐ SP00442 Controlled Low Strength Materials

☐ SP00443 Rapid Setting Controlled Low Strength Materials

☒ SP00445 Sanitary, Storm, Culvert, Siphon, and Irrigation Pipe ***(Requires SP00405)***

☐ SP00446 Trench Drains

☐ SP00450 Structural Plate Shaped Structures

☐ SP00459 Cast-In-Place Concrete Pipe ***(Requires SP00540)***

☐ SP00460 Paved Culvert End Slopes

☒ SP00470 Manholes, Catch Basins, and Inlets

☐ SP00475 Drain Wells

☒ SP00480 Drainage Curbs

☒ SP00490 Work on Existing Sewers and Structures

☒ SP00495 Trench Resurfacing ***(Requires SP01040 when planting is required.)***

BRIDGES

- ☒ SP00501 Bridge Removal
- ☐ SP00503 Bridge Deck Cold Plane Pavement Removal
- ☒ SP00510 Structure Excavation and Backfill
- ☒ SP00512 Drilled Shafts ***(Requires SP02001)***
- ☒ SP00515 Micropiles ***(Requires SP02690)***
- ☒ SP00520 Driven Piles ***(Requires SP00550 when prestressed concrete piles are required. Requires SP02520 when steel pipe piles are required.)***
- ☒ SP00530 Steel Reinforcement for Concrete ***(Requires SP02513 when stainless steel reinforcement is required.)***
- ☒ SP00532 Rebar Continuity
- ☒ SP00535 Resin Bonded Anchor Systems
- ☐ SP00536 Internal Shear Anchors
- ☒ SP00538 Crack Injecting Existing Bridges
- ☒ SP00539 Concrete and Crack Sealing
- ☒ SP00540 Structural Concrete ***(Requires SP02001. Requires SP02440 when poured joint fillers are required.)***
- ☒ SP00545 Reinforced Concrete Bridge End Panels ***(Requires SP00540 & SP02001)***
- ☐ SP00550 Precast Prestressed Concrete Members ***(Requires SP02001. Requires SP02440 when poured joint fillers are required.)***
- ☒ SP00555 Post-Tensioning
- ☐ SP00556 Multi-Layer Polymer Concrete Overlay
- ☐ SP00557 Premixed Polymer Concrete Overlays
- ☐ SP00559 Silica Fume and Latex Modified Concrete Overlays ***(Requires SP02001)***
- ☒ SP00560 Structural Steel Bridges ***(Requires SP02530. Requires SP00594 when coating work is required.)***
- ☐ SP00566 Carbon Fiber Reinforced Polymer Strengthening - Near Surface Mounted
- ☐ SP00570 Timber Structures ***(Requires SP02530)***
- ☒ SP00581 Bridge Drainage Systems ***(Requires SP02530)***

18 SPLIST (2018 Specifications: 06-01-18)

☒ SP00582 Bridge Bearings

☒ SP00583 Electrical Conduit in Structures

☐ SP00584 Elastomeric Concrete Nosing

☒ SP00585 Expansion Joints ***(Requires SP02530. Requires SP02440 when hot poured joint filler is required.)***

☒ SP00586 Expansion Joints, Modular

☒ SP00587 Bridge Rails ***(Requires SP00540, SP02001, & SP02530. Require SP00535 when resin bonded anchors are used.)***

☐ SP00588 Precast Historic Ornamental Bridge Rails ***(Requires SP02001)***

☒ SP00589 Utility Attachments on Structures ***(Requires SP02530)***

☐ SP00590 Polymer Membrane

☐ SP00591 Spray Waterproofing Membrane

☐ SP00593 Powder Coating Metal Structures

☒ SP00594 Preparing and Coating Metal Structures ***(Requires SP00084 when a coating system warranty is required in subsection 00594.75. Requires SP00253 when work access/containment is required. Requires SP00296 when lead is anticipated.)***

☐ SP00595 Reinforced Concrete Box Culverts ***(Requires SP00540 when cast-in-place culverts are required.)***

☐ SP00596A Mechanically Stabilized Earth Retaining Walls ***(Requires SP02001)***

☐ SP00596B Prefabricated Modular Retaining Walls ***(Requires SP02690)***

☒ SP00596C Cast-In-Place Retaining Walls

☒ SP00597 Sound Walls

☐ SP00599 Concrete Slope Paving

BASES

☐ SP00610 Reconditioning Existing Roadway

☒ SP00620 Cold Plane Pavement Removal ***(Require SP00744 or SP00745 when traffic is not allowed on the cold planed surface.)***

☐ SP00622 Grinding Concrete Pavement

☐ SP00635 Grid-Rolled Aggregate Subbase

18 SPLIST (2018 Specifications: 06-01-18)

☐ SP00640 Aggregate Base and Shoulders

☒ SP00641 Aggregate Subbase, Base, and Shoulders

☐ SP00645 Recycled Asphalt Products in Base

☐ SP00660 Lean Concrete Base

☐ SP00670 Concrete Pavement Undersealing

☐ SP00680 Stockpiled Aggregates

WEARING SURFACES

☐ SP00705 Emulsified Asphalt Prime Coat and Emulsified Asphalt Fog Coat

☐ SP00706 Emulsified Asphalt Slurry Seal Surfacing

☐ SP00710 Single Application Emulsified Asphalt Surface Treatment

☐ SP00711 Pre-Coated Aggregate Asphalt Surface Treatment

☐ SP00712 Dry Key Emulsified Asphalt Surface Treatment

☐ SP00715 Multiple Application Emulsified Asphalt Surface Treatment

☐ SP00718 Hydrated Lime Slurry in Cold-In-Place Recycling

☐ SP00719 Pre-Recycle Lime Treatment

☐ SP00720 Cold In-Place Recycled Asphalt Concrete Pavement (CIR) ***(Requires SP00705 and SP00730. Requires SP00710 or SP00715 if a surface treatment is required over the CIR.)***

☐ SP00721 Cold Recycled Emulsified Asphalt Concrete Pavement (CRP) ***(Requires SP00705 & SP00710.)***

☐ SP00725 Hot In-Place Recycled Asphalt Concrete Pavement (HIR) ***(Requires SP00730.)***

☒ SP00730 Emulsified Asphalt Tack Coat

☐ SP00735 Emulsified Asphalt Concrete Pavement ***(Requires SP00705 when emulsified asphalt fog coat is required. Requires SP00710 or SP00715 when emulsified asphalt surface treatment is required.)***

☒ SP00738 Safety Edge

☐ SP00740 Commercial Asphalt Concrete Pavement (CACP) ***(Requires SP00738 when safety edge is required; check with Roadway Designer.)***

☐ SP00743 Porous Asphalt Concrete (PAC) ***(Requires SP00738 when safety edge is required; check with Roadway Designer.)***

☐ SP00744 Asphalt Concrete Pavement ***(Requires SP00730. Requires SP00738 when safety edge is required; check with Roadway Designer.)***

☒ SP00745 Asphalt Concrete Pavement - Statistical Acceptance ***(Requires SP00730. Requires SP00738 when safety edge is required; check with Roadway Designer.)***

☐ SP00746 Crack Sealing Flexible Pavements ***(Requires SP02440 when hot poured joint fill is required.)***

☐ SP00748 Asphalt Concrete Pavement Repair ***(Requires SP00738 when safety edge is required; check with Roadway Designer.)***

☐ SP00749 Miscellaneous Asphalt Concrete Structures

☐ SP00754 Plain Concrete Pavement Repair ***(Requires SP02001 & SP02530. Requires SP02440 when poured joint fillers are required.)***

☒ SP00755 Continuously Reinforced Concrete Pavement ***(Requires SP02001 & SP02530. Requires SP02440 when poured joint fillers are required.)***

☐ SP00756 Plain Concrete Pavement ***(Requires SP02001 & SP02530. Requires SP02440 when poured joint fillers are required.)***

☐ SP00758 Reinforced Concrete Pavement Repair ***(Requires SP02001 & SP02530. Requires SP02440 when poured joint fillers are required.)***

☒ SP00759 Miscellaneous Portland Cement Concrete Structures ***(Requires SP02001 when bus pads are required.)***

☐ SP00760 Unit Pavers ***(Requires SP02690)***

PERMANENT TRAFFIC SAFETY AND GUIDANCE DEVICES

☒ SP00810 Metal Guardrail ***(Requires SP00594 when weatherized guardrail and painting of transitions and terminals is required.)***

☐ SP00811 Cable Barrier

☒ SP00812 Adjusting Guardrail

☐ SP00813 Steel Backed Timber Guardrail

☐ SP00815 Bollards

☒ SP00820 Concrete Barrier ***(Requires SP02690. Requires SP02001 when slipform single-slope barrier is required.)***

☒ SP00822 Glare Shields

☒ SP00830 Impact Attenuators

- ☒ SP00840 Delineators and Milepost Marker Posts
- ☒ SP00842 Facility Identification Markers
- ☒ SP00850 Common Provisions for Permanent Pavement Markings
- ☒ SP00855 Pavement Markers ***(Requires SP00850)***
- ☐ SP00856 Surface Mounted Tubular Markers
- ☐ SP00857 Rumble Strips
- ☐ SP00860 Longitudinal Pavement Markings - Paint ***(Requires SP00850)***
- ☒ SP00865 Longitudinal Pavement Markings - Durable ***(Requires SP00850)***
- ☐ SP00866 Longitudinal Pavement Markings - High Performance ***(Requires SP00850)***
- ☒ SP00867 Transverse Pavement Markings - Legends and Bars ***(Requires SP00850)***

PERMANENT TRAFFIC CONTROL AND ILLUMINATION SYSTEMS

- ☒ SP00902 Crosswalk Closure Barricades ***(Requires SP00990 when crosswalk closure barricades will be paid for under 00990.90)***
- ☒ SP00905 Removal and Reinstallation of Existing Signs
- ☒ SP00910 Wood Sign Posts
- ☒ SP00920 Sign Support Footings
- ☒ SP00921 Major Sign Support Drilled Shafts ***(Requires SP02001)***
- ☒ SP00930 Metal Sign Supports ***(Requires SP02530)***
- ☒ SP00940 Signs ***(Requires SP02910 when anti-graffiti coating is required.)***
- ☒ SP00941 Sign Covers
- ☐ SP00942 Permanent Barricades
- ☒ SP00950 Removal of Electrical Systems
- ☒ SP00960 Common Provisions for Electrical Systems
- ☒ SP00962 Metal Illumination and Traffic Signal Supports ***(Requires SP02530)***
- ☒ SP00963 Signal Support Drilled Shafts
- ☒ SP00965 Camera Poles and Foundations ***(Requires SP02530 & ITS Specifications*. * Obtain from ITS unit.)***

☒ SP00970 Highway Illumination ***(Requires SP00962 when metal illumination supports are required.***

☒ SP00990 Traffic Signals

RIGHT OF WAY DEVELOPMENT AND CONTROL

☐ SP01010 Stormwater Control, Water Quality Structures

☒ SP01011 Stormwater Control, Ponds

☒ SP01012 Stormwater Control, Water Quality Biofiltration Swale

☒ SP01013 Stormwater Control, Water Quality Bioslope

☐ SP01014 Stormwater Control, Water Quality Filter Strip

☒ SP01030 Seeding

☒ SP01040 Planting

☒ SP01050 Fences

☐ SP01060 Metal Cattle Guards

☐ SP01070 Mailbox Supports

☐ SP01090 Gravel Beds and Blankets

☒ SP01091 Waterway Enhancements

☐ SP01095 Site Furnishings

WATER SUPPLY SYSTEMS

☒ SP01120 Irrigation Systems

☐ SP01140 Potable Water Pipe and Fittings

☐ SP01150 Potable Water Valves

☒ SP01160 Hydrants and Appurtenances

☐ SP01170 Potable Water Service Connections, 2 inch and Smaller

MATERIALS

☒ SP02001 Highway Illumination ***(Requires SP02690)***

☒ SP02440 Joint Materials

18 SPLIST (2018 Specifications: 06-01-18)

- ☐ SP02513 Stainless Steel Reinforcement
- ☒ SP02520 Steel and Concrete Piles
- ☒ SP02530 Structural Steel
- ☒ SP02690 PCC Aggregates
- ☒ SP02910 Sign Materials

Reset Form | Assemble Document

SPECIFICATION PROVISIONS TO BE DEVELOPED
(New Stand Alone Special Provisions)

Date August 31, 2018

Scope of Work GRADING, DRAINAGE, STRUCTURES, PAVING, SIGNING

Project Name I-205: PARK PLACE INTCHGE TO WEST LINN INTCHGE SEC.

Highway Name EAST PORTLAND FREEWAY

County CLACKAMAS **EA No.** C6035200

Anticipated Bid Date November, 2020 **Key No.** 19786

	Name	Specification No.	Effective Date
	Part XXXXX - Nonstandard Bid Items		
☒	Move Existing Bridges	None	N/A

2018 STANDARD SPECIFICATIONS

BID BOOKLET and SPECIAL PROVISIONS DOCUMENT ASSEMBLY

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Assemble Document

Date AUGUST 31, 2018 **Funding** ☒ **Federal** ☒ **State**

Scope of Work GRADING, DRAINAGE, STRUCTURES, PAVING, SIGNING

Project Name I-205: OSWEGO HWY (OR43) TO STAFFORD RD SEC.

Highway Name EAST PORTLAND FREEWAY

County CLACKAMAS **EA No.** C6035200

Anticipated Bid Date February, 2021 **Key No.** 19786

Construction Project Manager: TBD
(For ODOT administered projects, enter the Construction Project Manager's name only. Contact the project Team Leader for this information. For Consultant or Local Agency administered projects, enter The Consultant or Local Agency Construction Project Manager's name, address, and phone number.)

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BID BOOKLET

	FILE NAME	SECTION NAME
☒	00002_BB_COV	Bid Booklet - Cover Page and Description of Work Page

SPECIAL PROVISIONS

	FILE NAME	SECTION NAME
☐		Transmittal Letter ***(Contact appropriate Region for Transmittal Letter)***
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☒ SP00092_002 Special Provisions - Page 1 (Work to be Done)

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18 SPLIST (2018 Specifications: 06-01-18)

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ROADWORK

☒ SP00305 Construction Survey Work ***(Requires SP00150 to establish survey responsibilities)***

☒ SP00310 Removal of Structures and Obstructions

☒ SP00320 Clearing and Grubbing

☒ SP00330 Earthwork ***(Require SP00235 when using Agency-furnished disposal sites.)***

☒ SP00331 Subgrade Stabilization

☐ SP00333 Aggregate Ditch Lining

☐ SP00334 Preparation of Shoulders

☒ SP00335 Blasting Methods and Protection of Excavation Backslopes

☐ SP00340 Watering

☒ SP00344 Treated Subgrade

☒ SP00350 Geosynthetic Installation

☐ SP00360 Drainage Blankets

☐ SP00370 Finishing Roadbeds

☐ SP00380 Roadwork, Hourly Rate Basis

18 SPLIST (2018 Specifications: 06-01-18)

☒ SP00390 Riprap Protection

☒ SP00396 Shotcrete Slope Stabilization ***(Requires SP02690)***

☒ SP00398 Rock Slope Stabilization and Reinforcement

DRAINAGE AND SEWERS

☒ SP00405 Trench Excavation, Bedding, and Backfill ***(Requires SP02690)***

☒ SP00406 Tunneling, Boring, and Jacking

☐ SP00410 Common Provisions for Pipe Lining

☐ SP00411 Pipe Bursting and Slip Lining

☐ SP00412 Cured-In-Place Pipe Lining

☒ SP00415 Video Pipe Inspection

☐ SP00420 Salvaging Pipe

☒ SP00430 Subsurface Drains ***(Requires SP02690 when granular drain backfill material is required.)***

☐ SP00435 Prefabricated Vertical Drains

☒ SP00440 Commercial Grade Concrete

☐ SP00442 Controlled Low Strength Materials

☐ SP00443 Rapid Setting Controlled Low Strength Materials

☒ SP00445 Sanitary, Storm, Culvert, Siphon, and Irrigation Pipe ***(Requires SP00405)***

☐ SP00446 Trench Drains

☐ SP00450 Structural Plate Shaped Structures

☐ SP00459 Cast-In-Place Concrete Pipe ***(Requires SP00540)***

☐ SP00460 Paved Culvert End Slopes

☒ SP00470 Manholes, Catch Basins, and Inlets

☐ SP00475 Drain Wells

☒ SP00480 Drainage Curbs

☒ SP00490 Work on Existing Sewers and Structures

☒ SP00495 Trench Resurfacing ***(Requires SP01040 when planting is required.)***

BRIDGES

- ☒ SP00501 Bridge Removal
- ☐ SP00503 Bridge Deck Cold Plane Pavement Removal
- ☒ SP00510 Structure Excavation and Backfill
- ☒ SP00512 Drilled Shafts ***(Requires SP02001)***
- ☐ SP00515 Micropiles ***(Requires SP02690)***
- ☒ SP00520 Driven Piles ***(Requires SP00550 when prestressed concrete piles are required. Requires SP02520 when steel pipe piles are required.)***
- ☐ SP00530 Steel Reinforcement for Concrete ***(Requires SP02513 when stainless steel reinforcement is required.)***
- ☒ SP00532 Rebar Continuity
- ☒ SP00535 Resin Bonded Anchor Systems
- ☐ SP00536 Internal Shear Anchors
- ☐ SP00538 Crack Injecting Existing Bridges
- ☒ SP00539 Concrete and Crack Sealing
- ☒ SP00540 Structural Concrete ***(Requires SP02001. Requires SP02440 when poured joint fillers are required.)***
- ☒ SP00545 Reinforced Concrete Bridge End Panels ***(Requires SP00540 & SP02001)***
- ☒ SP00550 Precast Prestressed Concrete Members ***(Requires SP02001. Requires SP02440 when poured joint fillers are required.)***
- ☒ SP00555 Post-Tensioning
- ☐ SP00556 Multi-Layer Polymer Concrete Overlay
- ☐ SP00557 Premixed Polymer Concrete Overlays
- ☐ SP00559 Silica Fume and Latex Modified Concrete Overlays ***(Requires SP02001)***
- ☒ SP00560 Structural Steel Bridges ***(Requires SP02530. Requires SP00594 when coating work is required.)***
- ☐ SP00566 Carbon Fiber Reinforced Polymer Strengthening - Near Surface Mounted
- ☐ SP00570 Timber Structures ***(Requires SP02530)***
- ☒ SP00581 Bridge Drainage Systems ***(Requires SP02530)***

18 SPLIST (2018 Specifications: 06-01-18)

☒ SP00582 Bridge Bearings

☒ SP00583 Electrical Conduit in Structures

☐ SP00584 Elastomeric Concrete Nosing

☒ SP00585 Expansion Joints ***(Requires SP02530. Requires SP02440 when hot poured joint filler is required.)***

☒ SP00586 Expansion Joints, Modular

☒ SP00587 Bridge Rails ***(Requires SP00540, SP02001, & SP02530. Require SP00535 when resin bonded anchors are used.)***

☐ SP00588 Precast Historic Ornamental Bridge Rails ***(Requires SP02001)***

☐ SP00589 Utility Attachments on Structures ***(Requires SP02530)***

☐ SP00590 Polymer Membrane

☐ SP00591 Spray Waterproofing Membrane

☐ SP00593 Powder Coating Metal Structures

☒ SP00594 Preparing and Coating Metal Structures ***(Requires SP00084 when a coating system warranty is required in subsection 00594.75. Requires SP00253 when work access/containment is required. Requires SP00296 when lead is anticipated.)***

☐ SP00595 Reinforced Concrete Box Culverts ***(Requires SP00540 when cast-in-place culverts are required.)***

☒ SP00596A Mechanically Stabilized Earth Retaining Walls ***(Requires SP02001)***

☐ SP00596B Prefabricated Modular Retaining Walls ***(Requires SP02690)***

☒ SP00596C Cast-In-Place Retaining Walls

☒ SP00597 Sound Walls

☒ SP00599 Concrete Slope Paving

BASES

☐ SP00610 Reconditioning Existing Roadway

☒ SP00620 Cold Plane Pavement Removal ***(Require SP00744 or SP00745 when traffic is not allowed on the cold planed surface.)***

☐ SP00622 Grinding Concrete Pavement

☐ SP00635 Grid-Rolled Aggregate Subbase

18 SPLIST (2018 Specifications: 06-01-18)

☐ SP00640 Aggregate Base and Shoulders

☒ SP00641 Aggregate Subbase, Base, and Shoulders

☐ SP00645 Recycled Asphalt Products in Base

☐ SP00660 Lean Concrete Base

☐ SP00670 Concrete Pavement Undersealing

☐ SP00680 Stockpiled Aggregates

WEARING SURFACES

☐ SP00705 Emulsified Asphalt Prime Coat and Emulsified Asphalt Fog Coat

☐ SP00706 Emulsified Asphalt Slurry Seal Surfacing

☐ SP00710 Single Application Emulsified Asphalt Surface Treatment

☐ SP00711 Pre-Coated Aggregate Asphalt Surface Treatment

☐ SP00712 Dry Key Emulsified Asphalt Surface Treatment

☐ SP00715 Multiple Application Emulsified Asphalt Surface Treatment

☐ SP00718 Hydrated Lime Slurry in Cold-In-Place Recycling

☐ SP00719 Pre-Recycle Lime Treatment

☐ SP00720 Cold In-Place Recycled Asphalt Concrete Pavement (CIR) ***(Requires SP00705 and SP00730. Requires SP00710 or SP00715 if a surface treatment is required over the CIR.)***

☐ SP00721 Cold Recycled Emulsified Asphalt Concrete Pavement (CRP) ***(Requires SP00705 & SP00710.)***

☐ SP00725 Hot In-Place Recycled Asphalt Concrete Pavement (HIR) ***(Requires SP00730.)***

☒ SP00730 Emulsified Asphalt Tack Coat

☐ SP00735 Emulsified Asphalt Concrete Pavement ***(Requires SP00705 when emulsified asphalt fog coat is required. Requires SP00710 or SP00715 when emulsified asphalt surface treatment is required.)***

☒ SP00738 Safety Edge

☐ SP00740 Commercial Asphalt Concrete Pavement (CACP) ***(Requires SP00738 when safety edge is required; check with Roadway Designer.)***

☐ SP00743 Porous Asphalt Concrete (PAC) ***(Requires SP00738 when safety edge is required; check with Roadway Designer.)***

☐ SP00744 Asphalt Concrete Pavement ***(Requires SP00730. Requires SP00738 when safety edge is required; check with Roadway Designer.)***

☒ SP00745 Asphalt Concrete Pavement - Statistical Acceptance ***(Requires SP00730. Requires SP00738 when safety edge is required; check with Roadway Designer.)***

☐ SP00746 Crack Sealing Flexible Pavements ***(Requires SP02440 when hot poured joint fill is required.)***

☐ SP00748 Asphalt Concrete Pavement Repair ***(Requires SP00738 when safety edge is required; check with Roadway Designer.)***

☐ SP00749 Miscellaneous Asphalt Concrete Structures

☐ SP00754 Plain Concrete Pavement Repair ***(Requires SP02001 & SP02530. Requires SP02440 when poured joint fillers are required.)***

☒ SP00755 Continuously Reinforced Concrete Pavement ***(Requires SP02001 & SP02530. Requires SP02440 when poured joint fillers are required.)***

☐ SP00756 Plain Concrete Pavement ***(Requires SP02001 & SP02530. Requires SP02440 when poured joint fillers are required.)***

☐ SP00758 Reinforced Concrete Pavement Repair ***(Requires SP02001 & SP02530. Requires SP02440 when poured joint fillers are required.)***

☒ SP00759 Miscellaneous Portland Cement Concrete Structures ***(Requires SP02001 when bus pads are required.)***

☐ SP00760 Unit Pavers ***(Requires SP02690)***

PERMANENT TRAFFIC SAFETY AND GUIDANCE DEVICES

☒ SP00810 Metal Guardrail ***(Requires SP00594 when weatherized guardrail and painting of transitions and terminals is required.)***

☐ SP00811 Cable Barrier

☒ SP00812 Adjusting Guardrail

☐ SP00813 Steel Backed Timber Guardrail

☐ SP00815 Bollards

☒ SP00820 Concrete Barrier ***(Requires SP02690. Requires SP02001 when slipform single-slope barrier is required.)***

☒ SP00822 Glare Shields

☒ SP00830 Impact Attenuators

18 SPLIST (2018 Specifications: 06-01-18)

- ☒ SP00840 Delineators and Milepost Marker Posts
- ☒ SP00842 Facility Identification Markers
- ☒ SP00850 Common Provisions for Permanent Pavement Markings
- ☒ SP00855 Pavement Markers ***(Requires SP00850)***
- ☐ SP00856 Surface Mounted Tubular Markers
- ☐ SP00857 Rumble Strips
- ☐ SP00860 Longitudinal Pavement Markings - Paint ***(Requires SP00850)***
- ☒ SP00865 Longitudinal Pavement Markings - Durable ***(Requires SP00850)***
- ☐ SP00866 Longitudinal Pavement Markings - High Performance ***(Requires SP00850)***
- ☒ SP00867 Transverse Pavement Markings - Legends and Bars ***(Requires SP00850)***

PERMANENT TRAFFIC CONTROL AND ILLUMINATION SYSTEMS

- ☒ SP00902 Crosswalk Closure Barricades ***(Requires SP00990 when crosswalk closure barricades will be paid for under 00990.90)***
- ☒ SP00905 Removal and Reinstallation of Existing Signs
- ☒ SP00910 Wood Sign Posts
- ☒ SP00920 Sign Support Footings
- ☒ SP00921 Major Sign Support Drilled Shafts ***(Requires SP02001)***
- ☒ SP00930 Metal Sign Supports ***(Requires SP02530)***
- ☒ SP00940 Signs ***(Requires SP02910 when anti-graffiti coating is required.)***
- ☒ SP00941 Sign Covers
- ☒ SP00942 Permanent Barricades
- ☒ SP00950 Removal of Electrical Systems
- ☒ SP00960 Common Provisions for Electrical Systems
- ☒ SP00962 Metal Illumination and Traffic Signal Supports ***(Requires SP02530)***
- ☒ SP00963 Signal Support Drilled Shafts
- ☒ SP00965 Camera Poles and Foundations ***(Requires SP02530 & ITS Specifications*. * Obtain from ITS unit.)***

18 SPLIST (2018 Specifications: 06-01-18)

☒ SP00970 Highway Illumination ***(Requires SP00962 when metal illumination supports are required.***

☒ SP00990 Traffic Signals

RIGHT OF WAY DEVELOPMENT AND CONTROL

☐ SP01010 Stormwater Control, Water Quality Structures

☒ SP01011 Stormwater Control, Ponds

☒ SP01012 Stormwater Control, Water Quality Biofiltration Swale

☒ SP01013 Stormwater Control, Water Quality Bioslope

☐ SP01014 Stormwater Control, Water Quality Filter Strip

☒ SP01030 Seeding

☒ SP01040 Planting

☒ SP01050 Fences

☐ SP01060 Metal Cattle Guards

☐ SP01070 Mailbox Supports

☐ SP01090 Gravel Beds and Blankets

☐ SP01091 Waterway Enhancements

☐ SP01095 Site Furnishings

WATER SUPPLY SYSTEMS

☐ SP01120 Irrigation Systems

☐ SP01140 Potable Water Pipe and Fittings

☐ SP01150 Potable Water Valves

☒ SP01160 Hydrants and Appurtenances

☐ SP01170 Potable Water Service Connections, 2 inch and Smaller

MATERIALS

☒ SP02001 Highway Illumination ***(Requires SP02690)***

☒ SP02440 Joint Materials

18 SPLIST (2018 Specifications: 06-01-18)

- ☐ SP02513 Stainless Steel Reinforcement
- ☒ SP02520 Steel and Concrete Piles
- ☒ SP02530 Structural Steel
- ☒ SP02690 PCC Aggregates
- ☒ SP02910 Sign Materials

Reset Form | Assemble Document

SPECIFICATION PROVISIONS TO BE DEVELOPED
(New Stand Alone Special Provisions)

Date August 31, 2018

Scope of Work GRADING, DRAINAGE, STRUCTURES, PAVING, SIGNING

Project Name I-205: OSWEGO HWY (OR43) TO STAFFORD RD SEC.

Highway Name EAST PORTLAND FREEWAY

County CLACKAMAS **EA No.** C6035200

Anticipated Bid Date February, 2021 **Key No.** 19786

	Name	Specification No.	Effective Date
	Part XXXXX - Nonstandard Bid Items		
☒	Raise Existing Bridges	None	N/A

2018 STANDARD SPECIFICATIONS

BID BOOKLET and SPECIAL PROVISIONS DOCUMENT ASSEMBLY

Manual Document Assembly Process

When preparing project special provisions, follow the requirements described in the Specification and Writing Style Manual. The manual is available on the web at:

www.oregon.gov/ODOT/HWY/SPECS/pages/manuals_forms_etc.aspx

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Date AUGUST 31, 2018 **Funding** ☐ **Federal** ☒ **State**

Scope of Work STRUCTURES, SIGNING

Project Name I-205: REGIONAL ACTIVE TRAFFIC MANAGEMENT (ATM).

Highway Name EAST PORTLAND FREEWAY

County CLACKAMAS **EA No.** C6035200

Anticipated Bid Date September, 2019 **Key No.** 19786

Construction Project Manager: TBD
(For ODOT administered projects, enter the Construction Project Manager's name only. Contact the project Team Leader for this information. For Consultant or Local Agency administered projects, enter The Consultant or Local Agency Construction Project Manager's name, address, and phone number.)

