

APPENDIX J

**SR 28/281 Rock Island to I-90 Cost Estimating Assumptions Memorandum**

## MEMORANDUM

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To: Riley Shewak

From: Brent Powell, PE, PTOE

Date: June 27, 2022

Re: SR 28 Corridor Study, Phase 2 – Opinion of Cost Assumptions

## INTRODUCTION

Perteet will develop a planning-level opinion of cost for the following locations/projects as part of the second phase of our SR 28 Corridor Study for Chelan-Douglas Transportation Council (CDTC) in partnership with Washington State Department of Transportation (WSDOT). This memorandum documents the assumptions we plan to use in developing these costs.

### Main Corridors

- SR 28 from milepost (MP) 9.15 (Batterman Road) to MP 27.87 (western Quincy city limits)
- SR 281 from MP 0.00 (I-90 interchange) to MP 9.77 (southern Quincy city limits)

### Projects within Quincy

- Included in SR 28 cost estimate:
  - Connection from city limits to existing five-lane section in Quincy urban area at 7th Street SW. No upgrades assumed east of 7th Street SW.
- Included in SR 281 cost estimate:
  - Connection to existing five-lane section at N Street SW and heading south (no roundabout or signal included as part of this connection).
  - Upgraded irrigation canal crossing south of N Street SW.

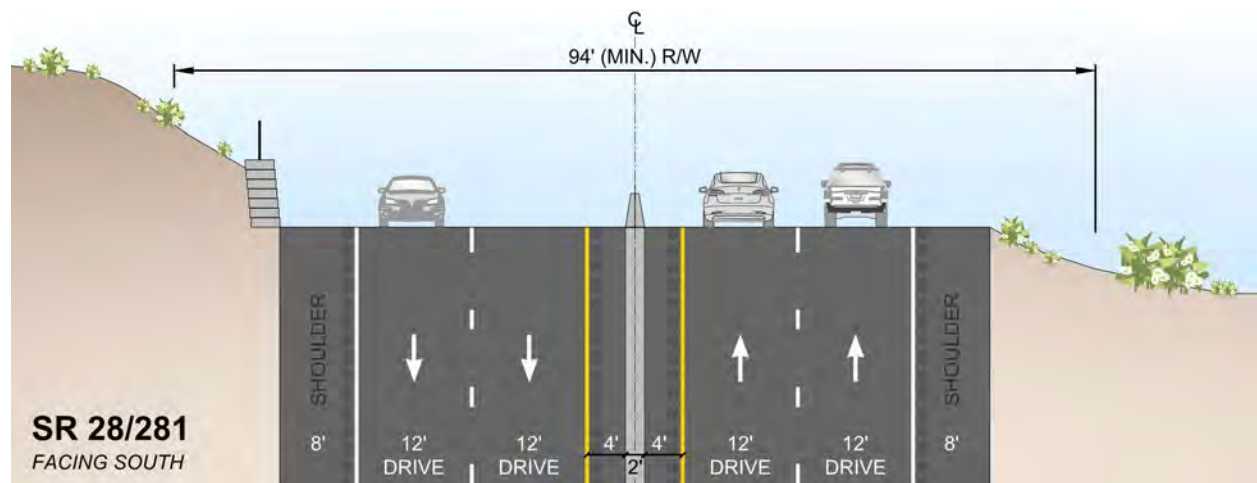


Figure 1. Typical Section for SR 28 and SR 281 (Conditions Beyond Shoulders Vary).

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Figure 1, copied from our Phase 1 documentation, illustrates the proposed typical section for both main corridors. Note that right-of-way (ROW) widths and matching conditions outside of the shoulders vary from this figure in some locations.

Our opinion of cost deliverables will separate costs by corridor and will include the projects within Quincy as noted above. The deliverables will not include any subdivision of costs by milepost range or otherwise pursuant to our scope of services.

**COST ESTIMATING ASSUMPTIONS**

Our estimating assumptions for SR 28 and SR 281 are listed in Table 1. Generally, we will apply the same assumptions to both corridors. We will list each project within Quincy as a lump sum line item that will include all costs for each project.

**Table 1. Cost Estimating Assumptions for SR 28 and SR 281.**

Parameter/Element	SR 28 Assumption	SR 281 Assumption	Notes
<b>Right of Way</b>			
Minimum ROW width	94 feet including 10 feet beyond edge of shoulder on each side	94 feet including 10 feet beyond edge of shoulder on each side	
ROW acquisition method(s)	Strip acquisition only	Strip acquisition only	Applies where existing ROW width is less than minimum
Temporary construction easement width	None	None	
Acquisition/Negotiation costs	Count of all parcels with strip acquisition plus count of any additional corner parcels at proposed roundabouts	Count of all parcels with strip acquisition plus count of any additional corner parcels at proposed roundabouts	
<b>Pavement</b>			
Total pavement width	74 feet	74 feet	Includes width of center barrier
Existing travel-lane pavement treatment	No treatment; no replacement or overlay	No treatment; no replacement or overlay	
Existing shoulder pavement treatment	Replace with full-depth travel-lane section	Replace with full-depth travel-lane section	
Full-depth travel-lane section	0.67