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☐ SP00299 Decommission Underground Injection Control Systems ***(Requires SP00294 when contaminated soil or groundwater will be encountered.)***

☐ SP00299A Decommission Septic Tanks

ROADWORK

☒ SP00305 Construction Survey Work ***(Requires SP00150 to establish survey responsibilities)***

☒ SP00310 Removal of Structures and Obstructions

☒ SP00320 Clearing and Grubbing

☒ SP00330 Earthwork ***(Require SP00235 when using Agency-furnished disposal sites.)***

☐ SP00331 Subgrade Stabilization

☐ SP00333 Aggregate Ditch Lining

☐ SP00334 Preparation of Shoulders

☐ SP00335 Blasting Methods and Protection of Excavation Backslopes

☐ SP00340 Watering

☐ SP00344 Treated Subgrade

☐ SP00350 Geosynthetic Installation

☐ SP00360 Drainage Blankets

☐ SP00370 Finishing Roadbeds

☐ SP00380 Roadwork, Hourly Rate Basis

- ☐ SP00390 Riprap Protection
- ☐ SP00396 Shotcrete Slope Stabilization ***(Requires SP02690)***
- ☐ SP00398 Rock Slope Stabilization and Reinforcement

DRAINAGE AND SEWERS

- ☐ SP00405 Trench Excavation, Bedding, and Backfill ***(Requires SP02690)***
- ☐ SP00406 Tunneling, Boring, and Jacking
- ☐ SP00410 Common Provisions for Pipe Lining
- ☐ SP00411 Pipe Bursting and Slip Lining
- ☐ SP00412 Cured-In-Place Pipe Lining
- ☐ SP00415 Video Pipe Inspection
- ☐ SP00420 Salvaging Pipe
- ☐ SP00430 Subsurface Drains ***(Requires SP02690 when granular drain backfill material is required.)***
- ☐ SP00435 Prefabricated Vertical Drains
- ☐ SP00440 Commercial Grade Concrete
- ☐ SP00442 Controlled Low Strength Materials
- ☐ SP00443 Rapid Setting Controlled Low Strength Materials
- ☐ SP00445 Sanitary, Storm, Culvert, Siphon, and Irrigation Pipe ***(Requires SP00405)***
- ☐ SP00446 Trench Drains
- ☐ SP00450 Structural Plate Shaped Structures
- ☐ SP00459 Cast-In-Place Concrete Pipe ***(Requires SP00540)***
- ☐ SP00460 Paved Culvert End Slopes
- ☐ SP00470 Manholes, Catch Basins, and Inlets
- ☐ SP00475 Drain Wells
- ☐ SP00480 Drainage Curbs
- ☐ SP00490 Work on Existing Sewers and Structures
- ☐ SP00495 Trench Resurfacing ***(Requires SP01040 when planting is required.)***

BRIDGES

- ☒ SP00501 Bridge Removal
- ☐ SP00503 Bridge Deck Cold Plane Pavement Removal
- ☒ SP00510 Structure Excavation and Backfill
- ☒ SP00512 Drilled Shafts ***(Requires SP02001)***
- ☐ SP00515 Micropiles ***(Requires SP02690)***
- ☐ SP00520 Driven Piles ***(Requires SP00550 when prestressed concrete piles are required. Requires SP02520 when steel pipe piles are required.)***
- ☐ SP00530 Steel Reinforcement for Concrete ***(Requires SP02513 when stainless steel reinforcement is required.)***
- ☐ SP00532 Rebar Continuity
- ☐ SP00535 Resin Bonded Anchor Systems
- ☐ SP00536 Internal Shear Anchors
- ☐ SP00538 Crack Injecting Existing Bridges
- ☐ SP00539 Concrete and Crack Sealing
- ☐ SP00540 Structural Concrete ***(Requires SP02001. Requires SP02440 when poured joint fillers are required.)***
- ☐ SP00545 Reinforced Concrete Bridge End Panels ***(Requires SP00540 & SP02001)***
- ☐ SP00550 Precast Prestressed Concrete Members ***(Requires SP02001. Requires SP02440 when poured joint fillers are required.)***
- ☐ SP00555 Post-Tensioning
- ☐ SP00556 Multi-Layer Polymer Concrete Overlay
- ☐ SP00557 Premixed Polymer Concrete Overlays
- ☐ SP00559 Silica Fume and Latex Modified Concrete Overlays ***(Requires SP02001)***
- ☐ SP00560 Structural Steel Bridges ***(Requires SP02530. Requires SP00594 when coating work is required.)***
- ☐ SP00566 Carbon Fiber Reinforced Polymer Strengthening - Near Surface Mounted
- ☐ SP00570 Timber Structures ***(Requires SP02530)***
- ☐ SP00581 Bridge Drainage Systems ***(Requires SP02530)***

18 SPLIST (2018 Specifications: 06-01-18)

- ☐ SP00582 Bridge Bearings
- ☐ SP00583 Electrical Conduit in Structures
- ☐ SP00584 Elastomeric Concrete Nosing
- ☐ SP00585 Expansion Joints ***(Requires SP02530. Requires SP02440 when hot poured joint filler is required.)***
- ☐ SP00586 Expansion Joints, Modular
- ☐ SP00587 Bridge Rails ***(Requires SP00540, SP02001, & SP02530. Require SP00535 when resin bonded anchors are used.)***
- ☐ SP00588 Precast Historic Ornamental Bridge Rails ***(Requires SP02001)***
- ☐ SP00589 Utility Attachments on Structures ***(Requires SP02530)***
- ☐ SP00590 Polymer Membrane
- ☐ SP00591 Spray Waterproofing Membrane
- ☐ SP00593 Powder Coating Metal Structures
- ☒ SP00594 Preparing and Coating Metal Structures ***(Requires SP00084 when a coating system warranty is required in subsection 00594.75. Requires SP00253 when work access/containment is required. Requires SP00296 when lead is anticipated.)***
- ☐ SP00595 Reinforced Concrete Box Culverts ***(Requires SP00540 when cast-in-place culverts are required.)***
- ☐ SP00596A Mechanically Stabilized Earth Retaining Walls ***(Requires SP02001)***
- ☐ SP00596B Prefabricated Modular Retaining Walls ***(Requires SP02690)***
- ☐ SP00596C Cast-In-Place Retaining Walls
- ☐ SP00597 Sound Walls
- ☐ SP00599 Concrete Slope Paving

BASES

- ☐ SP00610 Reconditioning Existing Roadway
- ☐ SP00620 Cold Plane Pavement Removal ***(Require SP00744 or SP00745 when traffic is not allowed on the cold planed surface.)***
- ☐ SP00622 Grinding Concrete Pavement
- ☐ SP00635 Grid-Rolled Aggregate Subbase

18 SPLIST (2018 Specifications: 06-01-18)

- ☒ SP00640 Aggregate Base and Shoulders
- ☐ SP00641 Aggregate Subbase, Base, and Shoulders
- ☐ SP00645 Recycled Asphalt Products in Base
- ☐ SP00660 Lean Concrete Base
- ☐ SP00670 Concrete Pavement Undersealing
- ☐ SP00680 Stockpiled Aggregates

WEARING SURFACES

- ☐ SP00705 Emulsified Asphalt Prime Coat and Emulsified Asphalt Fog Coat
- ☐ SP00706 Emulsified Asphalt Slurry Seal Surfacing
- ☐ SP00710 Single Application Emulsified Asphalt Surface Treatment
- ☐ SP00711 Pre-Coated Aggregate Asphalt Surface Treatment
- ☐ SP00712 Dry Key Emulsified Asphalt Surface Treatment
- ☐ SP00715 Multiple Application Emulsified Asphalt Surface Treatment
- ☐ SP00718 Hydrated Lime Slurry in Cold-In-Place Recycling
- ☐ SP00719 Pre-Recycle Lime Treatment
- ☐ SP00720 Cold In-Place Recycled Asphalt Concrete Pavement (CIR) ***(Requires SP00705 and SP00730. Requires SP00710 or SP00715 if a surface treatment is required over the CIR.)***
- ☐ SP00721 Cold Recycled Emulsified Asphalt Concrete Pavement (CRP) ***(Requires SP00705 & SP00710.)***
- ☐ SP00725 Hot In-Place Recycled Asphalt Concrete Pavement (HIR) ***(Requires SP00730.)***
- ☐ SP00730 Emulsified Asphalt Tack Coat
- ☐ SP00735 Emulsified Asphalt Concrete Pavement ***(Requires SP00705 when emulsified asphalt fog coat is required. Requires SP00710 or SP00715 when emulsified asphalt surface treatment is required.)***
- ☐ SP00738 Safety Edge
- ☐ SP00740 Commercial Asphalt Concrete Pavement (CACP) ***(Requires SP00738 when safety edge is required; check with Roadway Designer.)***
- ☐ SP00743 Porous Asphalt Concrete (PAC) ***(Requires SP00738 when safety edge is required; check with Roadway Designer.)***

☐ SP00744 Asphalt Concrete Pavement ***(Requires SP00730. Requires SP00738 when safety edge is required; check with Roadway Designer.)***

☐ SP00745 Asphalt Concrete Pavement - Statistical Acceptance ***(Requires SP00730. Requires SP00738 when safety edge is required; check with Roadway Designer.)***

☐ SP00746 Crack Sealing Flexible Pavements ***(Requires SP02440 when hot poured joint fill is required.)***

☐ SP00748 Asphalt Concrete Pavement Repair ***(Requires SP00738 when safety edge is required; check with Roadway Designer.)***

☐ SP00749 Miscellaneous Asphalt Concrete Structures

☐ SP00754 Plain Concrete Pavement Repair ***(Requires SP02001 & SP02530. Requires SP02440 when poured joint fillers are required.)***

☐ SP00755 Continuously Reinforced Concrete Pavement ***(Requires SP02001 & SP02530. Requires SP02440 when poured joint fillers are required.)***

☐ SP00756 Plain Concrete Pavement ***(Requires SP02001 & SP02530. Requires SP02440 when poured joint fillers are required.)***

☐ SP00758 Reinforced Concrete Pavement Repair ***(Requires SP02001 & SP02530. Requires SP02440 when poured joint fillers are required.)***

☐ SP00759 Miscellaneous Portland Cement Concrete Structures ***(Requires SP02001 when bus pads are required.)***

☐ SP00760 Unit Pavers ***(Requires SP02690)***

PERMANENT TRAFFIC SAFETY AND GUIDANCE DEVICES

☒ SP00810 Metal Guardrail ***(Requires SP00594 when weatherized guardrail and painting of transitions and terminals is required.)***

☐ SP00811 Cable Barrier

☒ SP00812 Adjusting Guardrail

☐ SP00813 Steel Backed Timber Guardrail

☐ SP00815 Bollards

☐ SP00820 Concrete Barrier ***(Requires SP02690. Requires SP02001 when slipform single-slope barrier is required.)***

☐ SP00822 Glare Shields

☐ SP00830 Impact Attenuators

18 SPLIST (2018 Specifications: 06-01-18)

- ☐ SP00840 Delineators and Milepost Marker Posts
- ☒ SP00842 Facility Identification Markers
- ☐ SP00850 Common Provisions for Permanent Pavement Markings
- ☐ SP00855 Pavement Markers ***(Requires SP00850)***
- ☐ SP00856 Surface Mounted Tubular Markers
- ☐ SP00857 Rumble Strips
- ☐ SP00860 Longitudinal Pavement Markings - Paint ***(Requires SP00850)***
- ☐ SP00865 Longitudinal Pavement Markings - Durable ***(Requires SP00850)***
- ☐ SP00866 Longitudinal Pavement Markings - High Performance ***(Requires SP00850)***
- ☐ SP00867 Transverse Pavement Markings - Legends and Bars ***(Requires SP00850)***

PERMANENT TRAFFIC CONTROL AND ILLUMINATION SYSTEMS

- ☐ SP00902 Crosswalk Closure Barricades ***(Requires SP00990 when crosswalk closure barricades will be paid for under 00990.90)***
- ☒ SP00905 Removal and Reinstallation of Existing Signs
- ☒ SP00910 Wood Sign Posts
- ☒ SP00920 Sign Support Footings
- ☒ SP00921 Major Sign Support Drilled Shafts ***(Requires SP02001)***
- ☒ SP00930 Metal Sign Supports ***(Requires SP02530)***
- ☒ SP00940 Signs ***(Requires SP02910 when anti-graffiti coating is required.)***
- ☐ SP00941 Sign Covers
- ☐ SP00942 Permanent Barricades
- ☒ SP00950 Removal of Electrical Systems
- ☒ SP00960 Common Provisions for Electrical Systems
- ☒ SP00962 Metal Illumination and Traffic Signal Supports ***(Requires SP02530)***
- ☐ SP00963 Signal Support Drilled Shafts
- ☒ SP00965 Camera Poles and Foundations ***(Requires SP02530 & ITS Specifications*. * Obtain from ITS unit.)***

18 SPLIST (2018 Specifications: 06-01-18)

☒ SP00970 Highway Illumination ***(Requires SP00962 when metal illumination supports are required.***

☒ SP00990 Traffic Signals

RIGHT OF WAY DEVELOPMENT AND CONTROL

☐ SP01010 Stormwater Control, Water Quality Structures

☐ SP01011 Stormwater Control, Ponds

☐ SP01012 Stormwater Control, Water Quality Biofiltration Swale

☐ SP01013 Stormwater Control, Water Quality Bioslope

☐ SP01014 Stormwater Control, Water Quality Filter Strip

☒ SP01030 Seeding

☒ SP01040 Planting

☐ SP01050 Fences

☐ SP01060 Metal Cattle Guards

☐ SP01070 Mailbox Supports

☐ SP01090 Gravel Beds and Blankets

☐ SP01091 Waterway Enhancements

☐ SP01095 Site Furnishings

WATER SUPPLY SYSTEMS

☐ SP01120 Irrigation Systems

☐ SP01140 Potable Water Pipe and Fittings

☐ SP01150 Potable Water Valves

☐ SP01160 Hydrants and Appurtenances

☐ SP01170 Potable Water Service Connections, 2 inch and Smaller

MATERIALS

☒ SP02001 Highway Illumination ***(Requires SP02690)***

☐ SP02440 Joint Materials

18 SPLIST (2018 Specifications: 06-01-18)

- ☐ SP02513 Stainless Steel Reinforcement
- ☐ SP02520 Steel and Concrete Piles
- ☒ SP02530 Structural Steel
- ☒ SP02690 PCC Aggregates
- ☒ SP02910 Sign Materials

Reset Form | Assemble Document

SPECIFICATION PROVISIONS TO BE DEVELOPED
(New Stand Alone Special Provisions)

Date August 31, 2018

Scope of Work GRADING, DRAINAGE, STRUCTURES, PAVING, SIGNING

Project Name I-205: REGIONAL ACTIVE TRAFFIC MANAGEMENT (ATM)

Highway Name EAST PORTLAND FREEWAY

County CLACKAMAS **EA No.** C6035200

Anticipated Bid Date September, 2019 **Key No.** 19786

	Name	Specification No.	Effective Date
	Part XXXXX - Nonstandard Bid Items		
☒	BID ITEM NAME	None	N/A
☒	BID ITEM NAME	None	N/A
☒	BID ITEM NAME	None	N/A
	Part XXXXX – Standard Bid Items		
☒	BID ITEM NAME	None	N/A
☒	BID ITEM NAME	None	N/A
☒	BID ITEM NAME	None	N/A
	Part XXXXX – Materials		
☒	BID ITEM NAME	None	N/A

Appendix D.
Cost Estimate

September 6, 2018

PROGRAMMATIC OPINION OF COST

ITEM NO.	BID ITEM CODE	ITEM	CONSTRUCTION VARIABILITY CONTINGENCY (Range 0%-20%)	PACKAGE A PARK PLACE INTCHGE TO WEST LINN INTCHGE	PACKAGE B OSWEGO HWY (OR43) TO STAFFORD RD	PACKAGE C REGIONAL ACTIVE TRAFFIC MANAGEMENT (ATM)	TOTAL COST
200 - TEMPORARY FEATURES AND APPURTENANCES							
0010	0210-0100000A	MOBILIZATION	0%	$ 15,735,400.00	$ 12,157,700.00	$ 302,700.00	$28,195,800.00
0020	0100-0101000T	TRAINING	0%	$ 393,400.00	$ 303,900.00	$ 7,600.00	$704,900.00
0030	0225-0100000A	TEMPORARY PROTECTION AND DIRECTION OF TRAFFIC	0%	$ 7,867,700.00	$ 3,647,300.00	$ 151,400.00	$11,666,400.00
0040	0225-0108000F	TEMP GRD TYPE 2A REFLECTORIZED	10%	$ 7,500.00	$ 6,800.00	$ -	$14,300.00
0050	0225-0110000F	TEMP GRD TYPE 3 REFLECTORIZED	10%	$ -	$ 1,100.00	$ -	$1,100.00
0060	0225-0115000E	TEMP GRD TERMINALS, NON-FLAR	10%	$ 4,600.00	$ 13,900.00	$ -	$18,500.00
0070	0225-0117000E	TEMP GUARDRAIL TRANSITION	10%	$ -	$ 17,600.00	$ -	$17,600.00
0080	0225-0126000F	TEMPORARY CONCRETE BARRIER, TALL, REFL	10%	$ 3,500.00	$ 438,900.00	$ -	$442,400.00
0090	0225-0132000F	MOVING TEMPORARY CONCRETE BARRIER	10%	$ -	$ 192,500.00	$ -	$192,500.00
0100	0225-0141650F	SECURING TEMPORARY CONCRETE BARRIER	10%	$ -	$ 251,500.00	$ -	$251,500.00
0110	0225-0153000F	TEMPORARY STRIPING	20%	$ -	$ 32,100.00	$ -	$32,100.00
0120	0225-0158000A	TEMPORARY TRAFFIC SIGNAL	15%	$ 86,300.00	$ -	$ -	$86,300.00
0130	02560109000A	TEMPORARY RETAINING WALL	10%	$ 71,500.00	$ -	$ -	$71,500.00
0140	0280-0100000A	EROSION CONTROL	0%	$ 786,800.00	$ 607,900.00	$ 15,100.00	$1,409,800.00
0150	0294-	HAZMAT	0%	$ 393,400.00	$ 303,900.00	$ 7,600.00	$704,900.00
0160	0294-9Z90000K	CONTAMINATED SOIL MANAGEMENT	12.5%	$ 171,500.00	$ 1,749,600.00	$ -	$1,921,100.00
							$45,730,700.00
300 - ROADWORK							
0170	0305-0100000A	CONSTRUCTION SURVEY WORK	0%	$ 1,573,500.00	$ 1,215,800.00	$ 30,300.00	$2,819,600.00
0180	0310-0106000A	REMOVAL OF STRUCTURES AND OBSTRUCTIONS	0%	$ 786,800.00	$ 607,900.00	$ 15,100.00	$1,409,800.00
0190	0310-0100000F	REMOVAL OF PIPES	20%	$ 23,000.00	$ 53,600.00	$ -	$76,600.00
0200	0310-0102000J	REMOVAL OF WALKS AND DRIVEWAYS	10%	$ -	$ 1,100.00	$ -	$1,100.00
0210	0310-0103000J	REMOVAL OF SURFACINGS	10%	$ -	$ 89,200.00	$ -	$89,200.00
0220	0310-0104000E	REMOVAL OF INLETS	20%	$ 14,400.00	$ 21,300.00	$ -	$35,700.00
0230	0310-0113000A	REMOVAL OF GUARDRAIL	10%	$ -	$ 317,800.00	$ -	$317,800.00
0240	0320-0100000R	CLEARING AND GRUBBING	15%	$ 147,000.00	$ 677,900.00	$ -	$824,900.00
0250	0330-0105000K	GENERAL EXCAVATION	12.5%	$ 440,300.00	$ 3,661,700.00	$ -	$4,102,000.00
0260	0331-0112000J	24 INCH SUBGRADE STABILIZATION	10%	$ 118,300.00	$ 435,800.00	$ -	$554,100.00
0270	0344-0101000J	TREATED SUBGRADE, 9 INCHES THICK	10%	$ -	$ 1,420,300.00	$ -	$1,420,300.00
0280	0344-0108000M	PORTLAND CEMENT	10%	$ -	$ 567,900.00	$ -	$567,900.00
0290	0350-0105000J	SUBGRADE GEOTEXTILE	15%	$ 12,100.00	$ 333,400.00	$ -	$345,500.00
							$12,564,500.00
400 - DRAINAGE AND SEWERS							
0300	0405-0100000K	ROCK EXCAVATION	15%	$ -	$ 5,299,300.00	$ -	$5,299,300.00
0310		ROCK PRE-SPLITTING	20%	$ -	$ 600,000.00	$ -	$600,000.00
0320		PRE-SURVEY	20%	$ -	$ 120,000.00	$ -	$120,000.00
0330		POST-SURVEY	20%	$ -	$ 120,000.00	$ -	$120,000.00
0340	0445-035012AF	12 INCH STORM SEWER PIPE, 5 FT DEPTH	10%	$ 68,600.00	$ 671,200.00	$ -	$739,800.00
0350	0445-035012BF	12 INCH STORM SEWER PIPE, 10 FT DEPTH	10%	$ -	$ -	$ -	$0.00
0360	0445-035015AF	15 INCH STORM SEWER PIPE, 5 FT DEPTH	10%	$ -	$ -	$ -	$0.00
0370	0445-035018AF	18 INCH STORM SEWER PIPE, 5 FT DEPTH	10%	$ 479,300.00	$ 1,028,900.00	$ -	$1,508,200.00
0380	0445-035036BF	36 INCH STORM SEWER PIPE, 10 FT DEPTH	10%	$ 162,200.00	$ -	$ -	$162,200.00
0390	0445-035048BF	48 INCH STORM SEWER PIPE, 10 FT DEPTH	10%	$ 69,300.00	$ -	$ -	$69,300.00
0400	0470-0101000E	CONCRETE STORM SEWER MANHOLES	10%	$ 146,300.00	$ 231,000.00	$ -	$377,300.00
0410	0470-0311000E	CONCRETE INLETS, TYPE D	10%	$ 14,900.00	$ 33,000.00	$ -	$47,900.00
0420	0470-0315000E	CONCRETE INLETS, TYPE G-2	10%	$ 108,900.00	$ 161,700.00	$ -	$270,600.00
0430	0470-XXXXXXX	CONCRETE OUTLET CONTROL STRUCTURE	10%	$ -	$ 73,200.00	$ -	$73,200.00
0440	0490-0105000E	ADJUSTING INLETS	10%	$ -	$ 15,400.00	$ -	$15,400.00
0450		4F/6F MITIGATION	10%	$ 220,000.00	$ 330,000.00	$ -	$550,000.00
0460	0470-0315000E	WALL DRAINAGE	15%	$ -	$ 180,800.00	$ -	$180,800.00
							$10,134,000.00
5xx - Bridge No. 09704 (Remove Sign Mounts)							
0460	0501-	BRIDGE REMOVAL WORK	10%	$ -	$ 6,100.00	$ -	$6,100.00
							$6,100.00
xxx - Bridge No. 19456 (Cantilever)							
0470	0501-	BRIDGE REMOVAL WORK	10%	$ 39,600.00	$ -	$ -	$39,600.00
							$39,600.00
xxx - Bridge No. 19294 (Butterfly)							
0480	0501-	BRIDGE REMOVAL WORK	10%	$ 44,000.00	$ -	$ -	$44,000.00
							$44,000.00
xxx - Bridge No. 0M396 (Sign Bridge)							
0490	0501-	BRIDGE REMOVAL WORK	10%	$ 79,200.00	$ -	$ -	$79,200.00
							$79,200.00
xxx - Bridge No. 19452 (Cantilever)							
0500	0501-	BRIDGE REMOVAL WORK	10%	$ -	$ 39,600.00	$ -	$39,600.00
							$39,600.00
5xx - Bridge No. 19454 (Cantilever)							
0510	0501-	BRIDGE REMOVAL WORK	10%	$ 39,600.00	$ -	$ -	$39,600.00
							$39,600.00
xxx - Bridge No. 09403 (Sign Bridge on Bridge)							
0520	0501-	BRIDGE REMOVAL WORK	10%	$ 66,000.00	$ -	$ -	$66,000.00
							$66,000.00
xxx - Bridge No. 09403 (Sign Bridge on Bridge)							
0530	0501-	BRIDGE REMOVAL WORK	10%	$ 66,000.00	$ -	$ -	$66,000.00
							$66,000.00
510 - Bridge Nos. 09738 & 09738A (Borland Rd.)							
0540	05XX-	REPLACEMENT	10%	$ -	$ 4,796,000.00	$ -	$4,796,000.00
							$4,796,000.00
515 - Bridge Nos. 09737 & 09737A (Tualatin River)							
0550	05XX-	REPLACEMENT	10%	$ -	$ 22,066,000.00	$ -	$22,066,000.00
							$22,066,000.00
520 - Bridge Nos. 09735 & 09735A (Woodbine Rd.)							
0560	05XX-	REPLACEMENT	10%	$ -	$ 5,324,000.00	$ -	$5,324,000.00
							$5,324,000.00
525 - Bridge Nos. 09734 & 09734A (Blankenship Rd.)							
0570	05XX-	RETROFIT/WIDENING/BRIDGE RAISING	10%	$ -	$ 3,014,000.00	$ -	$3,014,000.00
							$3,014,000.00
530 - Bridge Nos. 09728 & 09728A (10th St.)							
0580	05XX-	RETROFIT/WIDENING/BRIDGE RAISING	10%	$ -	$ 2,684,000.00	$ -	$2,684,000.00
							$2,684,000.00
535 - Bridge No. XXXXX (Sunset Ave.)							
0590	05XX-	REPLACEMENT	10%	$ -	$ 2,772,000.00	$ -	$2,772,000.00
							$2,772,000.00
540 - Bridge No. XXXXX (West A St.)							
0600	05XX-	REPLACEMENT	10%	$ -	$ 3,685,000.00	$ -	$3,685,000.00
							$3,685,000.00
545 - Bridge No. 09703 (Broadway St.)							
0610	05XX-	DEMOLITION/REMOVAL	10%	$ -	$ 748,000.00	$ -	$748,000.00
							$748,000.00
550 - Bridge Nos. 09403, 09403A, 09403C, 09403R (Abernethy)							
0620	05XX-	ABERNETHY BRIDGE	15%	$ 116,552,000.00	$ -	$ -	$116,552,000.00
0630	05XX-	ABERNETHY BRIDGE, SB RAMP	10%	$ 5,868,300.00	$ -	$ -	$5,868,300.00
0640	05XX-	ABERNETHY BRIDGE, NB RAMP	0%	$ 325,000.00	$ -	$ -	$325,000.00
0650	05XX-	HYDRAULIC MITIGATION	10%	$ 154,000.00	$ -	$ -	$154,000.00
0660	05XX-	ABERNETHY CREEK MITIGATION	10%	$ 544,500.00	$ -	$ -	$544,500.00
0670	05XX-	TEMPORARY WATER MANAGEMENT	10%	$ 330,000.00	$ -	$ -	$330,000.00
0680	05XX-	RIP RAP REMOVAL		$ 330,000.00	$ -	$ -	$330,000.00
0690	05XX-	GEOTECHNICAL MITIGATION FOR LATERAL SPREAD	5%	$ 15,750,000.00	$ -	$ -	$15,750,000.00
							$139,853,800.00
555 - Bridge No. 09702 (Main St.)							
0700	05XX-	RETROFIT/WIDENING	10%	$ 5,104,000.00	$ -	$ -	$5,104,000.00
							$5,104,000.00

PROGRAMMATIC OPINION OF COST (CONT.)

ITEM NO.	BID ITEM CODE	ITEM	CONSTRUCTION VARIABILITY CONTINGENCY (Range 0%-20%)	PACKAGE A PARK PLACE INTCHGE TO WEST LINN INTCHGE	PACKAGE B OSWEGO HWY (OR43) TO STAFFORD RD	PACKAGE C REGIONAL ACTIVE TRAFFIC MANAGEMENT (ATM)	TOTAL COST
560 - Retaining Walls							
0710	0596-0108000A	RETAINING WALL, MSE NO. 001	10%	$ 162,300.00	$ -	$ -	$162,300.00
0720	0596-0108000A	RETAINING WALL, CAST-IN-PLACE GRAVITY	10%	$ 447,700.00	$ -	$ -	$447,700.00
0730	0597-0100000J	SOUND WALL SW B1	10%	$ -	$ 1,133,800.00	$ -	$1,133,800.00
0740	0597-0100000J	SOUND WALL SW B2	10%	$ -	$ -	$ -	$0.00
0750	0597-0100000J	SOUND WALL SW B3 & SW B4	10%	$ -	$ 760,300.00	$ -	$760,300.00
0760	0597-0100000J	SOUND WALL SW B5	10%	$ -	$ 401,300.00	$ -	$401,300.00
0770	0597-0100000J	SOUND WALL SW B6	10%	$ -	$ 346,500.00	$ -	$346,500.00
0780	0597-0100000J	SOUND WALL SW B7	10%	$ -	$ -	$ -	$0.00
							$3,251,900.00
600 - BASES							
0790	0620-0103000J	COLD PLANE PAVEMENT REMOVAL, 0 - 1 INCHES DEEP	10%	$ -	$ 21,600.00	$ -	$21,600.00
0800	0620-0104000J	COLD PLANE PAVEMENT REMOVAL, 0 - 2 INCHES DEEP	10%	$ -	$ 8,300.00	$ -	$8,300.00
0810	0620-0110000J	COLD PLANE PAVEMENT REMOVAL, 0 - 9 INCHES DEEP	10%	$ -	$ 18,700.00	$ -	$18,700.00
0820	0620-0120000J	COLD PLANE PAVEMENT REMOVAL, 2 INCHES DEEP	10%	$ 127,000.00	$ 23,100.00	$ -	$150,100.00
0830	0640-XXXXXXX	iCTB	10%	$ -	$ 68,200.00	$ -	$68,200.00
0840	0640-XXXXXXX	iCTB PORTLAND CEMENT	10%	$ -	$ 112,200.00	$ -	$112,200.00
0850	0641-0102000M	AGGREGATE BASE	12.5%	$ 559,400.00	$ 5,893,200.00	$ -	$6,452,600.00
							$6,831,700.00
700 - WEARING SURFACES							
0860	0730-0100000M	EMULSIFIED ASPHALT FOR TACK COAT	10%	$ 18,200.00	$ 9,900.00	$ -	$28,100.00
	0744-0341000M	LEVEL 3, 1/2 INCH ACP MIXTURE IN TEMPORARY	10%	$ 10,800.00	$ 751,400.00	$ -	$762,200.00
0870	0745-0402000M	LEVEL 4, 1/2 INCH ACP	10%	$ 1,329,900.00	$ 5,847,100.00	$ -	$7,177,000.00
0880	0745-0640100M	PG 70-22ER ASPHALT IN LEVEL 4, 1/2 INCH ACP	10%	$ 100.00	$ 100.00	$ -	$200.00
0890	0755-0104000J	CONTINUOUSLY REINFORCED CONCRETE PAVEMENT 9 INCH THICK	10%	$ 792,000.00	$ 24,808,500.00	$ -	$25,600,500.00
0900	0755-0107000J	CONTINUOUSLY REINFORCED CONCRETE PAVEMENT 11 INCH THICK	10%	$ -	$ 4,065,400.00	$ -	$4,065,400.00
0910	0759-0110000F	CONCRETE CURBS, STANDARD CURB	15%	$ 139,200.00	$ 109,300.00	$ -	$248,500.00
0920	0759-0106000F	CONCRETE CURBS, LOW PROFILE MOUNTABLE CURB	15%	$ 95,700.00	$ 104,900.00	$ -	$200,600.00
0930	0759-0122000J	CONCRETE ISLANDS	15%	$ 115,300.00	$ -	$ -	$115,300.00
0940	0759-0128000J	CONCRETE WALKS	15%	$ 265,300.00	$ 25,600.00	$ -	$290,900.00
0950	0759-0154000E	EXTRA FOR NEW SIDEWALK RAMPS	15%	$ 89,100.00	$ 100,600.00	$ -	$189,700.00
0960	0759-0510000E	TRUNCATED DOMES ON NEW SURFACES	15%	$ 17,800.00	$ 20,100.00	$ -	$37,900.00
							$38,716,300.00
800 - PERMANENT TRAFFIC SAFETY AND GUIDANCE DEVICES							
0970	0810-0122000E	GUARDRAIL END PIECES, TYPE B	10%	$ 200.00	$ 1,100.00	$ -	$1,300.00
0980	0810-0126000E	GUARDRAIL TRANSITION	10%	$ -	$ 57,500.00	$ 18,200.00	75700.0
0990	0810-0129000E	GUARDRAIL TERMINALS, NON-FLARED	10%	$ 5,500.00	$ 85,300.00	$ 16,500.00	107300.0
1000	0810-0146000F	31 INCH GUARDRAIL, TYPE 2A	10%	$ 115,000.00	$ 806,600.00	$ 33,000.00	$954,600.00
1010	0810-0146000F	31 INCH GUARDRAIL, TYPE 3	10%	$ -	$ 44,600.00	$ 4,500.00	$49,100.00
1020	0820-0100000F	CONCRETE BARRIER	10%	$ -	$ 784,800.00	$ -	$784,800.00
1030	0820-0127000F	CONCRETE BARRIER, TALL	10%	$ -	$ 375,400.00	$ -	$375,400.00
1040	08XX-	CONSTRUCT CONCRETE BARRIER/RETAINING WALL	10%	$ -	$ 453,900.00	$ -	$453,900.00
1050	0830-0125000E	IMPACT ATTENUATOR	10%	$ 66,000.00	$ 33,000.00	$ -	$99,000.00
1060	08XX-	PAVEMENT MARKING	10%	$ 58,400.00	$ 701,800.00	$ -	$760,200.00
							$3,661,300.00
900 - PERMANENT TRAFFIC CONTROL AND ILLUMINATION SYSTEMS							
1070	09XX-	SIGNING	10%	$ 429,000.00	$ 198,000.00	$ 5,500.00	$632,500.00
1080	0930-0101000A	TRUSS SIGN BRIDGE	10%	$ 1,949,200.00	$ -	$ 704,000.00	$2,653,200.00
1090	0930-0102000A	MONOTUBE SIGN BRIDGE	10%	$ -	$ -	$ 269,500.00	$269,500.00
1100	0930-0104000A	MONOTUBE CANTILEVER SIGN STRUCTURE	10%	$ 137,500.00	$ 1,650,000.00	$ 165,000.00	$1,952,500.00
1110	0930-0105000A	BRIDGE STRUCTURE MOUNTS	10%	$ 23,800.00	$ 74,300.00	$ 86,300.00	$184,400.00
1120	0930-0106000A	VERTICAL SIGN MOUNTS ON EXISTING STRUCTURES	15%	$ 5,800.00	$ 54,800.00	$ 12,200.00	$72,800.00
1130	0930-0106000A	VERTICAL SIGN MOUNTS ON EXISTING STRUCTURES, NO. 19257	15%	$ 7,800.00	$ -	$ -	$7,800.00
1140	0950-0101000A	REMOVAL OF ELECTRICAL SYSTEMS, OR43/I-205 NB RAMP SIGNAL	10%	$ 27,500.00	$ -	$ -	$27,500.00
1150	0970-	ILLUMINATION	10%	$ 1,074,700.00	$ 2,540,400.00	$ 46,000.00	$3,661,100.00
1160	0990-0102000A	TRAFFIC SIGNAL MODIFICATION, OR99/I-205 SB RAMP	10%	$ 24,400.00	$ -	$ -	$24,400.00
1170	0990-0102000A	TRAFFIC SIGNAL MODIFICATION, OR99/I-205 NB RAMP	10%	$ 24,900.00	$ -	$ -	$24,900.00
1180	0990-0102000A	TRAFFIC SIGNAL MODIFICATION, OR43/I-205 SB RAMP	10%	$ 58,900.00	$ -	$ -	$58,900.00
1190	0990-0104000A	RAMP METER SIGNAL INSTALLATION, I-205 SB RAMP AT OR99	10%	$ 187,800.00	$ -	$ -	$187,800.00
1200	0990-0104000A	RAMP METER SIGNAL INSTALLATION, I-205 NB RAMP AT OR99	10%	$ 228,600.00	$ -	$ -	$228,600.00
1210	0990-0104000A	RAMP METER SIGNAL INSTALLATION, I-205 SB RAMP AT OR43	10%	$ 204,100.00	$ -	$ -	$204,100.00
1220	0990-0104000A	RAMP METER SIGNAL INSTALLATION, I-205 SB RAMP AT 10TH STREET	10%	$ -	$ 204,100.00	$ -	$204,100.00
1230	0990-0104000A	RAMP METER SIGNAL INSTALLATION, I-205 NB RAMP AT 10TH STREET	10%	$ -	$ 188,800.00	$ -	$188,800.00
1240	0990-0104000A	RAMP METER SIGNAL INSTALLATION, I-205 SB RAMP AT STAFFORD	10%	$ -	$ 202,000.00	$ -	$202,000.00
1250	0990-0104000A	RAMP METER SIGNAL INSTALLATION, I-205 NB RAMP AT STAFFORD	10%	$ -	$ 178,900.00	$ -	$178,900.00
1260	0990-0106000A	FLASHING BEACON INSTALLATION, OR43/WILLAMETTE FALLS DRIVE	10%	$ 45,000.00	$ -	$ -	$45,000.00
1270	0990-9Z90000A	TELECOMMUNICATIONS, (FIBER)	10%	$ 294,800.00	$ 968,000.00	$ 489,500.00	$1,752,300.00
							$12,761,100.00
910 - NB ATM/VMS IMPROVEMENTS							
1280	0990-9Z90000A	MP 0.95 - VMS & ADVISORY SPEED	10%	$ -	$ -	$ 377,300.00	$377,300.00
1290	0990-9Z90000A	MP 3.15 - ADVISORY SPEED	10%	$ -	$ -	$ 161,700.00	$161,700.00
1300	0990-9Z90000A	MP 4.26 - FULL VMS	10%	$ -	$ -	$ 152,900.00	$152,900.00
1310	0990-9Z90000A	MP 7.60 - VMS & ADVISORY SPEED	10%	$ -	$ -	$ 220,000.00	$220,000.00
1320	0990-9Z90000A	MP 8.5 - ADVISORY SPEED	10%	$ -	$ 132,700.00	$ -	$132,700.00
							$1,044,600.00
920 - SB ATM/VMS IMPROVEMENTS							
1330	0990-9Z90000A	MP 11.68 - REPLACE EXTG VMS	10%	$ -	$ -	$ 103,400.00	$103,400.00
1340	0990-9Z90000A	MP 10.18 - ADVISORY SPEED	10%	$ -	$ -	$ 161,700.00	$161,700.00
1350	0990-9Z90000A	MP 8.3 - ADVISORY SPEED	10%	$ -	$ 132,700.00	$ -	$132,700.00
							$397,800.00
1000 - RIGHT OF WAY DEVELOPMENT AND CONTROL							
1360	1012-	WATER QUALITY	10%	$ 467,500.00	$ 265,100.00	$ -	$732,600.00
1370	1012-	DETENTION	10%	$ -	$ 2,018,500.00	$ -	$2,018,500.00
1380	1030-0101000R	WEED CONTROL	10%	$ 30,800.00	$ 252,200.00	$ -	$283,000.00
1390	1030-0108000R	PERMANENT SEEDING	10%	$ 55,400.00	$ 259,400.00	$ -	$314,800.00
1400	1040-	LANDSCAPING	0%	$ 1,573,500.00	$ 1,215,800.00	$ 30,300.00	$2,819,600.00
							$6,168,500.00
SUBTOTAL FOR CONSTRUCTION W/O ENGINEERING, CONTINGENCIES OR ANTICIPATED ITEMS							**$331,689,300.00**
		UNKNOWNS CONTINGENCIES (idependent of design contingencies above)	15%	$ 27,919,400.00	$ 21,238,700.00	$ 538,100.00	$49,696,200.00
							$49,696,200.00
SUBTOTAL FOR CONSTRUCTION W/O ANTICIPATED ITEMS							**$381,385,500.00**
			AGGREGATE CONTINGENCY	**$46,173,900.00**	**$33,066,500.00**	**$819,000.00**	**$80,059,400.00**
ANTICIPATED ITEMS							
		ANTICIPATED ITEMS	0%	$ 1,573,500.00	$ 1,215,800.00	$ 30,300.00	$2,819,600.00
		AI: POWER SERVICE CONNECTION FOR AGENCY	LS	$ -	$ 5,500.00	$ 33,000.00	$38,500.00
		AI: AGENCY-FURNISHED ATM ITEMS	LS	$ -	$ 161,500.00	$ 862,400.00	$1,023,900.00
		ENVIRONMENTAL MITIGATION	0%	$ 393,400.00	$ 425,500.00	$ -	$818,900.00
		CONSTRUCTION ENGINEERING (CE)	0%	$ 19,264,400.00	$ 14,654,700.00	$ 412,500.00	$34,331,600.00
							$39,032,500.00
SUBTOTAL FOR CONSTRUCTION (CURRENT DOLLARS)				**$ 235,300,000.00**	**$ 179,300,000.00**	**$ 5,500,000.00**	**$420,100,000.00**
CONSTRUCTION YEAR COST INCLUDING INFLATION (TO MIDPOINT OF OF CONSTRUCTION)				**$ 269,400,000.00**	**$ 208,100,000.00**	**$ 5,800,000.00**	**$483,300,000.00**
			2017.5	**2022.5**	**2023**	**2020.0**	
POTENTIAL COST FOR MEGA PROJECT (TO MIDPOINT OF CONSTRUCTION, INCLUDES ECONOMY OF SCALE)				**$ 258,700,000.00**	**$ 199,800,000.00**	**$ 5,600,000.00**	**$ 464,100,000.00**
PROGRAMMATIC ITEMS							
						PROFESSIONAL ENGINEERING (PE)	$45,000,000.00
						RIGHT OF WAY (ROW)	$2,500,000.00
						(ASSUMED) REIMBURSABLE UTILITES	$1,500,000.00
							49,000,000.00
						TOTAL PROJECT COST	**$513,100,000.00**

I-205: PARK PLACE INTCHGE TO WEST LINN INTCHGE SEC.
OPINION OF COST

ITEM NO.	BID ITEM CODE	ITEM	UNIT	QUANTITY	UNIT COST	CONSTRUCTION VARIABILITY CONTINGENCY (Range 0%-20%)	TOTAL PRICE
200 - TEMPORARY FEATURES AND APPURTENANCES							
0010	0210-0100000A	MOBILIZATION	LS	10.0%	$15,735,359.91	0%	$15,735,359.91
0020	0100-0101000T	TRAINING	LS	0.25%	$393,384.00	0%	$393,384.00
0030	0225-0100000A	TEMPORARY PROTECTION AND DIRECTION OF TRAFFIC	LS	5.0%	$7,867,679.95	0%	$7,867,679.95
0040	0225-0108000F	TEMP GRD TYPE 2A REFLECTORIZED	FOOT	360	$19.00	10%	$7,524.00
0050	0225-0110000F	TEMP GRD TYPE 3 REFLECTORIZED	FOOT	0	$39.00	10%	$0.00
0060	0225-0115000E	TEMP GRD TERMINALS, NON-FLAR	EACH	2	$2,100.00	10%	$4,620.00
0070	0225-0117000E	TEMP GUARDRAIL TRANSITION	EACH	0	$2,000.00	10%	$0.00
0080	0225-0126000F	TEMPORARY CONCRETE BARRIER, TALL, REFL	FOOT	225	$14.00	10%	$3,465.00
0090	0225-0132000F	MOVING TEMPORARY CONCRETE BARRIER	FOOT	0	$5.00	10%	$0.00
0100	0225-0141650F	SECURING TEMPORARY CONCRETE BARRIER	FOOT	0	$3.60	10%	$0.00
0110	0225-0153000F	TEMPORARY STRIPING	FOOT	0	$0.15	10%	$0.00
0120	0225-0158000A	TEMPORARY TRAFFIC SIGNAL	LS	1	$75,000.00	15%	$86,250.00
0130	02560109000A	TEMPORARY RETAINING WALL	SF	1,300	$50.00	10%	$71,500.00
0140	0280-0100000A	EROSION CONTROL	LS	0.5%	$786,768.00	0%	$786,768.00
0150	0294-	HAZMAT	LS	0.25%	$393,384.00	0%	$393,384.00
0160	0294-9Z90000K	CONTAMINATED SOIL MANAGEMENT	CUYD	19,060	$8.00	12.5%	$171,540.00
					Subtotal		**$25,521,474.85**
300 - ROADWORK							
0170	0305-0100000A	CONSTRUCTION SURVEY WORK	LS	1.0%	$1,573,535.99	0%	$1,573,535.99
0180	0310-0106000A	REMOVAL OF STRUCTURES AND OBSTRUCTIONS	LS	0.5%	$786,768.00	0%	$786,768.00
0190	0310-0100000F	REMOVAL OF PIPES	FOOT	1742	$11.00	20%	$22,994.40
0200	0310-0102000J	REMOVAL OF WALKS AND DRIVEWAYS	SQYD	0	$7.00	10%	$0.00
0210	0310-0103000J	REMOVAL OF SURFACINGS	SQYD	0	$6.00	10%	$0.00
0220	0310-0104000E	REMOVAL OF INLETS	EACH	48	$250.00	20%	$14,400.00
0230	0310-0113000A	REMOVAL OF GUARDRAIL	FOOT	0	$9.00	10%	$0.00
0240	0320-0100000R	CLEARING AND GRUBBING	ACRE	14	$9,000.00	15%	$146,970.00
0250	0330-0105000K	GENERAL EXCAVATION	CUYD	20,600	$19.00	12.5%	$440,325.00
0260	0331-0112000J	24 INCH SUBGRADE STABILIZATION	SQYD	4,300	$25.00	10%	$118,250.00
0270	0344-0101000J	TREATED SUBGRADE, 9 INCHES THICK	SQYD	0	$10.00	10%	$0.00
0280	0344-0108000M	PORTLAND CEMENT	TON	0	$120.00	10%	$0.00
0290	0350-0105000J	SUBGRADE GEOTEXTILE	SQYD	10,555	$1.00	15%	$12,138.25
					Subtotal		**$3,115,381.64**
400 - DRAINAGE AND SEWERS							
0300	0405-0100000K	ROCK EXCAVATION	CUYD	0	$55.00	17.5%	$0.00
0310		ROCK PRE-SPLITTING	LS	1	$0.00	20%	$0.00
0320		PRE-SURVEY	LS	1	$0.00	20%	$0.00
0330		POST-SURVEY	LS	1	$0.00	20%	$0.00
0340	0445-035012AF	12 INCH STORM SEWER PIPE, 5 FT DEPTH	FOOT	959	$65.00	10%	$68,568.50
0350	0445-035012BF	12 INCH STORM SEWER PIPE, 10 FT DEPTH	FOOT	0	$70.00	10%	$0.00
0360	0445-035015AF	15 INCH STORM SEWER PIPE, 5 FT DEPTH	FOOT	0	$70.00	10%	$0.00
0370	0445-035018AF	18 INCH STORM SEWER PIPE, 5 FT DEPTH	FOOT	5810	$75.00	10%	$479,325.00
0380	0445-035036BF	36 INCH STORM SEWER PIPE, 10 FT DEPTH	FOOT	983	$150.00	10%	$162,195.00
0390	0445-035048BF	48 INCH STORM SEWER PIPE, 10 FT DEPTH	FOOT	315	$200.00	10%	$69,300.00
0400	0470-0101000E	CONCRETE STORM SEWER MANHOLES	EACH	38	$3,500.00	10%	$146,300.00
0410	0470-0311000E	CONCRETE INLETS, TYPE D	EACH	9	$1,500.00	10%	$14,850.00
0420	0470-0315000E	CONCRETE INLETS, TYPE G-2	EACH	66	$1,500.00	10%	$108,900.00
0430	0470-XXXXXXX	CONCRETE OUTLET CONTROL STRUCTURE	EACH	0	$3,500.00	10%	$0.00
0440	0490-0105000E	ADJUSTING INLETS	EACH	0	$1,000.00	10%	$0.00
0450		4F/6F MITIGATION	LS	1	$200,000.00	10%	$220,000.00
0460	0470-0315000E	WALL DRAINAGE	LF	0	$1,500.00	15%	$0.00
					Subtotal		**$1,269,438.50**
5xx - Bridge No. 09704 (Remove Sign Mounts)							
0460	0501-	BRIDGE REMOVAL WORK	LS	1	$0.00	10%	$0.00
					Subtotal		**$0.00**
xxx - Bridge No. 19456 (Cantilever)							
0470	0501-	BRIDGE REMOVAL WORK	LS	1	$36,000.00	10%	$39,600.00
					Subtotal		**$39,600.00**
xxx - Bridge No. 19294 (Butterfly)							
0480	0501-	BRIDGE REMOVAL WORK	LS	1	$40,000.00	10%	$44,000.00
					Subtotal		**$44,000.00**
xxx - Bridge No. 0M396 (Sign Bridge)							
0490	0501-	BRIDGE REMOVAL WORK	LS	1	$72,000.00	10%	$79,200.00
					Subtotal		**$79,200.00**
xxx - Bridge No. 19452 (Cantilever)							
0500	0501-	BRIDGE REMOVAL WORK	LS	1	$0.00	10%	$0.00
					Subtotal		**$0.00**
5xx - Bridge No. 19454 (Cantilever)							
0510	0501-	BRIDGE REMOVAL WORK	LS	1	$36,000.00	10%	$39,600.00
					Subtotal		**$39,600.00**
xxx - Bridge No. 09403 (Sign Bridge on Bridge)							
0520	0501-	BRIDGE REMOVAL WORK	LS	1	$60,000.00	10%	$66,000.00
					Subtotal		**$66,000.00**
xxx - Bridge No. 09403 (Sign Bridge on Bridge)							
0530	0501-	BRIDGE REMOVAL WORK	LS	1	$60,000.00	10%	$66,000.00
					Subtotal		**$66,000.00**
510 - Bridge Nos. 09738 & 09738A (Borland Rd.)							
0540	05XX-	REPLACEMENT	LS	1	$0.00	10%	$0.00
					Subtotal		**$0.00**
515 - Bridge Nos. 09737 & 09737A (Tualatin River)							
0550	05XX-	REPLACEMENT	LS	1	$0.00	10%	$0.00
					Subtotal		**$0.00**
520 - Bridge Nos. 09735 & 09735A (Woodbine Rd.)							
0560	05XX-	REPLACEMENT	LS	1	$0.00	10%	$0.00
					Subtotal		**$0.00**
525 - Bridge Nos. 09734 & 09734A (Blankenship Rd.)							
0570	05XX-	RETROFIT/WIDENING/BRIDGE RAISING	LS	1	$0.00	10%	$0.00
					Subtotal		**$0.00**
530 - Bridge Nos. 09728 & 09728A (10th St.)							
0580	05XX-	RETROFIT/WIDENING/BRIDGE RAISING	LS	1	$0.00	10%	$0.00
					Subtotal		**$0.00**
535 - Bridge No. XXXXX (Sunset Ave.)							
0590	05XX-	REPLACEMENT	LS	1	$0.00	10%	$0.00
					Subtotal		**$0.00**

I-205: PARK PLACE INTCHGE TO WEST LINN INTCHGE SEC.
OPINION OF COST (CONT.)

ITEM NO.	BID ITEM CODE	ITEM	UNIT	QUANTITY	UNIT COST	CONSTRUCTION VARIABILITY CONTINGENCY (Range 0%-20%)	TOTAL PRICE
540 - Bridge No. XXXXX (West A St.)							
0600	05XX-	REPLACEMENT	LS	1	$0.00	10%	$0.00
					Subtotal		**$0.00**
545 - Bridge No. 09703 (Broadway St.)							
0610	05XX-	DEMOLITION/REMOVAL	LS	1	$0.00	10%	$0.00
					Subtotal		**$0.00**
550 - Bridge Nos. 09403, 09403A, 09403C, 09403R (Abernethy)							
0620	05XX-	ABERNETHY BRIDGE	LS	1	$101,349,598.00	15%	$116,552,037.70
0630	05XX-	ABERNETHY BRIDGE, SB RAMP	LS	1	$5,334,808.00	10%	$5,868,288.80
0640	05XX-	ABERNETHY BRIDGE, NB RAMP	LS	1	$325,000.00	0%	$325,000.00
0650	05XX-	HYDRAULIC MITIGATION	LS	1	$140,000.00	10%	$154,000.00
0660	05XX-	ABERNETHY CREEK MITIGATION	LS	1	$495,000.00	10%	$544,500.00
0670	05XX-	TEMPORARY WATER MANAGEMENT	LS	1	$300,000.00	10%	$330,000.00
0680	05XX-	RIP RAP REMOVAL	LS	1	$300,000.00	10%	$330,000.00
0690	05XX-	GEOTECHNICAL MITIGATION FOR LATERAL SPREAD	LS	1	$15,000,000.00	5%	$15,750,000.00
					Subtotal		**$139,853,826.50**
555 - Bridge No. 09702 (Main St.)							
0700	05XX-	RETROFIT/WIDENING	LS	1	$4,640,000.00	10%	$5,104,000.00
					Subtotal		**$5,104,000.00**
560 - Retaining Walls							
0710	0596-0108000A	RETAINING WALL, MSE NO. 001	SF	2,270	$65.00	10%	$162,305.00
0720	0596-0108000A	RETAINING WALL, CAST-IN-PLACE GRAVITY	SF	3,700	$110.00	10%	$447,700.00
0730	0597-0100000J	SOUND WALL SW B1	SF	0	$25.00	10%	$0.00
0740	0597-0100000J	SOUND WALL SW B2	SF	0	$25.00	10%	$0.00
0750	0597-0100000J	SOUND WALL SW B3 & SW B4	SF	0	$20.00	10%	$0.00
0760	0597-0100000J	SOUND WALL SW B5	SF	0	$20.00	10%	$0.00
0770	0597-0100000J	SOUND WALL SW B6	SF	0	$20.00	10%	$0.00
0780	0597-0100000J	SOUND WALL SW B7	SF	0	$20.00	10%	$0.00
					Subtotal		**$610,005.00**
600 - BASES							
0790	0620-0103000J	COLD PLANE PAVEMENT REMOVAL, 0 - 1 INCHES DEEP	SQYD	0	$1.50	10%	$0.00
0800	0620-0104000J	COLD PLANE PAVEMENT REMOVAL, 0 - 2 INCHES DEEP	SQYD	0	$4.25	10%	$0.00
0810	0620-0110000J	COLD PLANE PAVEMENT REMOVAL, 0 - 9 INCHES DEEP	SQYD	0	$5.00	10%	$0.00
0820	0620-0120000J	COLD PLANE PAVEMENT REMOVAL, 2 INCHES DEEP	SQYD	69,000	$1.60	15%	$126,960.00
0830	0640-XXXXXXX	iCTB	SQYD	0	$2.00	10%	$0.00
0840	0640-XXXXXXX	iCTB PORTLAND CEMENT	TON	0	$120.00	10%	$0.00
0850	0641-0102000M	AGGREGATE BASE	TON	22,600	$22.00	12.5%	$559,350.00
					Subtotal		**$686,310.00**
700 - WEARING SURFACES							
0860	0730-0100000M	EMULSIFIED ASPHALT FOR TACK COAT	TON	66	$250.00	10%	$18,150.00
0870	0744-0341000M	LEVEL 3, 1/2 INCH ACP MIXTURE IN TEMPORARY	TON	280	$35.00	10%	$10,780.00
0880	0745-0402000M	LEVEL 4, 1/2 INCH ACP	TON	18,600	$65.00	10%	$1,329,900.00
0890	0745-0640100M	PG 70-22ER ASPHALT IN LEVEL 4, 1/2 INCH ACP	TON	1,010	$0.01	10%	$11.11
0900	0755-0104000J	CONTINUOUSLY REINFORCED CONCRETE PAVEMENT 9 INCH THICK	SQYD	12,000	$60.00	10%	$792,000.00
0910	0755-0107000J	CONTINUOUSLY REINFORCED CONCRETE PAVEMENT 11 INCH THICK	SQYD	0	$70.00	10%	$0.00
0920	0759-0110000F	CONCRETE CURBS, STANDARD CURB	FOOT	6,050	$20.00	15%	$139,150.00
0930	0759-0106000F	CONCRETE CURBS, LOW PROFILE MOUNTABLE CURB	FOOT	5,200	$16.00	15%	$95,680.00
0940	0759-0122000J	CONCRETE ISLANDS	SQFT	11,800	$8.50	15%	$115,345.00
0950	0759-0128000J	CONCRETE WALKS	SQFT	38,455	$6.00	15%	$265,339.50
0960	0759-0154000E	EXTRA FOR NEW SIDEWALK RAMPS	EA	31	$2,500.00	15%	$89,125.00
0970	0759-0510000E	TRUNCATED DOMES ON NEW SURFACES	EA	31	$500.00	15%	$17,825.00
					Subtotal		**$2,873,305.61**
800 - PERMANENT TRAFFIC SAFETY AND GUIDANCE DEVICES							
0980	0810-0122000E	GUARDRAIL END PIECES, TYPE B	EA	2	$100.00	10%	$220.00
0990	0810-0126000E	GUARDRAIL TRANSITION	EA	0	$2,750.00	10%	$0.00
1000	0810-0129000E	GUARDRAIL TERMINALS, NON-FLARED	EA	2	$2,500.00	10%	$5,500.00
1010	0810-0146000F	31 INCH GUARDRAIL, TYPE 2A	FOOT	4,750	$22.00	10%	$114,950.00
1020	0810-0146000F	31 INCH GUARDRAIL, TYPE 3	FOOT	0	$55.00	10%	$0.00
1030	0820-0100000F	CONCRETE BARRIER	FOOT	0	$55.00	10%	$0.00
1040	0820-0127000F	CONCRETE BARRIER, TALL	FOOT	0	$65.00	10%	$0.00
1050	08XX-	CONSTRUCT CONCRETE BARRIER/RETAINING WALL	FOOT	0	$80.00	10%	$0.00
1060	0830-0125000E	IMPACT ATTENUATOR	EA	2	$30,000.00	10%	$66,000.00
1070	08XX-	PAVEMENT MARKING	LF	26,550	$2.00	10%	$58,410.00
					Subtotal		**$245,080.00**
900 - PERMANENT TRAFFIC CONTROL AND ILLUMINATION SYSTEMS							
1080	09XX-	SIGNING	LS	1	$390,000.00	10%	$429,000.00
1090	0930-0101000A	TRUSS SIGN BRIDGE	EA	4	$443,000.00	10%	$1,949,200.00
1100	0930-0102000A	MONOTUBE SIGN BRIDGE	EA	0	$200,000.00	10%	$0.00
1110	0930-0103000A	MONOTUBE CANTILEVER SIGN STRUCTURE	EA	1	$125,000.00	10%	$137,500.00
1120	0930-0105000A	BRIDGE STRUCTURE MOUNTS	LS	1	$20,664.00	15%	$23,763.60
1130	0930-0106000A	VERTICAL SIGN MOUNTS ON EXISTING STRUCTURES	LS	1	$5,000.00	15%	$5,750.00
1140	0930-0106000A	VERTICAL SIGN MOUNTS ON EXISTING STRUCTURES, NO. 19257	LS	1	$6,768.00	15%	$7,783.20
1150	0950-0101000A	REMOVAL OF ELECTRICAL SYSTEMS, OR43/I-205 NB RAMP SIGNAL	LS	1	$25,000.00	10%	$27,500.00
1160	0970-	ILLUMINATION	LS	1	$977,000.00	10%	$1,074,700.00
1170	0990-0102000A	TRAFFIC SIGNAL MODIFICATION, OR99/I-205 SB RAMP	EA	1	$22,200.00	10%	$24,420.00
1180	0990-0102000A	TRAFFIC SIGNAL MODIFICATION, OR99/I-205 NB RAMP	EA	1	$22,600.00	10%	$24,860.00
1190	0990-0102000A	TRAFFIC SIGNAL MODIFICATION, OR43/I-205 SB RAMP	EA	1	$53,500.00	10%	$58,850.00
1200	0990-0104000A	RAMP METER SIGNAL INSTALLATION, I-205 SB RAMP AT OR99	EA	1	$170,700.00	10%	$187,770.00
1210	0990-0104000A	RAMP METER SIGNAL INSTALLATION, I-205 NB RAMP AT OR99	EA	1	$207,800.00	10%	$228,580.00
1220	0990-0104000A	RAMP METER SIGNAL INSTALLATION, I-205 SB RAMP AT OR43	EA	1	$185,500.00	10%	$204,050.00
1230	0990-0104000A	RAMP METER SIGNAL INSTALLATION, I-205 SB RAMP AT 10TH STREET	EA	0	$185,500.00	10%	$0.00
1240	0990-0104000A	RAMP METER SIGNAL INSTALLATION, I-205 NB RAMP AT 10TH STREET	EA	0	$171,600.00	10%	$0.00
1250	0990-0104000A	RAMP METER SIGNAL INSTALLATION, I-205 SB RAMP AT STAFFORD	EA	0	$183,600.00	10%	$0.00
1260	0990-0104000A	RAMP METER SIGNAL INSTALLATION, I-205 NB RAMP AT STAFFORD	EA	0	$162,600.00	10%	$0.00
1270	0990-0106000A	FLASHING BEACON INSTALLATION, OR43/WILLAMETTE FALLS DRIVE	EA	1	$40,900.00	10%	$44,990.00
1280	0990-9Z90000A	TELECOMMUNICATIONS, (FIBER)	LS	1	$268,000.00	10%	$294,800.00
					Subtotal		**$4,723,516.80**

I-205: PARK PLACE INTCHGE TO WEST LINN INTCHGE SEC.
OPINION OF COST (CONT.)

ITEM NO.	BID ITEM CODE	ITEM	UNIT	QUANTITY	UNIT COST	CONSTRUCTION VARIABILITY CONTINGENCY (Range 0%-20%)	TOTAL PRICE
910 - NB ATM/VMS IMPROVEMENTS							
1290	0990-9Z90000A	MP 0.95 - VMS & ADVISORY SPEED	LS	1	$0.00	10%	$0.00
1300	0990-9Z90000A	MP 3.15 - ADVISORY SPEED	LS	1	$0.00	10%	$0.00
1310	0990-9Z90000A	MP 4.26 - FULL VMS	LS	1	$0.00	10%	$0.00
1320	0990-9Z90000A	MP 7.60 - VMS & ADVISORY SPEED	LS	1	$0.00	10%	$0.00
1330	0990-9Z90000A	MP 8.5 - ADVISORY SPEED	LS	1	$0.00	10%	$0.00
					Subtotal		**$0.00**
920 - SB ATM/VMS IMPROVEMENTS							
1340	0990-9Z90000A	MP 11.68 - REPLACE EXTG VMS	LS	1	$0.00	10%	$0.00
1350	0990-9Z90000A	MP 10.18 - ADVISORY SPEED	LS	1	$0.00	10%	$0.00
1360	0990-9Z90000A	MP 8.3 - ADVISORY SPEED	LS	1	$0.00	10%	$0.00
					Subtotal		**$0.00**
1000 - RIGHT OF WAY DEVELOPMENT AND CONTROL							
1370	1012-	WATER QUALITY	LS	1	$425,000.00	10%	$467,500.00
1380	1012-	DETENTION	LS	1	$0.00	10%	$0.00
1390	1030-0101000R	WEED CONTROL	ACRE	8	$3,500.00	10%	$30,800.00
1400	1030-0108000R	PERMANENT SEEDING	ACRE	14	$3,600.00	10%	$55,440.00
1410	1040-	LANDSCAPING	LS	1.0%	$1,573,535.99	0%	$1,573,535.99
					Subtotal		**$2,127,275.99**
SUBTOTAL FOR CONSTRUCTION W/O ENGINEERING, CONTINGENCIES OR ANTICIPATED ITEMS							**$186,129,614.89**
		UNKNOWNS CONTINGENCIES (independent of design contingencies above)	LS		15%		$27,919,442.23
					Subtotal		**$27,919,442.23**
SUBTOTAL FOR CONSTRUCTION W/O ANTICIPATED ITEMS							**$214,049,057.12**
						AGGREGATE CONTINGENCY	**$46,173,931.19**
ANTICIPATED ITEMS							
		ANTICIPATED ITEMS	LS	1.0%	$1,573,535.99	0%	$1,573,535.99
		AI: POWER SERVICE CONNECTION FOR AGENCY	LS	1	$0.00	10%	$0.00
		AI: AGENCY-FURNISHED ATM ITEMS	LS	1	$0.00	10%	$0.00
		ENVIRONMENTAL MITIGATION	LS	0.25%	$393,384.00	0%	$393,384.00
		CONSTRUCTION ENGINEERING (CE)	LS	9.0%	$19,264,415.14	0%	$19,264,415.14
					Subtotal		**$21,231,335.13**
SUBTOTAL FOR CONSTRUCTION (CURRENT DOLLARS)							**$235,280,392.25**
					2017.5		
CONSTRUCTION YEAR COST INCLUDING INFLATION (TO MIDPOINT OF OF CONSTRUCTION)					**2022.5**	**3.00%**	**$269,400,000.00**
POTENTIAL COST FOR MEGA PROJECT (TO MIDPOINT OF CONSTRUCTION, INCLUDES ECONOMY OF SCALE)							**$258,624,000.00**

I-205: OSWEGO HWY (OR43) TO STAFFORD RD SEC.
OPINION OF COST

ITEM NO.	BID ITEM CODE	ITEM	UNIT	QUANTITY	UNIT COST	CONSTRUCTION VARIABILITY CONTINGENCY (Range 0%-20%)	TOTAL PRICE
200 - TEMPORARY FEATURES AND APPURTENANCES							
0010	0210-0100000A	MOBILIZATION	LS	10.0%	$12,157,666.98	0%	$12,157,666.98
0020	0100-0101000T	TRAINING	LS	0.25%	$303,941.67	0%	$303,941.67
0030	0225-0100000A	TEMPORARY PROTECTION AND DIRECTION OF TRAFFIC	LS	3.0%	$3,647,300.09	0%	$3,647,300.09
0040	0225-0108000F	TEMP GRD TYPE 2A REFLECTORIZED	FOOT	325	$19.00	10%	$6,792.50
0050	0225-0110000F	TEMP GRD TYPE 3 REFLECTORIZED	FOOT	25	$39.00	10%	$1,072.50
0060	0225-0115000E	TEMP GRD TERMINALS, NON-FLAR	EACH	6	$2,100.00	10%	$13,860.00
0070	0225-0117000E	TEMP GUARDRAIL TRANSITION	EACH	8	$2,000.00	10%	$17,600.00
0080	0225-0126000F	TEMPORARY CONCRETE BARRIER, TALL, REFL	FOOT	28,500	$14.00	10%	$438,900.00
0090	0225-0132000F	MOVING TEMPORARY CONCRETE BARRIER	FOOT	35,000	$5.00	10%	$192,500.00
0100	0225-0141650F	SECURING TEMPORARY CONCRETE BARRIER	FOOT	63,500	$3.60	10%	$251,460.00
0110	0225-0153000F	TEMPORARY STRIPING	FOOT	178,500	$0.15	20%	$32,130.00
0120	0225-0158000A	TEMPORARY TRAFFIC SIGNAL	LS	1	$0.00	15%	$0.00
0130	02560109000A	TEMPORARY RETAINING WALL	SF	0	$50.00	10%	$0.00
0140	0280-0100000A	EROSION CONTROL	LS	0.5%	$607,883.35	0%	$607,883.35
0150	0294-	HAZMAT	LS	0.25%	$303,941.67	0%	$303,941.67
0160	0294-9Z90000K	CONTAMINATED SOIL MANAGEMENT	CUYD	194,405	$8.00	12.5%	$1,749,645.00
					Subtotal		**$19,724,693.77**
300 - ROADWORK							
0170	0305-0100000A	CONSTRUCTION SURVEY WORK	LS	1.0%	$1,215,766.70	0%	$1,215,766.70
0180	0310-0106000A	REMOVAL OF STRUCTURES AND OBSTRUCTIONS	LS	0.5%	$607,883.35	0%	$607,883.35
0190	0310-0100000F	REMOVAL OF PIPES	FOOT	4059	$11.00	20%	$53,578.80
0200	0310-0102000J	REMOVAL OF WALKS AND DRIVEWAYS	SQYD	146	$7.00	10%	$1,124.20
0210	0310-0103000J	REMOVAL OF SURFACINGS	SQYD	13509	$6.00	10%	$89,159.40
0220	0310-0104000E	REMOVAL OF INLETS	EACH	71	$250.00	20%	$21,300.00
0230	0310-0113000A	REMOVAL OF GUARDRAIL	FOOT	32100	$9.00	10%	$317,790.00
0240	0320-0100000R	CLEARING AND GRUBBING	ACRE	66	$9,000.00	15%	$677,925.00
0250	0330-0105000K	GENERAL EXCAVATION	CUYD	171,309	$19.00	12.5%	$3,661,729.88
0260	0331-0112000J	24 INCH SUBGRADE STABILIZATION	SQYD	15,847	$25.00	10%	$435,787.00
0270	0344-0101000J	TREATED SUBGRADE, 9 INCHES THICK	SQYD	129,121	$10.00	10%	$1,420,333.20
0280	0344-0108000M	PORTLAND CEMENT	TON	4,302	$120.00	10%	$567,928.56
0290	0350-0105000J	SUBGRADE GEOTEXTILE	SQYD	289,936	$1.00	15%	$333,426.40
					Subtotal		**$9,403,732.48**
400 - DRAINAGE AND SEWERS							
0300	0405-0100000K	ROCK EXCAVATION	CUYD	82,000	$55.00	17.5%	$5,299,250.00
0310		ROCK PRE-SPLITTING	LS	1	$500,000.00	20%	$600,000.00
0320		PRE-SURVEY	LS	1	$100,000.00	20%	$120,000.00
0330		POST-SURVEY	LS	1	$100,000.00	20%	$120,000.00
0340	0445-035012AF	12 INCH STORM SEWER PIPE, 5 FT DEPTH	FOOT	9387	$65.00	10%	$671,170.50
0350	0445-035012BF	12 INCH STORM SEWER PIPE, 10 FT DEPTH	FOOT	0	$70.00	10%	$0.00
0360	0445-035015AF	15 INCH STORM SEWER PIPE, 5 FT DEPTH	FOOT	0	$70.00	10%	$0.00
0370	0445-035018AF	18 INCH STORM SEWER PIPE, 5 FT DEPTH	FOOT	12472	$75.00	10%	$1,028,940.00
0380	0445-035036BF	36 INCH STORM SEWER PIPE, 10 FT DEPTH	FOOT	0	$150.00	10%	$0.00
0390	0445-035048BF	48 INCH STORM SEWER PIPE, 10 FT DEPTH	FOOT	0	$200.00	10%	$0.00
0400	0470-0101000E	CONCRETE STORM SEWER MANHOLES	EACH	60	$3,500.00	10%	$231,000.00
0410	0470-0311000E	CONCRETE INLETS, TYPE D	EACH	20	$1,500.00	10%	$33,000.00
0420	0470-0315000E	CONCRETE INLETS, TYPE G-2	EACH	98	$1,500.00	10%	$161,700.00
0430	0470-XXXXXXX	CONCRETE OUTLET CONTROL STRUCTURE	EACH	19	$3,500.00	10%	$73,150.00
0440	0490-0105000E	ADJUSTING INLETS	EACH	14	$1,000.00	10%	$15,400.00
0450		4F/6F MITIGATION	LS	1	$300,000.00	10%	$330,000.00
0460	0470-0315000E	WALL DRAINAGE	LF	3930	$40.00	15%	$180,780.00
					Subtotal		**$8,864,390.50**
5xx - Bridge No. 09704 (Remove Sign Mounts)							
0460	0501-	BRIDGE REMOVAL WORK	LS	1	$5,500.00	10%	$6,050.00
					Subtotal		**$6,050.00**
xxx - Bridge No. 19456 (Cantilever)							
0470	0501-	BRIDGE REMOVAL WORK	LS	1	$0.00	10%	$0.00
					Subtotal		**$0.00**
xxx - Bridge No. 19294 (Butterfly)							
0480	0501-	BRIDGE REMOVAL WORK	LS	1	$0.00	10%	$0.00
					Subtotal		**$0.00**
xxx - Bridge No. 0M396 (Sign Bridge)							
0490	0501-	BRIDGE REMOVAL WORK	LS	1	$0.00	10%	$0.00
					Subtotal		**$0.00**
xxx - Bridge No. 19452 (Cantilever)							
0500	0501-	BRIDGE REMOVAL WORK	LS	1	$36,000.00	10%	$39,600.00
					Subtotal		**$39,600.00**
5xx - Bridge No. 19454 (Cantilever)							
0510	0501-	BRIDGE REMOVAL WORK	LS	1	$0.00	10%	$0.00
					Subtotal		**$0.00**
xxx - Bridge No. 09403 (Sign Bridge on Bridge)							
0520	0501-	BRIDGE REMOVAL WORK	LS	1	$0.00	10%	$0.00
					Subtotal		**$0.00**
xxx - Bridge No. 09403 (Sign Bridge on Bridge)							
0530	0501-	BRIDGE REMOVAL WORK	LS	1	$0.00	10%	$0.00
					Subtotal		**$0.00**
510 - Bridge Nos. 09738 & 09738A (Borland Rd.)							
0540	05XX-	REPLACEMENT	LS	1	$4,360,000.00	10%	$4,796,000.00
					Subtotal		**$4,796,000.00**
515 - Bridge Nos. 09737 & 09737A (Tualatin River)							
0550	05XX-	REPLACEMENT	LS	1	$20,060,000.00	10%	$22,066,000.00
					Subtotal		**$22,066,000.00**
520 - Bridge Nos. 09735 & 09735A (Woodbine Rd.)							
0560	05XX-	REPLACEMENT	LS	1	$4,840,000.00	10%	$5,324,000.00
					Subtotal		**$5,324,000.00**
525 - Bridge Nos. 09734 & 09734A (Blankenship Rd.)							
0570	05XX-	RETROFIT/WIDENING/BRIDGE RAISING	LS	1	$2,740,000.00	10%	$3,014,000.00
					Subtotal		**$3,014,000.00**
530 - Bridge Nos. 09728 & 09728A (10th St.)							
0580	05XX-	RETROFIT/WIDENING/BRIDGE RAISING	LS	1	$2,440,000.00	10%	$2,684,000.00
					Subtotal		**$2,684,000.00**
535 - Bridge No. XXXXX (Sunset Ave.)							
0590	05XX-	REPLACEMENT	LS	1	$2,520,000.00	10%	$2,772,000.00
					Subtotal		**$2,772,000.00**

I-205: OSWEGO HWY (OR43) TO STAFFORD RD SEC.
OPINION OF COST (CONT.)

ITEM NO.	BID ITEM CODE	ITEM	UNIT	QUANTITY	UNIT COST	CONSTRUCTION VARIABILITY CONTINGENCY (Range 0%-20%)	TOTAL PRICE
540 - Bridge No. XXXXX (West A St.)							
0600	05XX-	REPLACEMENT	LS	1	$3,350,000.00	10%	$3,685,000.00
					Subtotal		**$3,685,000.00**
545 - Bridge No. 09703 (Broadway St.)							
0610	05XX-	DEMOLITION/REMOVAL	LS	1	$680,000.00	10%	$748,000.00
					Subtotal		**$748,000.00**
550 - Bridge Nos. 09403, 09403A, 09403C, 09403R (Abernethy)							
0620	05XX-	ABERNETHY BRIDGE	LS	1	$0.00	15%	$0.00
0630	05XX-	ABERNETHY BRIDGE, SB RAMP	LS	1	$0.00	10%	$0.00
0640	05XX-	ABERNETHY BRIDGE, NB RAMP	LS	1	$0.00	10%	$0.00
0650	05XX-	HYDRAULIC MITIGATION	LS	1	$0.00	10%	$0.00
0660	05XX-	ABERNETHY CREEK MITIGATION	LS	1	$0.00	10%	$0.00
0670	05XX-	TEMPORARY WATER MANAGEMENT	LS	1	$0.00	10%	$0.00
0680	05XX-	RIP RAP REMOVAL	LS	1	$0.00	10%	$0.00
0690	05XX-	GEOTECHNICAL MITIGATION FOR LATERAL SPREAD	LS	1	$0.00	5%	$0.00
					Subtotal		**$0.00**
555 - Bridge No. 09702 (Main St.)							
0700	05XX-	RETROFIT/WIDENING	LS	1	$0.00	10%	$0.00
					Subtotal		**$0.00**
560 - Retaining Walls							
0710	0596-0108000A	RETAINING WALL, MSE NO. 001	SF	0	$65.00	10%	$0.00
0720	0596-0108000A	RETAINING WALL, CAST-IN-PLACE GRAVITY	SF	0	$110.00	10%	$0.00
0730	0597-0100000J	SOUND WALL SW B1	SF	41,229	$25.00	10%	$1,133,797.50
0740	0597-0100000J	SOUND WALL SW B2	SF	0	$25.00	10%	$0.00
0750	0597-0100000J	SOUND WALL SW B3 & SW B4	SF	34,560	$20.00	10%	$760,320.00
0760	0597-0100000J	SOUND WALL SW B5	SF	18,240	$20.00	10%	$401,280.00
0770	0597-0100000J	SOUND WALL SW B6	SF	15,750	$20.00	10%	$346,500.00
0780	0597-0100000J	SOUND WALL SW B7	SF	0	$20.00	10%	$0.00
					Subtotal		**$2,641,897.50**
600 - BASES							
0790	0620-0103000J	COLD PLANE PAVEMENT REMOVAL, 0 - 1 INCHES DEEP	SQYD	13,109	$1.50	10%	$21,629.85
0800	0620-0104000J	COLD PLANE PAVEMENT REMOVAL, 0 - 2 INCHES DEEP	SQYD	1,767	$4.25	10%	$8,260.73
0810	0620-0110000J	COLD PLANE PAVEMENT REMOVAL, 0 - 9 INCHES DEEP	SQYD	3,400	$5.00	10%	$18,700.00
0820	0620-0120000J	COLD PLANE PAVEMENT REMOVAL, 2 INCHES DEEP	SQYD	12,553	$1.60	15%	$23,097.52
0830	0640-XXXXXXX	iCTB	SQYD	31,000	$2.00	10%	$68,200.00
0840	0640-XXXXXXX	iCTB PORTLAND CEMENT	TON	850	$120.00	10%	$112,200.00
0850	0641-0102000M	AGGREGATE BASE	TON	238,109	$22.00	12.5%	$5,893,197.75
					Subtotal		**$6,145,285.85**
700 - WEARING SURFACES							
0860	0730-0100000M	EMULSIFIED ASPHALT FOR TACK COAT	TON	36	$250.00	10%	$9,900.00
0870	0744-0341000M	LEVEL 3, 1/2 INCH ACP MIXTURE IN TEMPORARY	TON	19,517	$35.00	10%	$751,404.50
0880	0745-0402000M	LEVEL 4, 1/2 INCH ACP	TON	81,777	$65.00	10%	$5,847,055.50
0890	0745-0640100M	PG 70-22ER ASPHALT IN LEVEL 4, 1/2 INCH ACP	TON	4,743	$0.01	10%	$52.17
0900	0755-0104000J	CONTINUOUSLY REINFORCED CONCRETE PAVEMENT 9 INCH THICK	SQYD	375,886	$60.00	10%	$24,808,476.00
0910	0755-0107000J	CONTINUOUSLY REINFORCED CONCRETE PAVEMENT 11 INCH THICK	SQYD	52,798	$70.00	10%	$4,065,446.00
0920	0759-0110000F	CONCRETE CURBS, STANDARD CURB	FOOT	4,750	$20.00	15%	$109,250.00
0930	0759-0106000F	CONCRETE CURBS, LOW PROFILE MOUNTABLE CURB	FOOT	5,700	$16.00	15%	$104,880.00
0940	0759-0122000J	CONCRETE ISLANDS	SQFT	0	$8.50	15%	$0.00
0950	0759-0128000J	CONCRETE WALKS	SQFT	3,713	$6.00	15%	$25,619.70
0960	0759-0154000E	EXTRA FOR NEW SIDEWALK RAMPS	EA	35	$2,500.00	15%	$100,625.00
0970	0759-0510000E	TRUNCATED DOMES ON NEW SURFACES	EA	35	$500.00	15%	$20,125.00
					Subtotal		**$35,842,833.87**
800 - PERMANENT TRAFFIC SAFETY AND GUIDANCE DEVICES							
0980	0810-0122000E	GUARDRAIL END PIECES, TYPE B	EA	10	$100.00	10%	$1,100.00
0990	0810-0126000E	GUARDRAIL TRANSITION	EA	19	$2,750.00	10%	$57,475.00
1000	0810-0129000E	GUARDRAIL TERMINALS, NON-FLARED	EA	31	$2,500.00	10%	$85,250.00
1010	0810-0146000F	31 INCH GUARDRAIL, TYPE 2A	FOOT	33,330	$22.00	10%	$806,586.00
1020	0810-0146000F	31 INCH GUARDRAIL, TYPE 3	FOOT	738	$55.00	10%	$44,649.00
1030	0820-0100000F	CONCRETE BARRIER	FOOT	12,972	$55.00	10%	$784,806.00
1040	0820-0127000F	CONCRETE BARRIER, TALL	FOOT	5,250	$65.00	10%	$375,375.00
1050	08XX-	CONSTRUCT CONCRETE BARRIER/RETAINING WALL	FOOT	5,158	$80.00	10%	$453,904.00
1060	0830-0125000E	IMPACT ATTENUATOR	EA	1	$30,000.00	10%	$33,000.00
1070	08XX-	PAVEMENT MARKING	LF	319,000	$2.00	10%	$701,800.00
					Subtotal		**$3,343,945.00**
900 - PERMANENT TRAFFIC CONTROL AND ILLUMINATION SYSTEMS							
1080	09XX-	SIGNING	LS	1	$180,000.00	10%	$198,000.00
1090	0930-0101000A	TRUSS SIGN BRIDGE	EA	0	$200,000.00	10%	$0.00
1100	0930-0102000A	MONOTUBE SIGN BRIDGE	EA	0	$200,000.00	10%	$0.00
1110	0930-0103000A	MONOTUBE CANTILEVER SIGN STRUCTURE	EA	12	$125,000.00	10%	$1,650,000.00
1120	0930-0105000A	BRIDGE STRUCTURE MOUNTS	LS	1	$64,620.00	15%	$74,313.00
1130	0930-0106000A	VERTICAL SIGN MOUNTS ON EXISTING STRUCTURES	LS	1	$47,644.00	15%	$54,790.60
1140	0930-0106000A	VERTICAL SIGN MOUNTS ON EXISTING STRUCTURES, NO. 19257	LS	1	$0.00	10%	$0.00
1150	0950-0101000A	REMOVAL OF ELECTRICAL SYSTEMS, OR43/I-205 NB RAMP SIGNAL	LS	1	$0.00	10%	$0.00
1160	0970-	ILLUMINATION	LS	1	$2,209,000.00	15%	$2,540,350.00
1170	0990-0102000A	TRAFFIC SIGNAL MODIFICATION, OR99/I-205 SB RAMP	EA	0	$50,000.00	10%	$0.00
1180	0990-0102000A	TRAFFIC SIGNAL MODIFICATION, OR99/I-205 NB RAMP	EA	0	$50,000.00	10%	$0.00
1190	0990-0102000A	TRAFFIC SIGNAL MODIFICATION, OR43/I-205 SB RAMP	EA	0	$50,000.00	10%	$0.00
1200	0990-0104000A	RAMP METER SIGNAL INSTALLATION, I-205 SB RAMP AT OR99	EA	0	$170,700.00	10%	$0.00
1210	0990-0104000A	RAMP METER SIGNAL INSTALLATION, I-205 NB RAMP AT OR99	EA	0	$207,800.00	10%	$0.00
1220	0990-0104000A	RAMP METER SIGNAL INSTALLATION, I-205 SB RAMP AT OR43	EA	0	$185,500.00	10%	$0.00
1230	0990-0104000A	RAMP METER SIGNAL INSTALLATION, I-205 SB RAMP AT 10TH STREET	EA	1	$185,500.00	10%	$204,050.00
1240	0990-0104000A	RAMP METER SIGNAL INSTALLATION, I-205 NB RAMP AT 10TH STREET	EA	1	$171,600.00	10%	$188,760.00
1250	0990-0104000A	RAMP METER SIGNAL INSTALLATION, I-205 SB RAMP AT STAFFORD	EA	1	$183,600.00	10%	$201,960.00
1260	0990-0104000A	RAMP METER SIGNAL INSTALLATION, I-205 NB RAMP AT STAFFORD	EA	1	$162,600.00	10%	$178,860.00
1270	0990-0106000A	FLASHING BEACON INSTALLATION, OR43/WILLAMETTE FALLS DRIVE	EA	0	$40,900.00	10%	$0.00
1280	0990-9Z90000A	TELECOMMUNICATIONS, (FIBER)	LS	1	$880,000.00	10%	$968,000.00
					Subtotal		**$6,259,083.60**

I-205: OSWEGO HWY (OR43) TO STAFFORD RD SEC.
OPINION OF COST (CONT.)

ITEM NO.	BID ITEM CODE	ITEM	UNIT	QUANTITY	UNIT COST	CONSTRUCTION VARIABILITY CONTINGENCY (Range 0%-20%)	TOTAL PRICE
910 - NB ATM/VMS IMPROVEMENTS							
1290	0990-9Z90000A	MP 0.95 - VMS & ADVISORY SPEED	LS	1	$0.00	10%	$0.00
1300	0990-9Z90000A	MP 3.15 - ADVISORY SPEED	LS	1	$0.00	10%	$0.00
1310	0990-9Z90000A	MP 4.26 - FULL VMS	LS	1	$0.00	10%	$0.00
1320	0990-9Z90000A	MP 7.60 - VMS & ADVISORY SPEED	LS	1	$0.00	10%	$0.00
1330	0990-9Z90000A	MP 8.5 - ADVISORY SPEED	LS	1	$120,630.00	10%	$132,693.00
					Subtotal		**$132,693.00**
920 - SB ATM/VMS IMPROVEMENTS							
1340	0990-9Z90000A	MP 11.68 - REPLACE EXTG VMS	LS	1	$0.00	10%	$0.00
1350	0990-9Z90000A	MP 10.18 - ADVISORY SPEED	LS	1	$0.00	10%	$0.00
1360	0990-9Z90000A	MP 8.3 - ADVISORY SPEED	LS	1	$120,630.00	10%	$132,693.00
					Subtotal		**$132,693.00**
1000 - RIGHT OF WAY DEVELOPMENT AND CONTROL							
1370	1012-	WATER QUALITY	LS	1	$241,000.00	10%	$265,100.00
1380	1012-	DETENTION	LS	1	$1,835,000.00	10%	$2,018,500.00
1390	1030-0101000R	WEED CONTROL	ACRE	66	$3,500.00	10%	$252,175.00
1400	1030-0108000R	PERMANENT SEEDING	ACRE	66	$3,600.00	10%	$259,380.00
1410	1040-	LANDSCAPING	LS	1.0%	$1,215,766.70	0%	$1,215,766.70
					Subtotal		**$4,010,921.70**
SUBTOTAL FOR CONSTRUCTION W/O ENGINEERING, CONTINGENCIES OR ANTICIPATED ITEMS							**$141,591,170.26**
		UNKNOWNS CONTINGENCIES (idependent of design contingencies above)	LS		15%		$21,238,675.54
					Subtotal		**$21,238,675.54**
SUBTOTAL FOR CONSTRUCTION W/O ANTICIPATED ITEMS							**$162,829,845.80**
						AGGREGATE CONTINGENCY	**$33,066,512.12**
ANTICIPATED ITEMS							
		ANTICIPATED ITEMS	LS	1.0%	$1,215,766.70	0%	$1,215,766.70
		AI: POWER SERVICE CONNECTION FOR AGENCY	LS	1	$5,000.00	10%	$5,500.00
		AI: AGENCY-FURNISHED ATM ITEMS	LS	1	$146,800.00	10%	$161,480.00
		ENVIRONMENTAL MITIGATION	LS	0.35%	$425,518.34	0%	$425,518.34
		CONSTRUCTION ENGINEERING (CE)	LS	9.0%	$14,654,686.12	0%	$14,654,686.12
					Subtotal		**$16,462,951.16**
SUBTOTAL FOR CONSTRUCTION (CURRENT DOLLARS)							**$179,292,796.97**
					2017.5		
CONSTRUCTION YEAR COST INCLUDING INFLATION (TO MIDPOINT OF OF CONSTRUCTION)					**2023**	**3.00%**	**$208,100,000.00**
POTENTIAL COST FOR MEGA PROJECT (TO MIDPOINT OF CONSTRUCTION, INCLUDES ECONOMY OF SCALE)							**$199,776,000.00**

I-205: REGIONAL ACTIVE TRAFFIC MANAGEMENT (ATM)
OPINION OF COST

ITEM NO.	BID ITEM CODE	ITEM	UNIT	QUANTITY	UNIT COST	CONSTRUCTION VARIABILITY CONTINGENCY (Range 0%-20%)	TOTAL PRICE
200 - TEMPORARY FEATURES AND APPURTENANCES							
0010	0210-0100000A	MOBILIZATION	LS	10.0%	$302,714.60	0%	$302,714.60
0020	0100-0101000T	TRAINING	LS	0.25%	$7,567.87	0%	$7,567.87
0030	0225-0100000A	TEMPORARY PROTECTION AND DIRECTION OF TRAFFIC	LS	5.0%	$151,357.30	0%	$151,357.30
0040	0225-0108000F	TEMP GRD TYPE 2A REFLECTORIZED	FOOT	0	$19.00	10%	$0.00
0050	0225-0110000F	TEMP GRD TYPE 3 REFLECTORIZED	FOOT	0	$39.00	10%	$0.00
0060	0225-0115000E	TEMP GRD TERMINALS, NON-FLAR	EACH	0	$2,100.00	10%	$0.00
0070	0225-0117000E	TEMP GUARDRAIL TRANSITION	EACH	0	$2,000.00	10%	$0.00
0080	0225-0126000F	TEMPORARY CONCRETE BARRIER, TALL, REFL	FOOT	0	$14.00	10%	$0.00
0090	0225-0132000F	MOVING TEMPORARY CONCRETE BARRIER	FOOT	0	$5.00	10%	$0.00
0100	0225-0141650F	SECURING TEMPORARY CONCRETE BARRIER	FOOT	0	$3.60	10%	$0.00
0110	0225-0153000F	TEMPORARY STRIPING	FOOT	0	$0.15	10%	$0.00
0120	0225-0158000A	TEMPORARY TRAFFIC SIGNAL	LS	1	$0.00	15%	$0.00
0130	02560109000A	TEMPORARY RETAINING WALL	SF	0	$50.00	10%	$0.00
0140	0280-0100000A	EROSION CONTROL	LS	0.5%	$15,135.73	0%	$15,135.73
0150	0294-	HAZMAT	LS	0.25%	$7,567.87	0%	$7,567.87
0160	0294-9Z90000K	CONTAMINATED SOIL MANAGEMENT	CUYD	0	$8.00	12.5%	$0.00
					Subtotal		**$484,343.36**
300 - ROADWORK							
0170	0305-0100000A	CONSTRUCTION SURVEY WORK	LS	1.0%	$30,271.46	0%	$30,271.46
0180	0310-0106000A	REMOVAL OF STRUCTURES AND OBSTRUCTIONS	LS	0.5%	$15,135.73	0%	$15,135.73
0190	0310-0100000F	REMOVAL OF PIPES	FOOT	0	$11.00	10%	$0.00
0200	0310-0102000J	REMOVAL OF WALKS AND DRIVEWAYS	SQYD	0	$7.00	10%	$0.00
0210	0310-0103000J	REMOVAL OF SURFACINGS	SQYD	0	$6.00	10%	$0.00
0220	0310-0104000E	REMOVAL OF INLETS	EACH	0	$250.00	10%	$0.00
0230	0310-0113000A	REMOVAL OF GUARDRAIL	FOOT	0	$9.00	10%	$0.00
0240	0320-0100000R	CLEARING AND GRUBBING	ACRE	0	$9,000.00	15%	$0.00
0250	0330-0105000K	GENERAL EXCAVATION	CUYD	0	$19.00	12.5%	$0.00
0260	0331-0112000J	24 INCH SUBGRADE STABILIZATION	SQYD	0	$25.00	10%	$0.00
0270	0344-0101000J	TREATED SUBGRADE, 9 INCHES THICK	SQYD	0	$10.00	10%	$0.00
0280	0344-0108000M	PORTLAND CEMENT	TON	0	$120.00	10%	$0.00
0290	0350-0105000J	SUBGRADE GEOTEXTILE	SQYD	0	$1.00	15%	$0.00
					Subtotal		**$45,407.19**
400 - DRAINAGE AND SEWERS							
0300	0405-0100000K	ROCK EXCAVATION	CUYD	0	$55.00	17.5%	$0.00
0310		ROCK PRE-SPLITTING	LS	1	$0.00	20%	$0.00
0320		PRE-SURVEY	LS	1	$0.00	20%	$0.00
0330		POST-SURVEY	LS	1	$0.00	20%	$0.00
0340	0445-035012AF	12 INCH STORM SEWER PIPE, 5 FT DEPTH	FOOT	0	$65.00	10%	$0.00
0350	0445-035012BF	12 INCH STORM SEWER PIPE, 10 FT DEPTH	FOOT	0	$70.00	10%	$0.00
0360	0445-035015AF	15 INCH STORM SEWER PIPE, 5 FT DEPTH	FOOT	0	$70.00	10%	$0.00
0370	0445-035018AF	18 INCH STORM SEWER PIPE, 5 FT DEPTH	FOOT	0	$75.00	10%	$0.00
0380	0445-035036BF	36 INCH STORM SEWER PIPE, 10 FT DEPTH	FOOT	0	$150.00	10%	$0.00
0390	0445-035048BF	48 INCH STORM SEWER PIPE, 10 FT DEPTH	FOOT	0	$200.00	10%	$0.00
0400	0470-0101000E	CONCRETE STORM SEWER MANHOLES	EACH	0	$3,500.00	10%	$0.00
0410	0470-0311000E	CONCRETE INLETS, TYPE D	EACH	0	$1,500.00	10%	$0.00
0420	0470-0315000E	CONCRETE INLETS, TYPE G-2	EACH	0	$1,500.00	10%	$0.00
0430	0470-XXXXXXX	CONCRETE OUTLET CONTROL STRUCTURE	EACH	0	$3,500.00	10%	$0.00
0440	0490-0105000E	ADJUSTING INLETS	EACH	0	$1,000.00	10%	$0.00
0450		4F/6F MITIGATION	LS	1	$0.00	10%	$0.00
0460	0470-0315000E	WALL DRAINAGE	LF	0	$1,500.00	15%	$0.00
					Subtotal		**$0.00**
5xx - Bridge No. 09704 (Remove Sign Mounts)							
0460	0501-	BRIDGE REMOVAL WORK	LS	1	$0.00	10%	$0.00
					Subtotal		**$0.00**
xxx - Bridge No. 19456 (Cantilever)							
0470	0501-	BRIDGE REMOVAL WORK	LS	1	$0.00	10%	$0.00
					Subtotal		**$0.00**
xxx - Bridge No. 19294 (Butterfly)							
0480	0501-	BRIDGE REMOVAL WORK	LS	1	$0.00	10%	$0.00
					Subtotal		**$0.00**
xxx - Bridge No. 0M396 (Sign Bridge)							
0490	0501-	BRIDGE REMOVAL WORK	LS	1	$0.00	10%	$0.00
					Subtotal		**$0.00**
xxx - Bridge No. 19452 (Cantilever)							
0500	0501-	BRIDGE REMOVAL WORK	LS	1	$0.00	10%	$0.00
					Subtotal		**$0.00**
5xx - Bridge No. 19454 (Cantilever)							
0510	0501-	BRIDGE REMOVAL WORK	LS	1	$0.00	10%	$0.00
					Subtotal		**$0.00**
xxx - Bridge No. 09403 (Sign Bridge on Bridge)							
0520	0501-	BRIDGE REMOVAL WORK	LS	1	$0.00	10%	$0.00
					Subtotal		**$0.00**
xxx - Bridge No. 09403 (Sign Bridge on Bridge)							
0530	0501-	BRIDGE REMOVAL WORK	LS	1	$0.00	10%	$0.00
					Subtotal		**$0.00**
510 - Bridge Nos. 09738 & 09738A (Borland Rd.)							
0540	05XX-	REPLACEMENT	LS	1	$0.00	10%	$0.00
					Subtotal		**$0.00**
515 - Bridge Nos. 09737 & 09737A (Tualatin River)							
0550	05XX-	REPLACEMENT	LS	1	$0.00	10%	$0.00
					Subtotal		**$0.00**
520 - Bridge Nos. 09735 & 09735A (Woodbine Rd.)							
0560	05XX-	REPLACEMENT	LS	1	$0.00	10%	$0.00
					Subtotal		**$0.00**
525 - Bridge Nos. 09734 & 09734A (Blankenship Rd.)							
0570	05XX-	RETROFIT/WIDENING/BRIDGE RAISING	LS	1	$0.00	10%	$0.00
					Subtotal		**$0.00**
530 - Bridge Nos. 09728 & 09728A (10th St.)							
0580	05XX-	RETROFIT/WIDENING/BRIDGE RAISING	LS	1	$0.00	10%	$0.00
					Subtotal		**$0.00**
535 - Bridge No. XXXXX (Sunset Ave.)							
0590	05XX-	REPLACEMENT	LS	1	$0.00	10%	$0.00
					Subtotal		**$0.00**

I-205: REGIONAL ACTIVE TRAFFIC MANAGEMENT (ATM)
OPINION OF COST (CONT.)

ITEM NO.	BID ITEM CODE	ITEM	UNIT	QUANTITY	UNIT COST	CONSTRUCTION VARIABILITY CONTINGENCY (Range 0%-20%)	TOTAL PRICE
540 - Bridge No. XXXXX (West A St.)							
0600	05XX-	REPLACEMENT	LS	1	$0.00	10%	$0.00
					Subtotal		**$0.00**
545 - Bridge No. 09703 (Broadway St.)							
0610	05XX-	DEMOLITION/REMOVAL	LS	1	$0.00	10%	$0.00
					Subtotal		**$0.00**
550 - Bridge Nos. 09403, 09403A, 09403C, 09403R (Abernethy)							
0620	05XX-	ABERNETHY BRIDGE	LS	1	$0.00	15%	$0.00
0630	05XX-	ABERNETHY BRIDGE, SB RAMP	LS	1	$0.00	10%	$0.00
0640	05XX-	ABERNETHY BRIDGE, NB RAMP	LS	1	$0.00	10%	$0.00
0650	05XX-	HYDRAULIC MITIGATION	LS	1	$0.00	10%	$0.00
0660	05XX-	ABERNETHY CREEK MITIGATION	LS	1	$0.00	10%	$0.00
0670	05XX-	TEMPORARY WATER MANAGEMENT	LS	1	$0.00	10%	$0.00
0680	05XX-	RIP RAP REMOVAL	LS	1	$0.00	10%	$0.00
0690	05XX-	GEOTECHNICAL MITIGATION FOR LATERAL SPREAD	LS	1	$0.00	5%	$0.00
					Subtotal		**$0.00**
555 - Bridge No. 09702 (Main St.)							
0700	05XX-	RETROFIT/WIDENING	LS	1	$0.00	10%	$0.00
					Subtotal		**$0.00**
560 - Retaining Walls							
0710	0596-0108000A	RETAINING WALL, MSE NO. 001	SF	0	$65.00	10%	$0.00
0720	0596-0108000A	RETAINING WALL, CAST-IN-PLACE GRAVITY	SF	0	$110.00	10%	$0.00
0730	0597-0100000J	SOUND WALL SW B1	SF	0	$25.00	10%	$0.00
0740	0597-0100000J	SOUND WALL SW B2	SF	0	$25.00	10%	$0.00
0750	0597-0100000J	SOUND WALL SW B3 & SW B4	SF	0	$20.00	10%	$0.00
0760	0597-0100000J	SOUND WALL SW B5	SF	0	$20.00	10%	$0.00
0770	0597-0100000J	SOUND WALL SW B6	SF	0	$20.00	10%	$0.00
0780	0597-0100000J	SOUND WALL SW B7	SF	0	$20.00	10%	$0.00
					Subtotal		**$0.00**
600 - BASES							
0790	0620-0103000J	COLD PLANE PAVEMENT REMOVAL, 0 - 1 INCHES DEEP	SQYD	0	$1.50	10%	$0.00
0800	0620-0104000J	COLD PLANE PAVEMENT REMOVAL, 0 - 2 INCHES DEEP	SQYD	0	$4.25	10%	$0.00
0810	0620-0110000J	COLD PLANE PAVEMENT REMOVAL, 0 - 9 INCHES DEEP	SQYD	0	$5.00	10%	$0.00
0820	0620-0120000J	COLD PLANE PAVEMENT REMOVAL, 2 INCHES DEEP	SQYD	0	$1.60	10%	$0.00
0830	0640-XXXXXXX	iCTB	SQYD	0	$2.00	10%	$0.00
0840	0640-XXXXXXX	iCTB PORTLAND CEMENT	TON	0	$120.00	10%	$0.00
0850	0641-0102000M	AGGREGATE BASE	TON	0	$22.00	12.5%	$0.00
					Subtotal		**$0.00**
700 - WEARING SURFACES							
0860	0730-0100000M	EMULSIFIED ASPHALT FOR TACK COAT	TON	0	$250.00	10%	$0.00
0870	0744-0341000M	LEVEL 3, 1/2 INCH ACP MIXTURE IN TEMPORARY	TON	0	$35.00	10%	$0.00
0880	0745-0402000M	LEVEL 4, 1/2 INCH ACP	TON	0	$65.00	10%	$0.00
0890	0745-0640100M	PG 70-22ER ASPHALT IN LEVEL 4, 1/2 INCH ACP	TON	0	$0.01	10%	$0.00
0900	0755-0104000J	CONTINUOUSLY REINFORCED CONCRETE PAVEMENT 9 INCH THICK	SQYD	0	$60.00	10%	$0.00
0910	0755-0107000J	CONTINUOUSLY REINFORCED CONCRETE PAVEMENT 11 INCH THICK	SQYD	0	$70.00	10%	$0.00
0920	0759-0110000F	CONCRETE CURBS, STANDARD CURB	FOOT	0	$20.00	15%	$0.00
0930	0759-0106000F	CONCRETE CURBS, LOW PROFILE MOUNTABLE CURB	FOOT	0	$16.00	15%	$0.00
0940	0759-0122000J	CONCRETE ISLANDS	SQFT	0	$8.50	15%	$0.00
0950	0759-0128000J	CONCRETE WALKS	SQFT	0	$6.00	15%	$0.00
0960	0759-0154000E	EXTRA FOR NEW SIDEWALK RAMPS	EA	0	$2,500.00	15%	$0.00
0970	0759-0510000E	TRUNCATED DOMES ON NEW SURFACES	EA	0	$500.00	15%	$0.00
					Subtotal		**$0.00**
800 - PERMANENT TRAFFIC SAFETY AND GUIDANCE DEVICES							
0980	0810-0122000E	GUARDRAIL END PIECES, TYPE B	EA	0	$100.00	10%	$0.00
0990	0810-0126000E	GUARDRAIL TRANSITION	EA	6	$2,750.00	10%	$18,150.00
1000	0810-0129000E	GUARDRAIL TERMINALS, NON-FLARED	EA	6	$2,500.00	10%	$16,500.00
1010	0810-0146000F	31 INCH GUARDRAIL, TYPE 2A	FOOT	1,363	$22.00	10%	$32,972.50
1020	0810-0146000F	31 INCH GUARDRAIL, TYPE 3	FOOT	75	$55.00	10%	$4,537.50
1030	0820-0100000F	CONCRETE BARRIER	FOOT	0	$55.00	10%	$0.00
1040	0820-0127000F	CONCRETE BARRIER, TALL	FOOT	0	$65.00	10%	$0.00
1050	08XX-	CONSTRUCT CONCRETE BARRIER/RETAINING WALL	FOOT	0	$80.00	10%	$0.00
1060	0830-0125000E	IMPACT ATTENUATOR	EA	0	$30,000.00	10%	$0.00
1070	08XX-	PAVEMENT MARKING	LF	0	$2.00	10%	$0.00
					Subtotal		**$72,160.00**
900 - PERMANENT TRAFFIC CONTROL AND ILLUMINATION SYSTEMS							
1080	09XX-	SIGNING	LS	1	$5,000.00	10%	$5,500.00
1090	0930-0101000A	TRUSS SIGN BRIDGE	EA	2	$320,000.00	10%	$704,000.00
1100	0930-0102000A	MONOTUBE SIGN BRIDGE	EA	1	$245,000.00	10%	$269,500.00
1110	0930-0103000A	MONOTUBE CANTILEVER SIGN STRUCTURE	EA	1	$150,000.00	10%	$165,000.00
1120	0930-0105000A	BRIDGE STRUCTURE MOUNTS	LS	1	$75,000.00	15%	$86,250.00
1130	0930-0106000A	VERTICAL SIGN MOUNTS ON EXISTING STRUCTURES	LS	1	$10,640.00	15%	$12,236.00
1140	0930-0106000A	VERTICAL SIGN MOUNTS ON EXISTING STRUCTURES, NO. 19257	LS	1	$0.00	10%	$0.00
1150	0950-0101000A	REMOVAL OF ELECTRICAL SYSTEMS, OR43/I-205 NB RAMP SIGNAL	LS	1	$0.00	10%	$0.00
1160	0970-	ILLUMINATION	LS	1	$40,000.00	15%	$46,000.00
1170	0990-0102000A	TRAFFIC SIGNAL MODIFICATION, OR99/I-205 SB RAMP	EA	0	$50,000.00	10%	$0.00
1180	0990-0102000A	TRAFFIC SIGNAL MODIFICATION, OR99/I-205 NB RAMP	EA	0	$50,000.00	10%	$0.00
1190	0990-0102000A	TRAFFIC SIGNAL MODIFICATION, OR43/I-205 SB RAMP	EA	0	$50,000.00	10%	$0.00
1200	0990-0104000A	RAMP METER SIGNAL INSTALLATION, I-205 SB RAMP AT OR99	EA	0	$170,700.00	10%	$0.00
1210	0990-0104000A	RAMP METER SIGNAL INSTALLATION, I-205 NB RAMP AT OR99	EA	0	$207,800.00	10%	$0.00
1220	0990-0104000A	RAMP METER SIGNAL INSTALLATION, I-205 SB RAMP AT OR43	EA	0	$185,500.00	10%	$0.00
1230	0990-0104000A	RAMP METER SIGNAL INSTALLATION, I-205 SB RAMP AT 10TH STREET	EA	0	$185,500.00	10%	$0.00
1240	0990-0104000A	RAMP METER SIGNAL INSTALLATION, I-205 NB RAMP AT 10TH STREET	EA	0	$171,600.00	10%	$0.00
1250	0990-0104000A	RAMP METER SIGNAL INSTALLATION, I-205 SB RAMP AT STAFFORD	EA	0	$183,600.00	10%	$0.00
1260	0990-0104000A	RAMP METER SIGNAL INSTALLATION, I-205 NB RAMP AT STAFFORD	EA	0	$162,600.00	10%	$0.00
1270	0990-0106000A	FLASHING BEACON INSTALLATION, OR43/WILLAMETTE FALLS DRIVE	EA	0	$40,900.00	10%	$0.00
1280	0990-9Z90000A	TELECOMMUNICATIONS, (FIBER)	LS	1	$445,000.00	10%	$489,500.00
					Subtotal		**$1,777,986.00**

I-205: REGIONAL ACTIVE TRAFFIC MANAGEMENT (ATM)
OPINION OF COST (CONT.)

ITEM NO.	BID ITEM CODE	ITEM	UNIT	QUANTITY	UNIT COST	CONSTRUCTION VARIABILITY CONTINGENCY (Range 0%-20%)	TOTAL PRICE
910 - NB ATM/VMS IMPROVEMENTS							
1290	0990-9Z90000A	MP 0.95 - VMS & ADVISORY SPEED	LS	1	$343,000.00	10%	$377,300.00
1300	0990-9Z90000A	MP 3.15 - ADVISORY SPEED	LS	1	$147,000.00	10%	$161,700.00
1310	0990-9Z90000A	MP 4.26 - FULL VMS	LS	1	$139,000.00	10%	$152,900.00
1320	0990-9Z90000A	MP 7.60 - VMS & ADVISORY SPEED	LS	1	$200,000.00	10%	$220,000.00
1330	0990-9Z90000A	MP 8.5 - ADVISORY SPEED	LS	1	$0.00	10%	$0.00
					Subtotal		**$911,900.00**
920 - SB ATM/VMS IMPROVEMENTS							
1340	0990-9Z90000A	MP 11.68 - REPLACE EXTG VMS	LS	1	$94,000.00	10%	$103,400.00
1350	0990-9Z90000A	MP 10.18 - ADVISORY SPEED	LS	1	$147,000.00	10%	$161,700.00
1360	0990-9Z90000A	MP 8.3 - ADVISORY SPEED	LS	1	$0.00	10%	$0.00
					Subtotal		**$265,100.00**
1000 - RIGHT OF WAY DEVELOPMENT AND CONTROL							
1370	1012-	WATER QUALITY	LS	1	$0.00	10%	$0.00
1380	1012-	DETENTION	LS	1	$0.00	10%	$0.00
1390	1030-0101000R	WEED CONTROL	ACRE	0	$3,500.00	10%	$0.00
1400	1030-0108000R	PERMANENT SEEDING	ACRE	0	$3,600.00	10%	$0.00
1410	1040-	LANDSCAPING	LS	1.0%	$30,271.46	0%	$30,271.46
					Subtotal		**$30,271.46**
SUBTOTAL FOR CONSTRUCTION W/O ENGINEERING, CONTINGENCIES OR ANTICIPATED ITEMS							**$3,587,168.01**
		UNKNOWNS CONTINGENCIES (idependent of design contingencies above)	LS		15%		$538,075.20
					Subtotal		**$538,075.20**
SUBTOTAL FOR CONSTRUCTION W/O ANTICIPATED ITEMS							**$4,125,243.21**
						AGGREGATE CONTINGENCY	**$818,981.20**
ANTICIPATED ITEMS							
		ANTICIPATED ITEMS	LS	1.0%	$30,271.46	0%	$30,271.46
		AI: POWER SERVICE CONNECTION FOR AGENCY	LS	1	$30,000.00	10%	$33,000.00
		AI: AGENCY-FURNISHED ATM ITEMS	LS	1	$784,000.00	10%	$862,400.00
		ENVIRONMENTAL MITIGATION	LS	0.0%	$0.00	0%	$0.00
		CONSTRUCTION ENGINEERING (CE)	LS	10.0%	$412,524.32	0%	$412,524.32
					Subtotal		**$1,338,195.78**
SUBTOTAL FOR CONSTRUCTION (CURRENT DOLLARS)							**$5,463,438.99**
					2017.5		
CONSTRUCTION YEAR COST INCLUDING INFLATION (TO MIDPOINT OF OF CONSTRUCTION)					**2020**	**3.00%**	**$5,800,000.00**
POTENTIAL COST FOR MEGA PROJECT (TO MIDPOINT OF CONSTRUCTION, INCLUDES ECONOMY OF SCALE)							**$5,568,000.00**

Appendix E.
Construction Schedule

September 6, 2018

Activity ID	Activity Name	Original Duration	Total Float	Start	Finish	Successors
I-205 Stafford - 99E Package A: Abernethy Bridge & OR43		794	0	12-Nov-20	28-Nov-23	
Administration/Milesones		794	0	12-Nov-20	28-Nov-23	
A1000	Bid Opening	0	0	12-Nov-20*		A1010
A1010	ODOT Review	40	61	12-Nov-20	06-Jan-21	A1020
A1020	Notice To Proceed	0	61	07-Jan-21		A1120, A1060,
A1025	IC 1: NB 3rd Lane Open to Traffic	0	588		26-Aug-21	
A1026	IC 2: NB Aux Lane 99E to OR213 Complete	0	232		06-Jan-23	
A1027	IC 3: Abernethy Bridge Jacking Complete	5	87	24-Jul-23	28-Jul-23	
A1030	Abernethy Substructure Complete	0	123		08-Jun-23	
A1040	Abernethy Bridge Complete	0	20		31-Oct-23	
A1690	Work Complete	0	0		28-Nov-23	
Submittals/Procurement		255	420	07-Jan-21	29-Dec-21	
Construction		697	20	01-Mar-21	31-Oct-23	
A1700	Mobilize to Site	15	49	01-Mar-21*	19-Mar-21	A1710, A1720
A1710	Install Initial Traffic Control	10	52	22-Mar-21	02-Apr-21	A1120
A1720	Install Erosion Control Measures	10	49	22-Mar-21	02-Apr-21	A1120, A1750,
Abernethy Bridge		622	70	05-Apr-21	22-Aug-23	
Temporary Work		622	35	05-Apr-21	22-Aug-23	
A1120	Build Access	20	52	05-Apr-21	30-Apr-21	A1130, A1730
A1290	Remove Riprap Pier 4	10	4	01-Jul-21	15-Jul-21	A1130
A1300	Remove Riprap Pier 5	10	0	15-Jul-21	27-Jul-21	A1730
A1310	Remove Riprap Pier 6	10	0	01-Jul-21	15-Jul-21	A1300
Install Pier 3/4 Access/Supports		71	9	12-Jul-21	29-Sep-21	
Install Pier 5/6 Access/Supports		71	0	21-Jul-21	08-Oct-21	
Remove Temp Access/Supports		40	43	10-Jul-23	22-Aug-23	
Substructure		606	86	05-Apr-21	31-Jul-23	
Abutment 1		30	662	05-Apr-21	14-May-21	
Pier 1		108	208	07-Apr-21	03-Sep-21	
Pier 2		110	472	06-Sep-21	04-Feb-22	
In-Water Piers		606	51	05-Apr-21	31-Jul-23	
Pier 3		346	262	05-Apr-21	01-Aug-22	
Pier 4		272	262	09-Aug-21	23-Aug-22	
Pier 5		292	262	04-Aug-21	15-Sep-22	
Pier 6		509	51	18-Aug-21	31-Jul-23	
Pier 7		129	490	12-Jul-21	06-Jan-22	
Pier 8		163	433	17-Aug-21	31-Mar-22	
Pier 9		236	358	19-Aug-21	14-Jul-22	
Pier 10		314	278	23-Aug-21	03-Nov-22	
Pier 11		367	223	25-Aug-21	19-Jan-23	
Pier 12		134	454	27-Aug-21	02-Mar-22	
Pier 13		323	263	31-Aug-21	24-Nov-22	
Pier 14		270	314	02-Sep-21	14-Sep-22	
Ramps		459	123	06-Sep-21	08-Jun-23	
Pier C3 1		329	253	06-Sep-21	08-Dec-22	
Pier C3 2		276	304	08-Sep-21	28-Sep-22	
Pier C3 3		335	243	10-Sep-21	22-Dec-22	
Pier C3 4		393	183	14-Sep-21	16-Mar-23	
Pier C3 5		451	123	16-Sep-21	08-Jun-23	
Abutment 4		143	429	20-Sep-21	06-Apr-22	
Superstructure		447	0	14-Feb-22	31-Oct-23	
Stage I NB Approach Widening		240	20	14-Feb-22	13-Jan-23	
East Approach Spans		60	200	14-Feb-22	06-May-22	
West Approach Spans		90	20	12-Sep-22	13-Jan-23	
Stage II SB Approach Widening		90	20	23-Jan-23	26-May-23	
East Approach Spans		70	25	23-Jan-23	28-Apr-23	
West Approach Spans		90	20	23-Jan-23	26-May-23	
Stage III Main Span Widening		232	0	12-Dec-22	31-Oct-23	

Actual Work | Critical Remaining Work | Summary
Remaining Work | Milestone

TASK filter: All Activities

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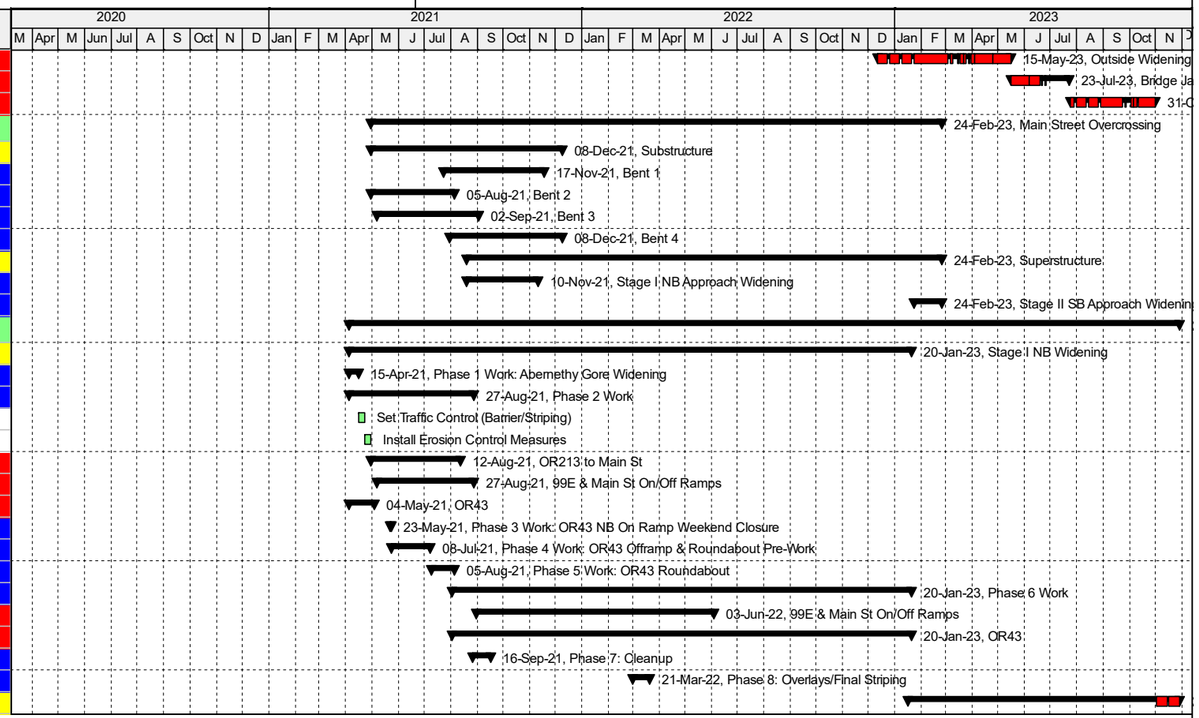
Activity ID	Activity Name	Original Duration	Total Float	Start	Finish	Successors
	Outside Widening	111	2	12-Dec-22	15-May-23	
	Bridge Jacking	49	0	16-May-23	23-Jul-23	
	Median Widening	72	0	24-Jul-23	31-Oct-23	
	Main Street Overcrossing	476	187	30-Apr-21	24-Feb-23	
	Substructure	159	504	30-Apr-21	08-Dec-21	
	Bent 1	84	504	23-Jul-21	17-Nov-21	
	Bent 2	70	593	30-Apr-21	05-Aug-21	
	Bent 3	85	573	07-May-21	02-Sep-21	
	Bent 4	94	504	30-Jul-21	08-Dec-21	
	Superstructure	396	187	20-Aug-21	24-Feb-23	
	Stage I NB Approach Widening	59	519	20-Aug-21	10-Nov-21	
	Stage II SB Approach Widening	25	187	23-Jan-23	24-Feb-23	
	Roadway/Civil	692	0	05-Apr-21	28-Nov-23	
	Stage I NB Widening	470	222	05-Apr-21	20-Jan-23	
	Phase 1 Work: Abernethy Gore Widening	9	327	05-Apr-21	15-Apr-21	
	Phase 2 Work	107	476	05-Apr-21	27-Aug-21	
A4340	Set Traffic Control (Barrier/Striping)	5	327	16-Apr-21	22-Apr-21	A4350, A4170
A4350	Install Erosion Control Measures	5	420	23-Apr-21	29-Apr-21	A4650, A4660,
	OR213 to Main St	77	487	30-Apr-21	12-Aug-21	
	99E & Main St On/Off Ramps	83	476	07-May-21	27-Aug-21	
	OR43	22	298	05-Apr-21	04-May-21	
	Phase 3 Work: OR43 NB On Ramp Weekend Closure	2	285	22-May-21	23-May-21	
	Phase 4 Work: OR43 Offramp & Roundabout Pre-Work	34	285	24-May-21	08-Jul-21	
	Phase 5 Work: OR43 Roundabout	20	492	09-Jul-21	05-Aug-21	
	Phase 6 Work	384	222	03-Aug-21	20-Jan-23	
	99E & Main St On/Off Ramps	114	387	30-Aug-21	03-Jun-22	
	OR43	384	222	03-Aug-21	20-Jan-23	
	Phase 7: Cleanup	15	573	27-Aug-21	16-Sep-21	
	Phase 8: Overlays/Final Striping	15	441	01-Mar-22	21-Mar-22	
	Stage II SB Widening	227	0	16-Jan-23	28-Nov-23	



Actual Work | Remaining Work | Critical Remaining Work | Milestone | Summary

TASK filter: All Activities

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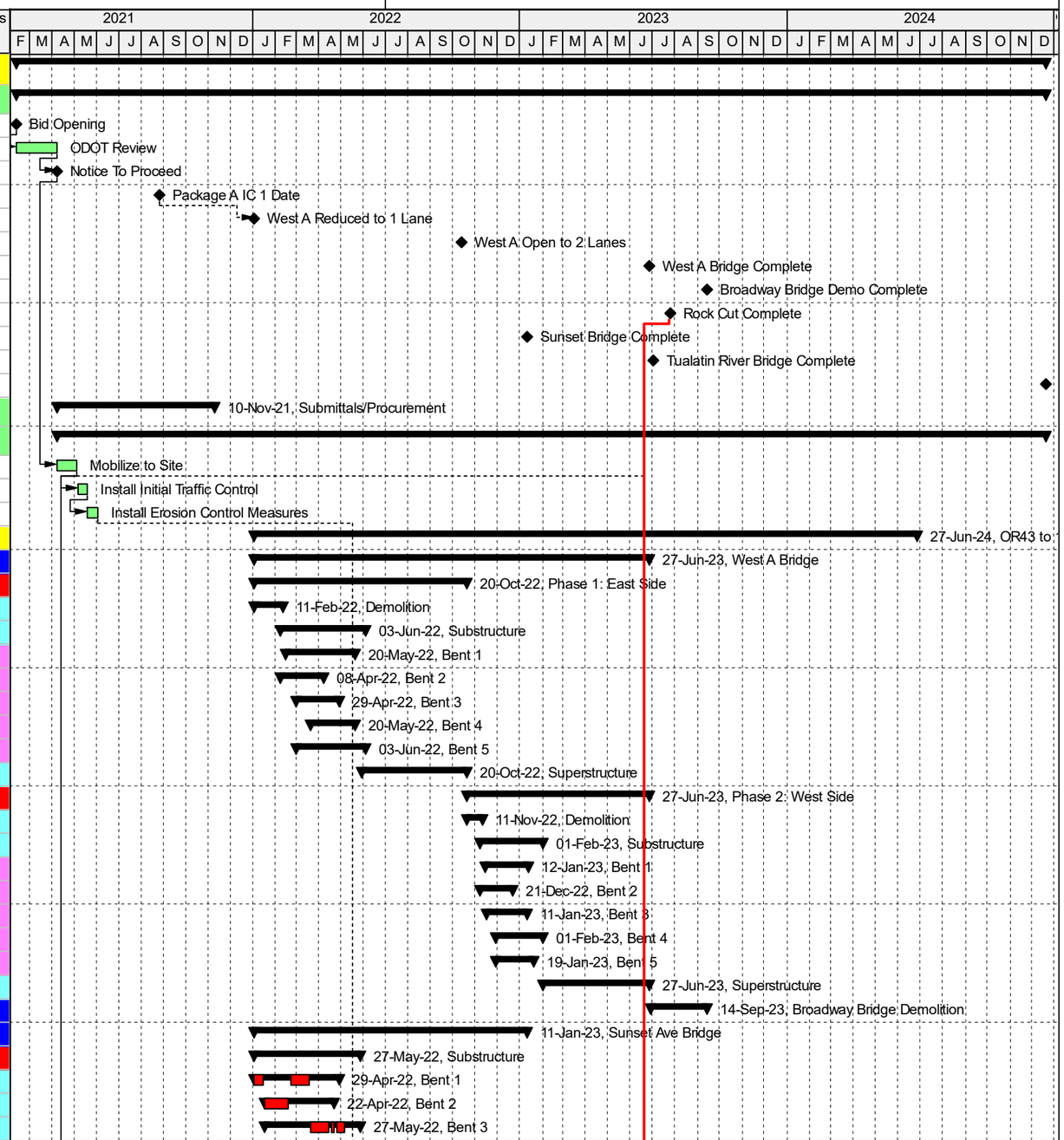
Activity ID	Activity Name	Original Duration	Total Float	Start	Finish	Successors
I-205 Stafford - 99E Package B: Stafford Rd to OR43		1007	0	11-Feb-21	20-Dec-24	
Administration/Milestones		1007	0	11-Feb-21	20-Dec-24	
A1000	Bid Opening	0	54	11-Feb-21*		A1010
A1010	ODOT Review	40	54	11-Feb-21	07-Apr-21	A1020
A1020	Notice To Proceed	0	54	08-Apr-21		A1080, A
A1021	Package A IC 1 Date	0	102		26-Aug-21*	A1025
A1025	West A Reduced to 1 Lane	0	10	03-Jan-22*		A1105, A
A1026	West A Open to 2 Lanes	0	10		13-Oct-22	A2410
A1030	West A Bridge Complete	0	225		27-Jun-23	A1960
A1040	Broadway Bridge Demo Complete	0	225		14-Sep-23	A6900
A1050	Rock Cut Complete	0	0		26-Jul-23	A3095
A1060	Sunset Bridge Complete	0	401		11-Jan-23	A6900
A1070	Tualatin River Bridge Complete	0	279		03-Jul-23	A6900
A1140	Work Complete	0	0		20-Dec-24	
Submittals/Procurement		155	336	08-Apr-21	10-Nov-21	
Construction		967	0	08-Apr-21	20-Dec-24	
A1180	Mobilize to Site	20	54	08-Apr-21	05-May-21	A1190, A
A1190	Install Initial Traffic Control	10	152	06-May-21	19-May-21	A1200
A1200	Install Erosion Control Measures	10	152	20-May-21	02-Jun-21	A1110, A
OR43 to 10th St I/C		649	20	03-Jan-22	27-Jun-24	
West A Bridge		387	225	03-Jan-22	27-Jun-23	
Phase 1: East Side		209	225	03-Jan-22	20-Oct-22	
Demolition		30	40	03-Jan-22	11-Feb-22	
Substructure		85	84	07-Feb-22	03-Jun-22	
Bent 1		70	89	14-Feb-22	20-May-22	
Bent 2		45	15	07-Feb-22	08-Apr-22	
Bent 3		45	15	28-Feb-22	29-Apr-22	
Bent 4		45	15	21-Mar-22	20-May-22	
Bent 5		70	84	28-Feb-22	03-Jun-22	
Superstructure		104	225	30-May-22	20-Oct-22	
Phase 2: West Side		178	225	21-Oct-22	27-Jun-23	
Demolition		16	243	21-Oct-22	11-Nov-22	
Substructure		63	304	07-Nov-22	01-Feb-23	
Bent 1		44	313	14-Nov-22	12-Jan-23	
Bent 2		33	225	07-Nov-22	21-Dec-22	
Bent 3		40	225	17-Nov-22	11-Jan-23	
Bent 4		47	225	29-Nov-22	01-Feb-23	
Bent 5		39	313	28-Nov-22	19-Jan-23	
Superstructure		104	225	02-Feb-23	27-Jun-23	
Broadway Bridge Demolition		57	225	28-Jun-23	14-Sep-23	
Sunset Ave Bridge		268	401	03-Jan-22	11-Jan-23	
Substructure		105	55	03-Jan-22	27-May-22	
Bent 1		85	60	03-Jan-22	29-Apr-22	
Bent 2		70	10	17-Jan-22	22-Apr-22	
Bent 3		95	55	17-Jan-22	27-May-22	



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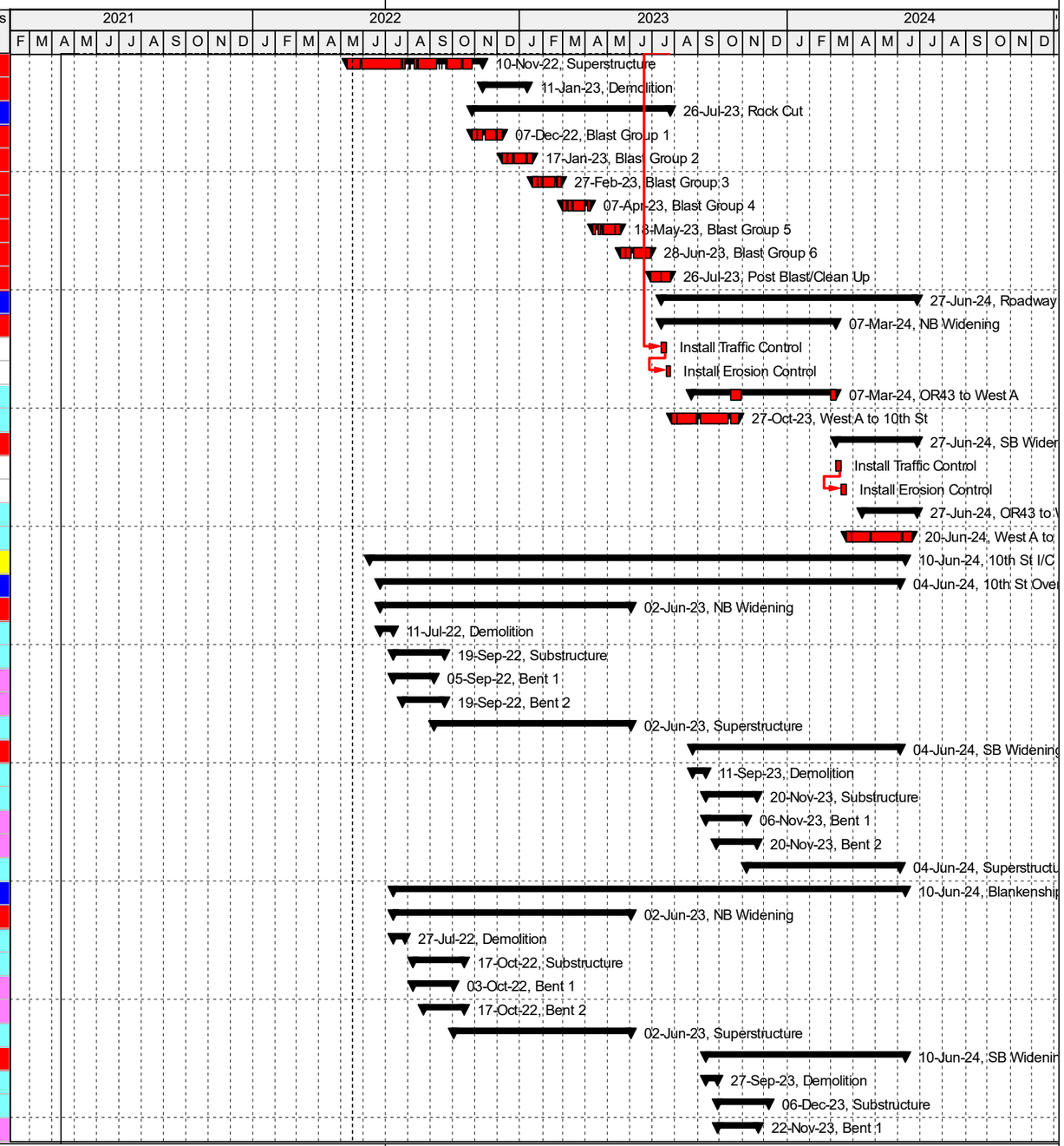
Activity ID	Activity Name	Original Duration	Total Float	Start	Finish	Successors
Superstructure		134	401	09-May-22	10-Nov-22	
Demolition		44	401	11-Nov-22	11-Jan-23	
Rock Cut		194	0	28-Oct-22	26-Jul-23	
Blast Group 1		29	0	28-Oct-22	07-Dec-22	
Blast Group 2		29	0	08-Dec-22	17-Jan-23	
Blast Group 3		29	0	18-Jan-23	27-Feb-23	
Blast Group 4		29	0	28-Feb-23	07-Apr-23	
Blast Group 5		29	0	10-Apr-23	18-May-23	
Blast Group 6		29	0	19-May-23	28-Jun-23	
Post Blast/Clean Up		20	0	29-Jun-23	26-Jul-23	
Roadway		251	20	13-Jul-23	27-Jun-24	
NB Widening		171	0	13-Jul-23	07-Mar-24	
A3095	Install Traffic Control	5	0	13-Jul-23	19-Jul-23	A3096
A3096	Install Erosion Control	5	0	20-Jul-23	26-Jul-23	A3030
OR43 to West A		54	0	24-Aug-23	07-Mar-24	
West A to 10th St		67	7	27-Jul-23	27-Oct-23	
SB Widening		80	20	08-Mar-24	27-Jun-24	
A3300	Install Traffic Control	5	0	08-Mar-24	14-Mar-24	A3310
A3310	Install Erosion Control	5	0	15-Mar-24	21-Mar-24	A3170
OR43 to West A		55	20	12-Apr-24	27-Jun-24	
West A to 10th St		65	0	22-Mar-24	20-Jun-24	
10th St I/C to Tualatin River Bridge		523	33	09-Jun-22	10-Jun-24	
10th St Overcrossing		509	37	23-Jun-22	04-Jun-24	
NB Widening		247	82	23-Jun-22	02-Jun-23	
Demolition		12	114	23-Jun-22	11-Jul-22	
Substructure		50	169	11-Jul-22	19-Sep-22	
Bent 1		40	169	11-Jul-22	05-Sep-22	
Bent 2		40	169	25-Jul-22	19-Sep-22	
Superstructure		195	82	05-Sep-22	02-Jun-23	
SB Widening		203	37	25-Aug-23	04-Jun-24	
Demolition		12	33	25-Aug-23	11-Sep-23	
Substructure		50	55	12-Sep-23	20-Nov-23	
Bent 1		40	55	12-Sep-23	06-Nov-23	
Bent 2		40	55	26-Sep-23	20-Nov-23	
Superstructure		151	37	07-Nov-23	04-Jun-24	
Blankenship Road Overcrossing		501	33	11-Jul-22	10-Jun-24	
NB Widening		235	82	11-Jul-22	02-Jun-23	
Demolition		12	122	11-Jul-22	27-Jul-22	
Substructure		50	159	08-Aug-22	17-Oct-22	
Bent 1		40	159	08-Aug-22	03-Oct-22	
Bent 2		40	159	22-Aug-22	17-Oct-22	
Superstructure		175	82	03-Oct-22	02-Jun-23	
SB Widening		195	33	12-Sep-23	10-Jun-24	
Demolition		12	33	12-Sep-23	27-Sep-23	
Substructure		50	53	28-Sep-23	06-Dec-23	
Bent 1		40	53	28-Sep-23	22-Nov-23	



Actual Work | Critical Remaining Work | Summary
Remaining Work | Milestone

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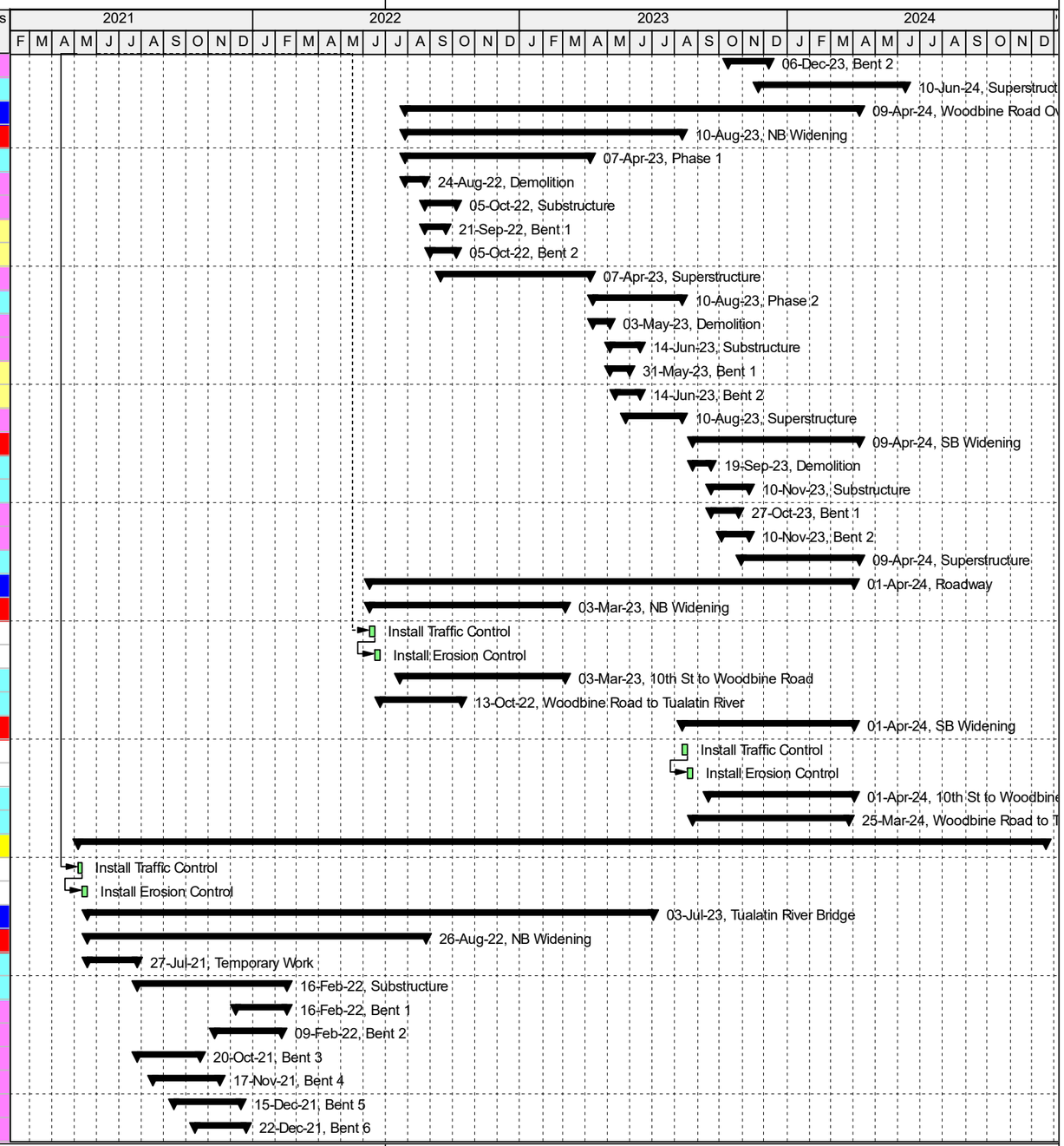
Activity ID	Activity Name	Original Duration	Total Float	Start	Finish	Successors
Bent 2		40	53	12-Oct-23	06-Dec-23	
Superstructure		143	33	23-Nov-23	10-Jun-24	
Woodbine Road Overcrossing		445	77	27-Jul-22	09-Apr-24	
NB Widening		272	33	27-Jul-22	10-Aug-23	
Phase 1		183	33	27-Jul-22	07-Apr-23	
Demolition		20	125	27-Jul-22	24-Aug-22	
Substructure		30	151	24-Aug-22	05-Oct-22	
Bent 1		20	151	24-Aug-22	21-Sep-22	
Bent 2		25	151	31-Aug-22	05-Oct-22	
Superstructure		148	33	14-Sep-22	07-Apr-23	
Phase 2		89	33	10-Apr-23	10-Aug-23	
Demolition		18	33	10-Apr-23	03-May-23	
Substructure		30	59	04-May-23	14-Jun-23	
Bent 1		20	59	04-May-23	31-May-23	
Bent 2		25	59	11-May-23	14-Jun-23	
Superstructure		56	33	25-May-23	10-Aug-23	
SB Widening		163	77	25-Aug-23	09-Apr-24	
Demolition		18	131	25-Aug-23	19-Sep-23	
Substructure		38	169	20-Sep-23	10-Nov-23	
Bent 1		28	169	20-Sep-23	27-Oct-23	
Bent 2		28	169	04-Oct-23	10-Nov-23	
Superstructure		117	77	30-Oct-23	09-Apr-24	
Roadway		473	83	09-Jun-22	01-Apr-24	
NB Widening		191	148	09-Jun-22	03-Mar-23	
A6640	Install Traffic Control	5	114	09-Jun-22	16-Jun-22	A6650
A6650	Install Erosion Control	5	114	16-Jun-22	23-Jun-22	A6380, A
10th St to Woodbine Road		75	148	21-Jul-22	03-Mar-23	
Woodbine Road to Tualatin River		80	163	23-Jun-22	13-Oct-22	
SB Widening		167	83	11-Aug-23	01-Apr-24	
A6660	Install Traffic Control	5	33	11-Aug-23	17-Aug-23	A6670
A6670	Install Erosion Control	5	33	18-Aug-23	24-Aug-23	A6510, A
10th St to Woodbine Road		55	83	15-Sep-23	01-Apr-24	
Woodbine Road to Tualatin River		65	83	25-Aug-23	25-Mar-24	
Tualatin River Bridge to Stafford I/C		947	0	06-May-21	20-Dec-24	
A5200	Install Traffic Control	5	54	06-May-21	12-May-21	A5210
A5210	Install Erosion Control	5	54	13-May-21	19-May-21	A4770
Tualatin River Bridge		552	279	20-May-21	03-Jul-23	
NB Widening		331	500	20-May-21	26-Aug-22	
Temporary Work		48	38	20-May-21	27-Jul-21	
Substructure		146	149	27-Jul-21	16-Feb-22	
Bent 1		50	149	08-Dec-21	16-Feb-22	
Bent 2		65	114	10-Nov-21	09-Feb-22	
Bent 3		61	196	27-Jul-21	20-Oct-21	
Bent 4		65	178	18-Aug-21	17-Nov-21	
Bent 5		65	160	15-Sep-21	15-Dec-21	
Bent 6		50	189	13-Oct-21	22-Dec-21	



Actual Work | Critical Remaining Work | Summary
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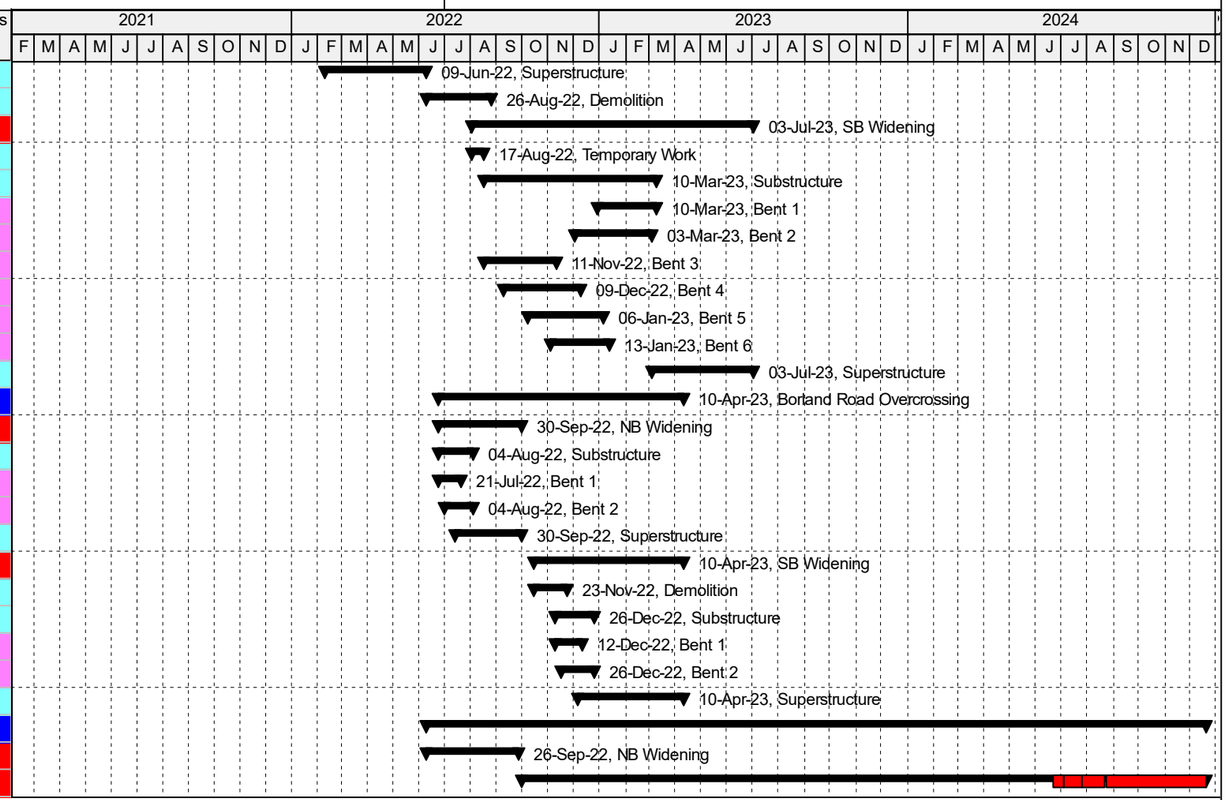
Activity ID	Activity Name	Original Duration	Total Float	Start	Finish	Successors
	Superstructure	86	114	09-Feb-22	09-Jun-22	
	Demolition	56	500	09-Jun-22	26-Aug-22	
	SB Widening	239	279	02-Aug-22	03-Jul-23	
	Temporary Work	11	91	02-Aug-22	17-Aug-22	
	Substructure	147	314	17-Aug-22	10-Mar-23	
	Bent 1	50	314	30-Dec-22	10-Mar-23	
	Bent 2	65	279	02-Dec-22	03-Mar-23	
	Bent 3	62	361	17-Aug-22	11-Nov-22	
	Bent 4	65	343	09-Sep-22	09-Dec-22	
	Bent 5	65	325	07-Oct-22	06-Jan-23	
	Bent 6	50	354	04-Nov-22	13-Jan-23	
	Superstructure	86	279	03-Mar-23	03-Jul-23	
	Borland Road Overcrossing	207	339	23-Jun-22	10-Apr-23	
	NB Widening	71	366	23-Jun-22	30-Sep-22	
	Substructure	30	392	23-Jun-22	04-Aug-22	
	Bent 1	20	392	23-Jun-22	21-Jul-22	
	Bent 2	25	392	30-Jun-22	04-Aug-22	
	Superstructure	56	366	14-Jul-22	30-Sep-22	
	SB Widening	126	339	14-Oct-22	10-Apr-23	
	Demolition	28	437	14-Oct-22	23-Nov-22	
	Substructure	33	399	09-Nov-22	26-Dec-22	
	Bent 1	23	399	09-Nov-22	12-Dec-22	
	Bent 2	28	399	16-Nov-22	26-Dec-22	
	Superstructure	90	339	05-Dec-22	10-Apr-23	
	Roadway	662	0	09-Jun-22	20-Dec-24	
	NB Widening	77	287	09-Jun-22	26-Sep-22	
	SB Widening	581	0	30-Sep-22	20-Dec-24	



Actual Work | Critical Remaining Work | Summary
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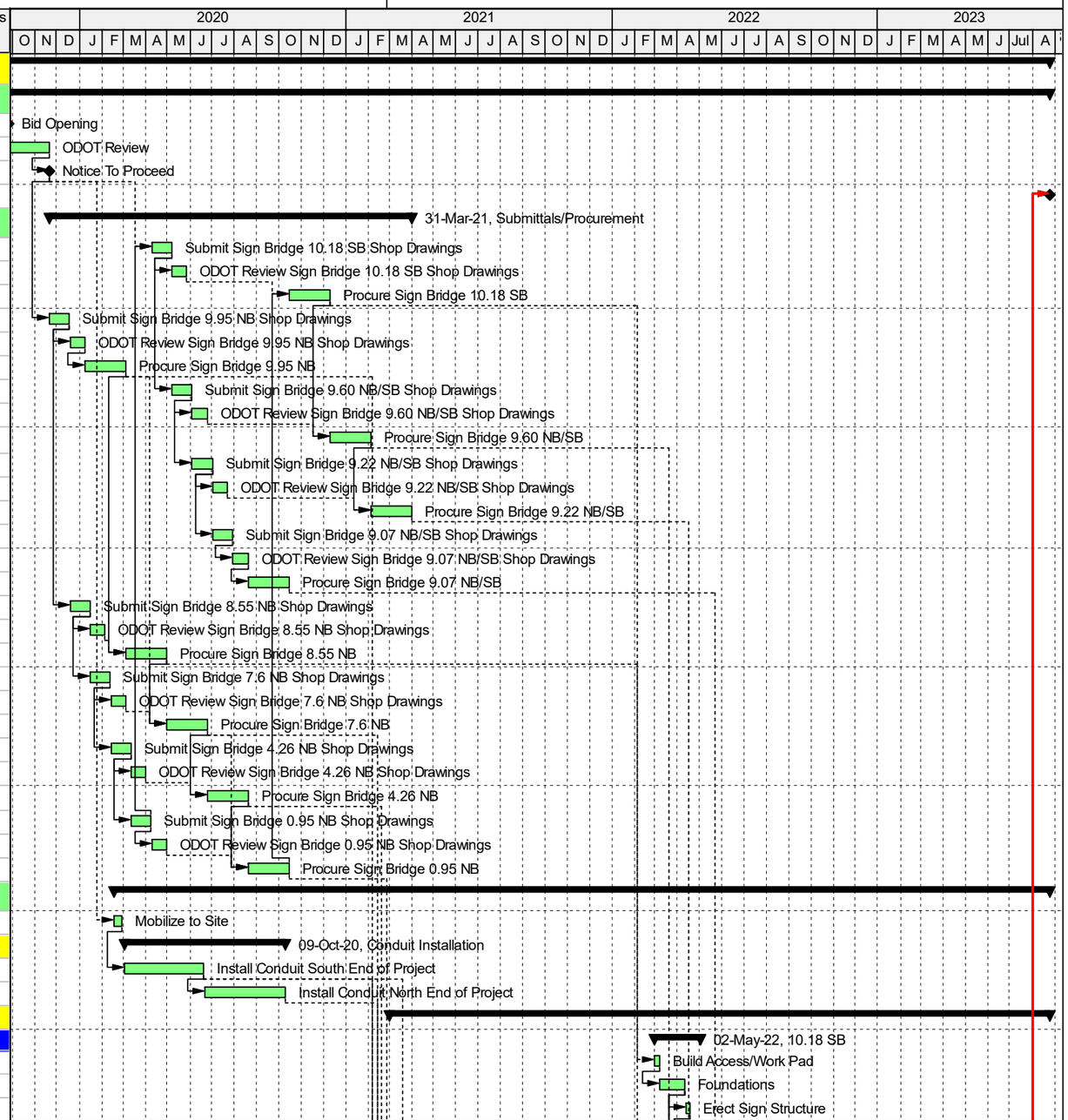
Activity ID	Activity Name	Original Duration	Total Float	Start	Finish	Successors
I-205 Stafford - 99E Package C: ATM		1022	0	26-Sep-19	25-Aug-23	
Administration/Milesones		1022	0	26-Sep-19	25-Aug-23	
A1000	Bid Opening	0	557	26-Sep-19		A1010
A1010	ODOT Review	40	557	26-Sep-19	20-Nov-19	A1020
A1020	Notice To Proceed	0	557	21-Nov-19		A1060, A
A1690	Work Complete	0	0		25-Aug-23	
Submittals/Procurement		355	582	21-Nov-19	31-Mar-21	
A1060	Submit Sign Bridge 10.18 SB Shop Drawings	20	657	09-Apr-20	06-May-20	A1070, A
A1070	ODOT Review Sign Bridge 10.18 SB Shop Drawings	15	657	07-May-20	27-May-20	A1080
A1080	Procure Sign Bridge 10.18 SB	40	557	15-Oct-20	09-Dec-20	A1990, A
A1730	Submit Sign Bridge 9.95 NB Shop Drawings	20	557	21-Nov-19	18-Dec-19	A1740, A
A1740	ODOT Review Sign Bridge 9.95 NB Shop Drawings	15	557	19-Dec-19	08-Jan-20	A1750
A1750	Procure Sign Bridge 9.95 NB	40	557	09-Jan-20	04-Mar-20	A1900, A
A1760	Submit Sign Bridge 9.60 NB/SB Shop Drawings	20	677	07-May-20	03-Jun-20	A1770, A
A1770	ODOT Review Sign Bridge 9.60 NB/SB Shop Drawing	15	677	04-Jun-20	24-Jun-20	A1780
A1780	Procure Sign Bridge 9.60 NB/SB	40	557	10-Dec-20	03-Feb-21	A1810, A
A1790	Submit Sign Bridge 9.22 NB/SB Shop Drawings	20	697	04-Jun-20	01-Jul-20	A1800, A
A1800	ODOT Review Sign Bridge 9.22 NB/SB Shop Drawing	15	697	02-Jul-20	22-Jul-20	A1810
A1810	Procure Sign Bridge 9.22 NB/SB	40	557	04-Feb-21	31-Mar-21	A2140
A1820	Submit Sign Bridge 9.07 NB/SB Shop Drawings	20	702	02-Jul-20	29-Jul-20	A1830
A1830	ODOT Review Sign Bridge 9.07 NB/SB Shop Drawing	15	702	30-Jul-20	19-Aug-20	A1840
A1840	Procure Sign Bridge 9.07 NB/SB	40	702	20-Aug-20	14-Oct-20	A2190
A1850	Submit Sign Bridge 8.55 NB Shop Drawings	20	577	19-Dec-19	15-Jan-20	A1860, A
A1860	ODOT Review Sign Bridge 8.55 NB Shop Drawings	15	577	16-Jan-20	05-Feb-20	A1870
A1870	Procure Sign Bridge 8.55 NB	40	557	05-Mar-20	29-Apr-20	A2240, A
A1880	Submit Sign Bridge 7.6 NB Shop Drawings	20	597	16-Jan-20	12-Feb-20	A1890, A
A1890	ODOT Review Sign Bridge 7.6 NB Shop Drawings	15	597	13-Feb-20	04-Mar-20	A1900
A1900	Procure Sign Bridge 7.6 NB	40	557	30-Apr-20	24-Jun-20	A1960, A
A1910	Submit Sign Bridge 4.26 NB Shop Drawings	20	617	13-Feb-20	11-Mar-20	A1920, A
A1920	ODOT Review Sign Bridge 4.26 NB Shop Drawings	15	617	12-Mar-20	01-Apr-20	A1930
A1930	Procure Sign Bridge 4.26 NB	40	557	25-Jun-20	19-Aug-20	A2340, A
A1940	Submit Sign Bridge 0.95 NB Shop Drawings	20	637	12-Mar-20	08-Apr-20	A1950, A
A1950	ODOT Review Sign Bridge 0.95 NB Shop Drawings	15	637	09-Apr-20	29-Apr-20	A1960
A1960	Procure Sign Bridge 0.95 NB	40	557	20-Aug-20	14-Oct-20	A2390, A
Construction		920	0	17-Feb-20	25-Aug-23	
A1700	Mobilize to Site	10	630	17-Feb-20*	28-Feb-20	A1970
Conduit Installation		160	630	02-Mar-20	09-Oct-20	
A1970	Install Conduit South End of Project	80	630	02-Mar-20	19-Jun-20	A1980, A
A1980	Install Conduit North End of Project	80	630	22-Jun-20	09-Oct-20	A2290
Sign Install		650	0	01-Mar-21	25-Aug-23	
10.18 SB		45	344	01-Mar-22	02-May-22	
A1990	Build Access/Work Pad	5	269	01-Mar-22*	07-Mar-22	A2000
A2000	Foundations	25	269	08-Mar-22	11-Apr-22	A2010, A
A2010	Erect Sign Structure	5	344	12-Apr-22	18-Apr-22	A2020



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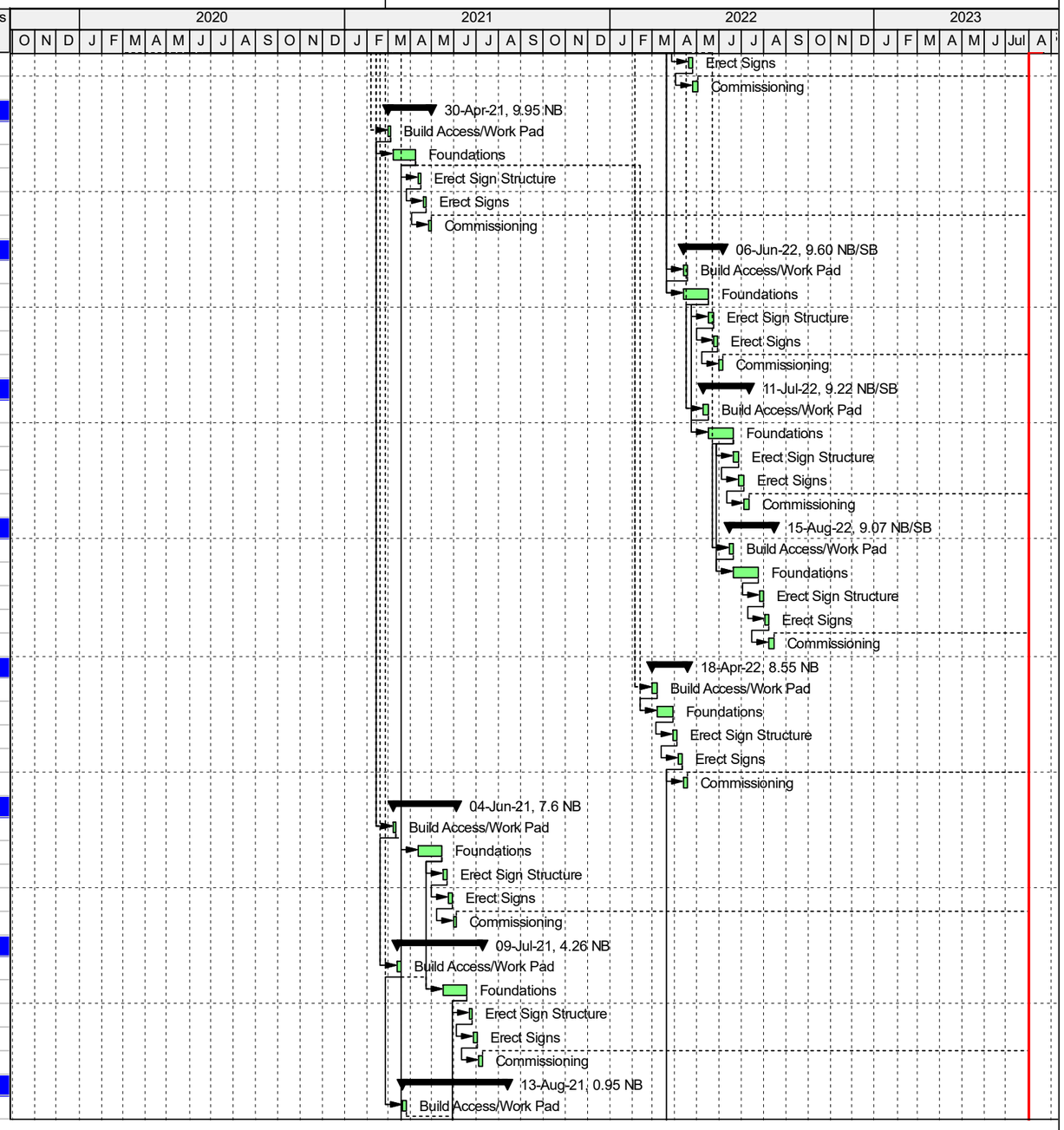
Activity ID	Activity Name	Original Duration	Total Float	Start	Finish	Successors
A2020	Erect Signs	5	344	19-Apr-22	25-Apr-22	A2030
A2030	Commissioning	5	344	26-Apr-22	02-May-22	A1690
9.95 NB		45	605	01-Mar-21	30-Apr-21	
A2040	Build Access/Work Pad	5	505	01-Mar-21*	05-Mar-21	A2050, A
A2050	Foundations	25	505	08-Mar-21	09-Apr-21	A2060, A
A2060	Erect Sign Structure	5	605	12-Apr-21	16-Apr-21	A2070
A2070	Erect Signs	5	605	19-Apr-21	23-Apr-21	A2080
A2080	Commissioning	5	605	26-Apr-21	30-Apr-21	A1690
9.60 NB/SB		40	319	12-Apr-22	06-Jun-22	
A2090	Build Access/Work Pad	5	269	12-Apr-22	18-Apr-22	A2100
A2100	Foundations	25	269	12-Apr-22	16-May-22	A2110, A
A2110	Erect Sign Structure	5	319	17-May-22	23-May-22	A2120
A2120	Erect Signs	5	319	24-May-22	30-May-22	A2130
A2130	Commissioning	5	319	31-May-22	06-Jun-22	A1690
9.22 NB/SB		45	294	10-May-22	11-Jul-22	
A2140	Build Access/Work Pad	5	269	10-May-22	16-May-22	A2150
A2150	Foundations	25	269	17-May-22	20-Jun-22	A2160, A
A2160	Erect Sign Structure	5	294	21-Jun-22	27-Jun-22	A2170
A2170	Erect Signs	5	294	28-Jun-22	04-Jul-22	A2180
A2180	Commissioning	5	294	05-Jul-22	11-Jul-22	A1690
9.07 NB/SB		45	269	14-Jun-22	15-Aug-22	
A2190	Build Access/Work Pad	5	269	14-Jun-22	20-Jun-22	A2200
A2200	Foundations	25	269	21-Jun-22	25-Jul-22	A2210
A2210	Erect Sign Structure	5	269	26-Jul-22	01-Aug-22	A2220
A2220	Erect Signs	5	269	02-Aug-22	08-Aug-22	A2230
A2230	Commissioning	5	269	09-Aug-22	15-Aug-22	A1690
8.55 NB		35	354	01-Mar-22	18-Apr-22	
A2240	Build Access/Work Pad	5	349	01-Mar-22*	07-Mar-22	A2250
A2250	Foundations	15	349	08-Mar-22	28-Mar-22	A2260
A2260	Erect Sign Structure	5	349	29-Mar-22	04-Apr-22	A2270
A2270	Erect Signs	5	349	05-Apr-22	11-Apr-22	A2280, A
A2280	Commissioning	5	354	12-Apr-22	18-Apr-22	A1690
7.6 NB		65	580	08-Mar-21	04-Jun-21	
A2290	Build Access/Work Pad	5	525	08-Mar-21	12-Mar-21	A2300, A
A2300	Foundations	25	505	12-Apr-21	14-May-21	A2310, A
A2310	Erect Sign Structure	5	580	17-May-21	21-May-21	A2320
A2320	Erect Signs	5	580	24-May-21	28-May-21	A2330
A2330	Commissioning	5	580	31-May-21	04-Jun-21	A1690
4.26 NB		85	555	15-Mar-21	09-Jul-21	
A2340	Build Access/Work Pad	5	545	15-Mar-21	19-Mar-21	A2350, A
A2350	Foundations	25	505	17-May-21	18-Jun-21	A2360, A
A2360	Erect Sign Structure	5	555	21-Jun-21	25-Jun-21	A2370
A2370	Erect Signs	5	555	28-Jun-21	02-Jul-21	A2380
A2380	Commissioning	5	555	05-Jul-21	09-Jul-21	A1690
0.95 NB		105	530	22-Mar-21	13-Aug-21	
A2390	Build Access/Work Pad	5	565	22-Mar-21	26-Mar-21	A2400



Actual Work | Critical Remaining Work | Summary
Remaining Work | Milestone

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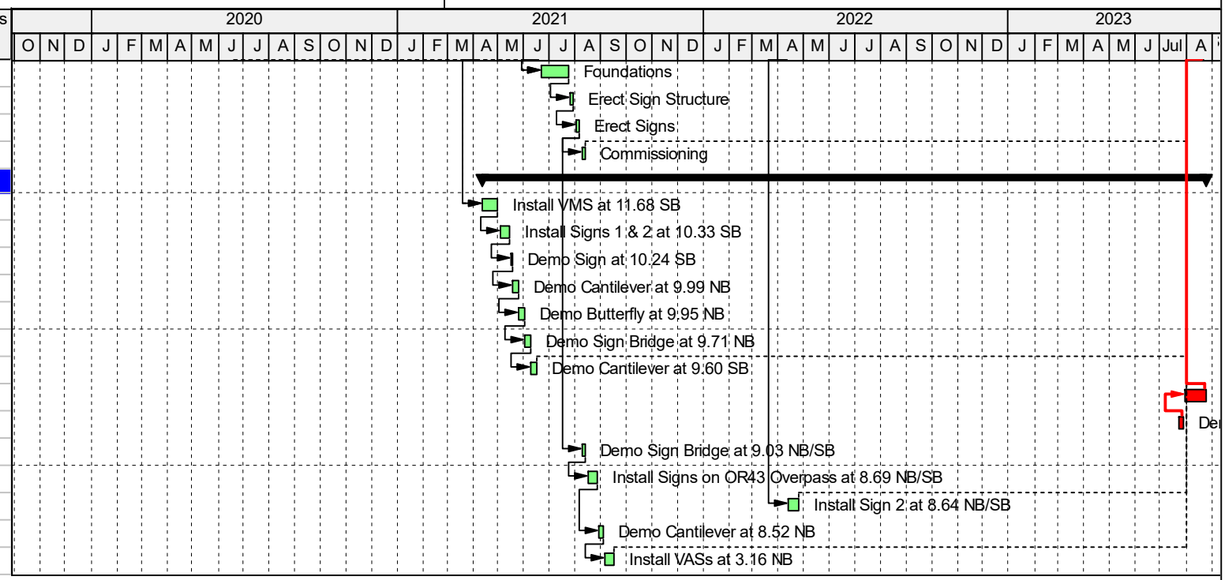
Activity ID	Activity Name	Original Duration	Total Float	Start	Finish	Successors
A2400	Foundations	25	505	21-Jun-21	23-Jul-21	A2410
A2410	Erect Sign Structure	5	505	26-Jul-21	30-Jul-21	A2420
A2420	Erect Signs	5	505	02-Aug-21	06-Aug-21	A2430, A
A2430	Commissioning	5	530	09-Aug-21	13-Aug-21	A1690
Signs On Existing Structures		620	0	12-Apr-21	25-Aug-23	
A2440	Install VMS at 11.68 SB	15	573	12-Apr-21	30-Apr-21	A2450
A2450	Install Signs 1 & 2 at 10.33 SB	10	573	03-May-21	14-May-21	A2460
A2460	Demo Sign at 10.24 SB	2	573	17-May-21	18-May-21	A2470
A2470	Demo Cantilever at 9.99 NB	5	573	19-May-21	25-May-21	A2480
A2480	Demo Butterfly at 9.95 NB	5	573	26-May-21	01-Jun-21	A2490
A2490	Demo Sign Bridge at 9.71 NB	5	573	02-Jun-21	08-Jun-21	A2500
A2500	Demo Cantilever at 9.60 SB	5	573	09-Jun-21	15-Jun-21	A1690
A2510	Install Signs/Conduit/Commission Abernathy at 9.30 I	20	0	31-Jul-23	25-Aug-23	A1690
A2520	Demo Sign Bridge at 9.22 NB/SB	5	0	24-Jul-23*	28-Jul-23	A2510
A2530	Demo Sign Bridge at 9.03 NB/SB	5	505	09-Aug-21	13-Aug-21	A2540
A2540	Install Signs on OR43 Overpass at 8.69 NB/SB	10	505	16-Aug-21	27-Aug-21	A2560
A2550	Install Sign 2 at 8.64 NB/SB	10	349	12-Apr-22	25-Apr-22	A1690
A2560	Demo Cantilever at 8.52 NB	5	505	30-Aug-21	03-Sep-21	A2570
A2570	Install VASs at 3.16 NB	10	505	06-Sep-21	17-Sep-21	A1690



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Appendix F.
Risk and Decision Log

September 6, 2018

K19786 - I-205 Corridor Widening PROJECT RISK LOG

Thursday, September 6, 2018

Project Package	Project Component / Location	Risk ID Number	Risk Area	Owner	Cost Impact $ = < $1M $$ = $1M-3M $$$ = > $5M	Risk Probability (H)igh, (M)edium, (L)ow	Opportunity or Risk	Final DAP Status	Description of Risk or Opportunity	Risk or Opportunity Response
General / Project Wide	Throughout the Project	**G-001**	Undefined Project Funding Type and Timing	PM	$$$	H	Risk	Active	Funding timing and/or requirements may be incompatible with the assumed delivery schedule. This could delay the Project (i.e., add escalation costs) and/or require other Project elements (such as tolling) that risk the budget.	Monitor cash flow to provide needed cash infusion deadlines. Determine decision points to revise scope and schedule of project if funding will not be achieved in timeframe required.
		G-002	Project Phasing and Delivery Method Costs	PM	$$$	H	Risk	Active	A 4% Cost Efficiency (i.e., economy of scale) was deducted from the construction costs to account for the construction package size. This value was lowered from a higher number (7%) to account for a premium associated with alternative contracting (i.e., A+C+D) bidding.	Per Executive Meeting on 8/3/18, apply the 4% cost efficiency value but assess and recommend alterations to the figure as the design progresses.
		G-003	Contractor Capacity	PM	$$$	M	Risk	Active	Limited OR-based contractor bonding capacity may reduce the bid pool. Large contractors from outside Oregon may be needed to construct the projects. This could bring increased mobilization costs and increased change order risk resulting from contractors unfamiliar with ODOT process.	Premium included in estimate to account for additional costs incurred by non-OR based contractor. Additionally, consideration of a contingency task for CM to provide additional contractor support for guidance on ODOT process my be beneficial.
		G-004	Project Escalation - simple 3% per year	PM	$$$	H	Risk	Active	Per ODOT OPL in April, 2018, the project estimate includes a 3% per year escalation rate to each package's mid-point of construction. Given the recent bid history, this may not be enough.	Per Executive Meeting on 8/3/18, apply the 3% escalation rate as recommended by OPL on 8/2/18. However, assess and recommend alterations to the figure as the design progresses.
		G-005	Lagging geometronic data - Vertical clearance, rock cut, and OR99E alignment cost refinement needed once data is available	PM	$$$	M	Risk	Retired	Scope, schedule and budget risk due to site condition assumptions for both design and construction.	Final survey will be performed after Amendment 3 is executed. (Retired: Final survey completed)
		G-006	FHWA Interchange Modification Request Approval	PM	$$	L	Risk	Active	Per FHWA, the elimination of the OR 43 NB on-ramp requires an Interchange Modification Request (IMR) approval from FHWA which requires the analysis of adjacent interchanges. If FHWA deems that other interchange performance must also be addresses, aggressive signal timing and/or significant project scope and budget increases could occur.	Based on August coordination meetings with FHWA, approval of the IMR seems likely. Continue to monitor the FHWA approval process.
		G-007	Design Exception Processing	PM	$$	L	Risk	Active	DE rejection would cause significant design changes which would require additional scope and budget.	Due to preliminary coordination efforts, risk of not achieving key DE's is low. Design has incorporated features that will receive a DE.
		G-008	LPA Approval Processing	PM	$$	L	Risk	Active	In many locations, the LPAs have approval authority on project features (local roadway widths; traffic detours during construction; curb returns; etc.). Coordination and approvals are necessary following local protocols.	Identify LPA's which will require additional outreach and work closely with key personnel through approvals. Key approvals include Broadway St turn-around improvements, acceptance of utility relocation costs, and intersection improvements. Preliminary discussions have occurred with the City to gain concurrence. Final requests will be developed to record approval for non-standard elements.
		G-009	Pavement Rehabilitation Strategy - ACP vs concrete pavement selection	Roadway	$$$	L	Opportunity	Active	Replacing the CRCP section with ACP could result in a $20M cost savings, but would not have the same long-term maintenance benefits that comes with CRCP. A decision to change, if desired by ODOT, must occur prior to the 60% Preliminary Plans Deliverable to avoid a schedule slip for Package A.	Further Study Required and will be presented to the ODOT Executive Management team in late 2018 or early 2019.
		G-010	Local Road Vertical Clearance	Roadway	$$	L	Risk	Retired	Design achieves AASHTO clearances of 14'. No additional approvals required.	
		G-011	Incomplete subsurface investigations	Geotechnical	$$$	M	Risk	Active	Scope, schedule and budget risk due to site condition assumptions for construction.	Construction pricing includes high construction variability contingency values to account for unknown field conditions.
		G-012	PS&E clarity and completeness associated with "work done by others".	Roadway	$$	M	Risk	Active	PS&E clarity and completeness associated with "work done by others". This is specific to work done under other packages are clearly called out and disclosed to avoid contractor claims.	Additional plan and specification language will be developed with Packages A, B and C Preliminary Plans. If work will be done by others and overlaps a Package work limit, there will be a plan note.
		G-013	Package Interdependencies (Constructability, Staging, and Access)	Construction	$$$	H	Risk	Active	A detailed Construction Schedule has been developed with Draft DAP. This schedule shows the work dependencies between each package. Schedule assumptions and/or construction delays could still impact overall project schedule and budget.	Continue to update schedule and assess scope, schedule and budget impacts at each update.
		G-014	Potential Archaeological sites unknown	Environmental	$$	L	Risk	Active	Preliminary results indicate a low risk within the API.	Archaeological studies are ongoing and should be completed by September, 2018. (Retired: Arch. Studies complete)
		G-015	Stormwater and Contaminated Media Siting	Stormwater	$	L	Opportunity	Retired	Preliminary siting has been provided in the Draft DAP. Costs have been included for meeting the necessary ODOT and local requirements. The Project assumes stormwater discharge entering an existing joint municipality conveyance system which directly discharges to the Willamette or Tualatin Rivers which would require both treatment and detention. There are some potential cost savings if detention is not required for outfalls that discharge directly to the Tualatin or Willamette Rivers	Determine if detention is required. (Retired: Detention is required)
		G-016	Lighting System Replacement Type	Utility	$$	L	Risk	Retired	Maintenance of existing lighting type included in base cost. No additional costs have been included in the estimate as the Contingency fund is intended for this potential increase.	
		G-017	Material delivery delay risks due to existing freeway traffic	Traffic	$$	H	Risk	Active	Due to high traffic volumes on I-205, risk pricing for delayed material delivery should be expected.	Mobilization is set at 10% (rather than 8% that is common for larger projects) to account for this premium. Consider available area for additional haul route outside of traffic or staging/storage areas for stockpiling early procured materials.

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Project Package	Project Component / Location	Risk ID Number	Risk Area	Owner	Cost Impact $ = < $1M $$ = $1M-3M $$$ = > $5M	Risk Probability (H)igh, (M)edium, (L)ow	Opportunity or Risk	Final DAP Status	Description of Risk or Opportunity	Risk or Opportunity Response
Package A: I-205: Park Place Intchge to West Linn Intchge Sec	I-205 Mainline: Stafford Rd to 10th St	A-001	Construction Staging - available width limited to 28 feet with barriers on both sides	Roadway	$$	L	Risk	Active	Costs assume that 28 feet of temporary horizontal clearance is acceptable for two freeway lanes. 28' is an insufficient width to provide an emergency lane and creates longer traffic delays along corridor. Additional width would add scope and increase budget.	Current design provides intermittent pull outs along corridor. Continued coordination with MAC and Region traffic will occur on this topic.
		A-002	Liquefiable soils at 10th St. / Blankenship St Bridges	Bridge	$$$	M	Risk	Active	Liquefiable soils below the tips of the piles supporting the bridge, below the depth normally considered by ODOT Geotechnical Design Manual.	Further geotechnical investigation and discussion with ODOT needed to determine if ODOT will accept the risk without mitigation.
		A-003	Temporary work bridges must accommodate recreation navigation on the Willamette River	Bridge	$$	L	Risk	Active	Work bridges have been designed for an assumed navigational opening. The risk is assumed openings are inadequate which would require redesign and increase in budget.	Continue working with regulatory agencies to confirm navigational clearances.
		A-004	Noise Walls	Environmental	$$	M	Opportunity	Retired	Noise wall selection has not been finalized. The full list of potential walls have been included in the estimate. The PDT expects some walls to be removed by Executive Mgmt.	Executive Mgmt removed 3 walls.
		A-005	Noise Walls	Environmental	$$	M	Opportunity	Active	The ultimate selection of the five reasonable and feasible soundwalls will be subject to a public vote - which could eliminate any or all of the walls. In the Final DAP estimate, all five walls have been included.	Conduct public vote and determine if cost reductions will result.
		A-006	Wetland impacts will be mitigated through banking service with limited available credits	Environmental	$	M	Risk	Active	Project is assuming ~ 1 acre of wetland mitigation which carries a cost of approximately $225k per acre. Cost is currently part of the "lump sum" for environmental mitigation costs which have not been split into line items	Develop a more detailed mitigation cost estimate with 60% design.
		A-007	Public Controversy for Lack of Willamette Falls Dr. Improvements	PI	$$$	L	Active	Retired	Because the OR43 RAB does not improve the WFD intersection, which is highly desired by the City of West Linn and its citizens, some questions about the project scope has been voiced. The CoWL is developing a 3-RAB plan that incorporates this as a future improvement. ODOT has determined this is out of the scope of the project but would be willing to incorporate into the project if CoWL can provide budget. Potential schedule risk.	ODOT Executive Management has determined that the project will include a single roundabout at the OR43 interchange. Continued coordination with CoWL, however, is expected to demonstrate that the existing approved project does not preclude a future improvement at WFD by the CoWL or others.
		A-008	Public Concerns about Construction Impacts (Similar risk, different component impact, reference Risk 039)	PI	$	L	Risk	Active	Construction impacts include blasting noise, congestion, cut through traffic, construction traffic, construction in a timely manner, coordination with other projects, etc. Additional cost impacts could occur during construction.	PI to address efforts to mitigate concerns during 60% Preliminary Plans design phase. Mitigations assume interim completion dates, work restrictions and minimizing lane reductions. Reasonable mitigations will be included in the project specifications.
	NB Auxiliary Lane: Abernethy Bridge to OR 213	A-009	Tree removal along I-205 N. of Main Street	PM	$	L	Risk	Retired	Requires permit and could cause public concern. If mitigation required for tree loss or permit denied, schedule and budget impacts	Some cost assumed in estimate. (Retired: General permits attained. No tree removal permit was needed)
		A-010	Slope stability analysis of existing roadway prism	Roadway	$$	L	Opportunity	Retired	Pricing was based on building a retaining wall, however, a more cost effective solution may be feasible.	Further analysis required. (Retired: Analysis performed and retaining wall which was originally anticipated is being used'
		A-011	Pavement grind and inlay repair versus complete reconstruction	Roadway	$$	M	Risk	Retired	Undetermined pavement type for the widening between OR99E and OR213.	per the ODOT Pavement Design group, the I-205 widening between OR99E and OR213 shall consist of a CRCP section. The existing CRCP travel lanes will include a 2" grind and inlay. This cost has been included in the Final DAP estimate.
		A-012	Liquefiable soils at Main St. Bridge	Bridge	$$	M	Risk	Active	Liquefiable soils below the tips of the piles supporting the bridge, below the depth normally considered by ODOT Geotechnical Design Manual.	Further geotechnical investigation and discussion with ODOT needed to determine if ODOT will accept the risk without mitigation.
	OR 43 Interchange	A-013	Additional ROW impacts due to ADA requirements	PM	$$$	L	Risk	Active	Some ROW will be purchased. Others avoided through proposed design exceptions for designing to the "maximum extent feasible". Additional ROW related to ramps along Willamette Falls Drive may be triggered depending design approvals.	Tentative approvals received from City of West Linn. Will continue to coordinate on exception approval to avoid other out of scope redesigns with ODOT and request formal concurrence from City of West Linn.
		A-014	Request for bicycle and pedestrian improvements, art or other out of scope elements	PM	$	M	Risk	Active	Additional budget from LPAs would need to be identified to incorporate changes into project for these type of out of scope items.	Continue coordination with City of West Linn. Preliminary support for the shared use trail has been provided by City.
		A-015	Vertical clearance reduction on OR43 due to Abernethy Br. widening	Roadway	$$	L	Risk	Retired	The Abernethy bridge widening reduces the vertical clearance over OR43. Approvals must be obtained to reduce the clearances.	Approval of reduction anticipated. MAC has concurred with approach. Final Design Exception request will be processed to formalize approval
		A-016	Cycle Track Design Standards called for a Cycle track on OR43 in West Linn TSP	Roadway	$$	L	Risk	Retired	The City's GOBond project improvement might interfere with the Bridge retrofit.	Retired: Team met with West Linn City Engineer to discuss multimodal design for OR43. City was supportive of multiuse path design concept. No other formal review or approval required. Document design for Share-use-path with Final DAP
		A-017	Ramp geometry refinement and vertical profile grades require design exceptions	Roadway	$	M	Risk	Active	Design Exceptions for the ramp geometry is required. If unapproved, the RAB design would need to increase, impacting the budget and possibly affecting the future CoWL RAB layout.	Design Exceptions have been coordinated and are expected to be approved.
		A-018	Construction Staging - Temporary reduction in vertical clearance for high loads under Broadway / West A St	Construction	$$$	M	Risk	Active	TMP assumes this reduced clearance is acceptable. A complete overhaul of the staging must be developed if not permissible. Budget Impact.	Project team must determine if there is an alternative route for high loads and establish how high loads be managed during construction. Design assumes high loads could still use NB ramp and new RAB. Future coordination at MAC meetings is required.
		A-019	Environmental Drivers - potential historic district	Environmental	$$	L	Risk	Active	The current project footprint avoids these impacts, but the City of West Linn is considering the addition of a second RAB (OR 43 / WFD intersection) that would impact these buildings. If added, this impact would require the Section 106 Finding to be reevaluated as well as the Cat Ex designation.	Continue coordination with City of West Linn, demonstrate importance of CatEx designation, as well as, additional project impacts which would result from the addition of the RAB. Will be resolved once Cat Ex is approved.
		A-020	Existing AM and PM SB OR 43 traffic queues extend from the Arch Bridge through the proposed OR 43 roundabout	Traffic	$$$	M	Risk	Active	The traffic condition exists in its current state and is not planned to be modified by the Project. If a solution to this issue is required, significant changes to the Project scope and budget would be required.	Traffic analysis to be updated to include shedding to the widened I-205 after the third lane is complete. Based on Streetlight data, approximately 200 (of the 700 PM vehicles) should be re-routed to I-205 instead of using WFD.
		A-021	Upgrade to signal controller required for signal at OR43 SB ramp terminal if existing too outdated	Traffic	$	M	Risk	Active	This upgrade could have ripple effects in the corridor if McKillican also needs to be upgraded for coordination with ramp terminal. This would increase cost.	The current design avoids impacts and the need to improve these facilities. If required as mitigation for OR43 SB ramp queuing, potential for incorporating integrated signal timing with McKillican may not require additional ground disturbance if conduit to the signal is sufficient but there would be minor costs associated with a new signal controller.
		A-022	Illumination pole foundation	Traffic	$	L	Risk	Active	Special foundations may be needed if rock is encountered at pole locations. Budget impacts for additional design.	Complete subsurface investigations to determine appropriate foundation types.

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Package A: I-205: Park Place Intchge to West Linn Intchge Sec		A-023	Public Concerns about Construction Impacts (Similar risk, different component impact, reference Risk 024)	PI	$	M	Risk	Active	Construction impacts include blasting noise, congestion, cut through traffic, construction traffic, construction in a timely manner, coordination with other projects, etc. Additional cost impacts could occur during construction.	Traffic detour coordination ongoing with City of West Linn. Some costs to improve intersection at WFD / Broadway St included in estimate.
	Abernethy Bridge									
		A-024	Vertical Clearance on OR99E	Roadway	$$	L	Risk	Retired	Reduction of clearance is anticipated with widening is not occurring at the "controlling location" and clearance will remain above 17' 4".	Retired: MAC has concurred with approach. No additional approval required.
		A-025	Shoulder width design exception	Bridge	$$$	L	Opportunity	Active	Due to the bridge length, an increased shoulder width (10') is included in the design. This is the minimum standard width for an auxiliary lane shoulder. A cost reduction of approximately $9M could be achieved if a DE is obtained to reduce the shoulder width to 6'.	This opportunity will be tracked as a option to reduce budget over-runs as the design advances, subject to approval by the Executive team.
		A-026	Boat ramp impacts	Bridge	$$	M	Risk	Retired	The Cat Ex is at risk if the boat ramps are impacted.	Design temporary facilities have been designed to avoid impacting the boat ramp.
		A-027	Bridge Aesthetics	Bridge	$$	L	Risk	Retired	If the bridge aesthetics are severely compromised, approval for the widening approach may not be provided. This would delay the schedule and increase budget.	Per ODOT Bridge Section and Executive Mgmt teams, the updated bent and widening aesthetics are acceptable. Changes to the bridge aesthetics are subject to a re-evaluation by the Bridge Section.
		A-028	Boat dock impacts	Bridge	$	M	Risk	Retired	Extensive boat dock impacts could negatively impact schedule.	ROW acquisition costs are included in estimate for "Super-bent" option, which also minimizes the amount of dock impacts anticipated. Access to docks during construction and impacts to existing business viability during construction are still under evaluation.
		A-029	Geologic Hazards (Liquefaction, Lateral Spread, and Artesian Flows)	Geotechnical	$$$	M	Risk	Active	If the extent of improvements is significantly modified, additional costs would be required.	Some cost is assumed in estimate for liquefaction. Additional geotechnical analysis will be performed throughout the Summer 2018. Cost refinements will occur after the analysis is complete in late 2018.
		A-030	Geologic Hazards (Liquefaction, Lateral Spread, and Artesian Flows) Claims by Contractor	Geotechnical	$$	M	Risk	Active	On most projects in which geotechnical hazard mitigation is implemented, large "differing site condition" claims by the construction contractors are submitted. No additional risk cost for this potential has been included in the estimate.	Accept the risk. Work with industry to define approach for constructing geotechnical ground improvements - possibly including it within Multi-parameter process.
		A-031	Location of rock related to footing limits of sheet pile location for cofferdams; isolation of excavation needed.	Geotechnical	$$	M	Risk	Active	Rock excavation/drilling may be required and/or relocation of footings. Budget impact	Some costs assumed in estimate. Further geotechnical explorations will be needed to identify rock elevations.
		A-032	Construction of long drilled shafts in the river .	Geotechnical	$$	L	Risk	Active	This work will require large oscillators. Temporary work bridges will need to be designed to handle large torque forces which. Increase in cost.	Assume higher temporary work bridge costs in estimate.
		A-033	Artesian impact on drilled shaft construction	Geotechnical	$$	H	Risk	Active	Artesian was found in the Basalt bedrock during the geotechnical field explorations in a number of borings. Artesian will impact the drilled shaft construction if the drilled shafts are embedded into the basalt bedrock, and would increase the construction cost.	The field explorations are still being conducted on the site. The subsurface conditions will be refined after completion. The drilled shaft design will consider how to minimize the artesian impact.
		A-034	Bridge footing removal limits	Environmental	$$$	L	Risk	Active	Based on preliminary conversations with NMFS, Abernethy Bridge in-water pier foundation removal is not included in the estimate. If required, additional costs would be required.	based on preliminary conversations prior to Final DAP, NMFS understands benefits of limiting the footing removal limits. Continue working with NMFS to establish acceptable removal limits.
		A-035	Environmental Impacts: Archaeology	Environmental	$$	L	Risk	Active	If unexpected impacts are encountered, change in scope could be required. This would increase the Project cost.	Some cost is assumed in the environmental mitigation budget.
		A-036	Potential 4(f) impact exceeding de minimis with ground improvements	Environmental	$	M	Risk	Retired	If unexpected impacts are encountered, change in scope could be required. This would increase the Project cost.	Ground improvements have been revised to eliminate any potential 4f impacts. Both Cities of West Linn and Oregon City have approved the de minimis designation.
		A-037	Threatened and Endangered species, migratory birds, Environmental Permits	Environmental	$	L	Risk	Retired	If unexpected impacts are encountered, mitigation would be required. This would increase the Project cost.	This will be resolved when the Cat Ex is approved. Cost assumed in estimate contingency
		A-038	Noise, Vibration and Protection (fish)	Environmental	$	L	Risk	Retired	Additional design mitigation features could be required to reduce impacts.	Cost has been included in temporary construction work estimate. Updated values will be developed as design progresses.
		A-039	Maintenance or modification of navigable waters	Environmental	$	M	Risk	Active	USCG requires a permanent change permit for any temporary or permanent changes to the navigation channel. These permits will not be obtained until much later in the design process, and may require additional mitigation or design alterations.	Initial coordination has occurred. Further coordination will be required as design advances, including the development of USCG permit plans and specifications.
		A-040	Marine Mammal Protection Act	Environmental	$$	L	Risk	Active	A permit is not required if the project implements BMPs to avoid harassing sea lions. BMP's are not clarified at this time, but may include stopping in water work if sea lions enter within a prescribed distance of in water work	Additional Coordination with NMFS is required to determine applicable BMPs. Project team will then assess the risk and determine the most appropriate action.
		A-041	Waterline protection on Abernethy Bridge	Utility	$	L	Risk	Retired	Maintaining the 24" waterline that is carried by the Abernethy bridge is vital. Only a limited design has been completed with the Final DAP. Limited Costs have been included in the estimate. Updated values will be developed as design progresses and ownership is confirmed.	Retired: Confirmed ownership by the City of West Linn
		A-042	Rise mitigation site identification and environmental clearance	Hydraulics	$	M	Risk	Active	Confirm no rise with updated Hydraulic analysis, and provide 1 to 1 fill/excavation balance within Willamette River and Tualatin River flood plane. Also, ensure no mitigation required beyond current design assumptions for temporary work and fill within the flood plane.	Mitigation currently anticipated within the ROW. Additional clarification related to limits on temporary work bridge and other fill in the flood plane do not require additional mitigation.
	OR 99E Interchange									
		A-043	Request for bicycle and pedestrian improvements, art or other out of scope elements	PM	$	L	Risk	Active	Additional budget from LPAs would need to be identified to incorporate changes into project for these type of out of scope items.	Continue coordination with City of Oregon.
		A-044	Clackamette Dr. Utility Relocations	Utility	$$	M	Risk	Active	Construction access may impact more reimbursable utilities than is currently identified in the Final DAP.	Enhance the design and update estimate as design progresses.
		A-045	Ramp geometry refinement	Roadway	$$	L	Risk	Active	Design Exceptions for the ramp geometry is required. If unapproved, the design would need to increase, impacting the budget and possibly affecting the Clackamette Dr. layout.	Design exception for geometry anticipated.
		A-046	Implementation of ADA standards in new contexts	Roadway	$	L	Risk	Active	Change in ODOT ADA standards or practices between now and construction could result in redesign or other mitigations.	Some effort and contingency costs assumed in estimate.

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Package B: I-205 Oswego Hwy (OR43) to Stafford Rd Sec	Bridge Widening and Seismic Retrofits (not Abernethy)	B-001	Permanent vertical clearance over local roads - assuming temporary reduction is acceptable for CIP concrete box girder widening (10th St and Blankenship Rd)	Roadway	$$	L	Risk	Retired	If the LPAs deny changes in vertical clearance, new profiles could be required which would increase mainline I-205 costs.	Retired. Current costs assume vertical clearance at 10th Street can be reduced below existing clearance of 16'-10". Local Agency Standard clearance is 14', as per AASHTO design.
		B-002	Temporary work bridges must accommodate recreation navigation on the Tualatin River. (Similar risk, different component impact, reference Risk 083)	Bridge	$	L	Risk	Active	Work bridges have been designed for an assumed navigational opening. The risk is assumed openings are inadequate which would require redesign and increase in budget.	Continue working with regulatory agencies to confirm navigational clearances.
		B-003	Liquefiable soils at Tualatin River Bridge	Bridge	$$	M	Risk	Active	Liquefiable soils are present and lateral spread potential will require likely require mitigation with associated cost and budget impacts	Further geotechnical investigation and analysis will be conducted in next work phase.
		B-004	Constructability and staging	Construction	$$$	M	Risk	Active	A detailed Construction Schedule has been developed with Draft DAP. This schedule shows the work dependencies between each package. Schedule assumptions and/or construction delays could still impact overall project schedule and budget.	Continue to update schedule and assess scope, schedule and budget impacts at each update.
		B-005	Tree removal in the median near the Tualatin River and in the median from Johnson Road to one half mile east of Johnson Road. Aesthetics compatibility	Environmental	$	L	Risk	Active	Area is within a scenic corridor. Design and construction costs assume widening towards the median. Changing alignment to avoid additional tree impacts in the median could result in additional construction and design costs including more reconstruction, lengthening of culverts, etc.	Costs are assumed for tree removal and paving limits based on median widening. Public information regarding their removal will be important to avoid changes to design.
	I-205 Mainline Improvements	B-006	Temporary shoulder construction - for traffic incidents during construction between 10th St interchange and Stafford Rd	Roadway	$$	M	Risk	Active	Draft DAP assumes 28' widths (2' shldr - 2x12' lanes - 2' shldr) in each direction without additional paved shoulders for breakdowns. Costs assume this 28 feet of temporary horizontal clearance is acceptable for two freeway lanes. 28' is an insufficient width to provide an emergency lane and creates longer traffic delays along corridor. Additional width would add scope and increase budget.	Current design provides intermittent pull outs along corridor. Continue coordination with MAC.
		B-007	Personal property damage from hauling blast materials on I-205	Roadway	$$	M	Risk	Active	Personal property damage as a result of hauling blast materials (or simply from dust / debris) on I-205 from the rock cut to the a presumed crushing plant location (at ODOT's abandoned Weigh Station site). Additional cost impacts could occur during construction.	During the 60% Preliminary Plans phase, property investigations and assessments will be conducted. Saps will be developed to place cost risk on the Contractor.
		B-008	Catchment width of rock cut on SB side	Roadway	$$	L	Risk	Active	Additional work on the SB slope will be required if ODOT requires a change from catchment width assumed in Draft DAP	Final ODOT approval of catchment widths is anticipated prior to 60% Preliminary Plans.
		B-009	Impacts of shallow hard rock excavation on underground drainage/trench construction	Geotechnical	$	L	Risk	Active	Risk of contractor encountering unexpected hard rock during trench and pipe installation, resulting in DSC claims, increased costs and schedule impacts	Identify areas where deep trench excavations are proposed and conduct additional explorations, as necessary, to determine hard rock areas to include in contract documents.
		B-010	Sunset Ave and West A median shoulder width reduction may require a design exception	Roadway	$$	L	Risk	Retired	The City of West Linn sections should be used for sizing the bridges. If additional width is deemed necessary, additional costs would result.	Coordination with the City has occurred and maintaining the existing width, with a redistribution of sidewalk vs shoulder vs lane widths) has been deemed acceptable.
		B-011	Rolling slowdown closures	Traffic	$$	H	Risk	Active	Up to 30 "rolling slowdowns" lasting either 10 minutes (for 15 pre-split) or 20 minutes (for 15 production blasts) have been assumed. If more are required, the Project may require a different construction sequence than anticipated - possibly causing cost increases.	Refined TCP coordination will occur as design progresses.
		B-012	Additional overhead sign structures for guide signs approaching Stafford and 10th St interchanges	Traffic	$$	H	Risk	Retired	The Project may require more sign structures than provided in the Draft DAP, which could increase cost.	Direction from ODOT has been provided that defined the sign locations. Cost increases have been incorporated into the Final DAP.
		B-013	Rock cut volume - Quantity of rock blasting inaccurate	Geotechnical	$$$	M	Risk	Active	Based on preliminary geotechnical site assessment and assumed finished slopes, 50,000 CY of the 85,000 CY total excavation is anticipated to be removed by blasting. Cost includes rock cut quantity accommodating a 99% catchment line, but no rock removal for aux lanes. The entire volume has a single, averaged unit cost - which includes a crushing plant located on-site. Risk pricing for quantity estimates.	Additional geotechnical explorations performed in the Summer, 2018. Interpretation of exploration work is ongoing and will be used to update unit costs and quantities.
		B-014	On-site Crushing Plant - Location risk / opportunity	Geotechnical	$$$	M	Risk / Opportunity	Active	An assumed crushing plant location (in the old rest stop) has been used as the basis of cost. If not permittable, additional costs for further hauling would be required unless a closer location is found (i.e., Old Mill site). Additionally, a dedicated haul route that can handle larger haul vehicles off of the freeway could reduce cost.	An assessment of using the rock crushing plant will occur during the 60% preliminary Design phase, and after the ODOT Materials Lab has concurred that the rock blast materials are suitable for reuse.
		B-015	Rock cut method / constructability - Production rate assumption	Geotechnical	$$	M	Risk	Active	Urban environment may require additional mitigation with lower production rates. A conservative number of production blasts (rate of blasting) has been assumed with the estimate, but a premium for this duration has not been added. Increased cost and schedule risks	Some cost is assumed in estimate. Further analysis will be made during the 60% Preliminary Design phase.
		B-016	Rock cut method / constructability - Need for stabilization and/or aesthetic enhancements	Geotechnical	$	M	Risk	Active	Because of potential for highly weathered breccia or agglomerate zones within cut area, localized areas of shotcrete or other stabilization measures may be necessary. Further, no special aesthetic costs for the cut have been applied.	Some cost is assumed in estimate. Further analysis will be made during the 60% Preliminary Design phase.
		B-017	Rock cut method / constructability - Local roadway closure costs	Geotechnical	$	M	Risk	Active	City of West Linn approvals required. If compensation is required, this would increase the Project cost.	Further coordination is required.
		B-018	Mitigation of existing landslide - not anticipated and therefore not included in the API	Geotechnical	$$	L	Risk	Active	Highway grading or sound wall construction work is assumed to not result in destabilization of the existing landslide. If additional mitigation were required it could effect highway geometry and or require slope stabilization	Highway grading and sound wall sections will be reviewed by the Geotechnical Team for potential changes which could effect slope stability.
		B-019	Constructability and staging	Construction	$$$	M	Risk	Active	A detailed Construction Schedule has been developed with Draft DAP. This schedule shows the work dependencies between each package. Schedule assumptions and/or construction delays could still impact overall project schedule and budget.	Continue to update schedule and assess scope, schedule and budget impacts at each update.
		B-020	Impacts to underground utilities due to proximity to the rock cut blasting	Utility	$$	M	Risk	Active	Existing underground utilities could be affected by the rock blasting. Impacts to these facilities would be reimbursable expenses. Additional cost impacts could occur during construction.	Some cost is assumed in estimate. Further analysis will be made during the 60% Preliminary Design phase.

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Package B: I-205 Oswego Hwy (OR43) to Stafford Rd Sec		B-021	Impacts to cell tower, PGE pole, and NW Natural pressure reducer station due to proximity to the rock cut blasting	Utility	$	L	Risk	Active	Additional budget may be required to mitigate rock blasting impacts to other facilities operations.	Initial assessment of the utility impacts related to blasting show no facility relocation are anticipated. Coordination with PGE, NW Natural and the Cell Tower operator related to blasting are ongoing. Some temporary mitigation costs for the cell tower and relocation of the existing PGE pole are included in the DAP estimate. As additional geotechnical information is obtained, conformation of potential impacts will be finalized.
		B-022	Impacts to private residences and other infrastructure due to proximity to the rock cut blasting	Environmental	$$	M	Risk	Active	Additional budget may be required to mitigate impacts to private residences	Pre-blasting inspections are planned but have not been performed
		B-023	Noise, vibration, air overpressure, and protection for rock cut blasting operations	Environmental	$$	M	Risk	Active	Existing buildings and facilities could be affected by the rock blasting. Impacts to these facilities would be reimbursable expenses. Additional cost impacts could occur during construction.	Some cost is assumed in estimate. Further analysis will be made during the 60% Preliminary Design phase.
		B-024	Disruption of Recreational Opportunities (Tualatin River). (Similar risk, different component impact, reference Risk 062)	Environmental	$	M	Risk	Active	Temporary work access will be required to sequenced or constructed in a way as to not limit recreational access under I-205.	Some costs are assumed in estimate. Additional mitigation may be needed in order to maintain recreational use during construction. Requirements related to recreational access will be coordinated as part of the permitting process.
		B-025	Public Concerns about Construction Impacts	PI	$$	M	Risk	Active	Construction impacts include blasting noise, congestion, cut through traffic, construction traffic, construction in a timely manner, coordination with other projects, etc. Additional cost impacts could occur during construction.	PI to address efforts to mitigate concerns after 60% design.
	Sunset Ave and West A Bridge Replacements									
		B-026	Implementation of ADA standards in new contexts (10% grades)	Roadway	$$$	L	Risk	Active	Design is based on a roadway profile that matches existing topography. Grade is within City Criteria for the roadway, however sidewalk grades over 5% require a design exception approval to demonstrate work is designed to the maximum extent feasible.	Design has been vetted ODOT and City of West Linn and Design Exception approval is expected.
		B-027	Staging and sequencing of West A and Broadway overcrossing removals	Roadway	$$	M	Risk	Retired	Construction staging sequencing has been developed with the DAP. West A will be constructed using a staged (1/2 bridge at a time) approach based on City of West Linn input. Costs have been developed accordingly.	The City of West Linn has accepted this approach.
		B-028	West A St - LPA approval of proposed bridge widths, alignment, and spans	Bridge	$$	M	Risk	Retired	Per initial conversations with the City of West Linn, the bridge width should include enough space for parking. If additional width is necessary, additional ROW and potentially some rock cut on the NW quadrant of the west abutment. Budget and scope impact.	Retired: City has provided bridge and lane widths which have been applied within the Final DAP.
		B-029	Sunset Ave - LPA approval of proposed bridge widths, alignment, and spans	Bridge	$$	L	Risk	Active	If additional width is necessary, additional ROW may be required. Budget and scope impact.	Per initial conversations with the City of West Linn, the bridge parameters appear acceptable. Final approvals will be sought prior to Final DAP.
		B-030	Bridge Aesthetics	Bridge	$$	L	Risk	Active	Additional cost for haunches, which, would increase vertical clearance needs, are not included.	Some cost is assumed in estimate for other aesthetic items. TS&L approvals by ODOT are being sought.
		B-031	Limited geotechnical data available	Geotechnical	$$	L	Risk	Active	Preliminary geotechnical parameters used for foundation type selection have been based on assumptions. Design may need to be revised when geotechnical data is updated. Budget Impact.	Additional geotechnical work as part of Amendment 4 will refine the recommendations.
		B-032	Utilities on the Broadway structure that is being removed will need to be relocated on West A St	Utility	$$	M	Risk	Active	Significant utilities are present on the Broadway Bridge. If reimbursable, costs are borne by the Project.	Based on preliminary research, it is assumed that these costs are not reimbursable. Further coordination is required.
Package C: I-205 Regional Active Traffic Management (ATM)	ATM Improvements									
		C-001	Evolving standards and scope variability	Traffic	$	M	Risk	Active	Evolving standards may increase costs and there is some scope variability depending on when you construct the improvements	Ongoing coordination with ODOT Traffic will occur as design progresses.
		C-002	State Furnished Materials	Traffic	$	M	Risk	Active	Per ODOT practice, ODOT must provide certain hardware to the Contractor as "State Furnished Materials". These must be procured prior to bidding. If not procured, a bid date slip could occur.	Anticipated Items for these costs have been added to the estimate. Ongoing coordination with ODOT ITS regarding early procurement of VAS and VMS will occur as design progresses.

Appendix G.
Roadway Design Criteria

See additional file

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Appendix H.
Design Exceptions

See additional file

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Appendix I. Stormwater Management Plan

See additional file

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Appendix J. Draft Traffic Management Plan

See additional file

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Appendix K.
Guide Signing Roll Map

See additional file

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Appendix L. Preliminary Rock Cut Geotechnical Memorandum

See additional file

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Appendix M. Illumination Analysis Memorandum

See additional file

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Appendix N. Bridge Type, Size, and Location Sheets

See additional files

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Appendix O. Preliminary Pavement Design Memorandum

See additional file

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Appendix P. Landscape Design Approach Report

See additional file

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Appendix Q. ROW Map

See additional file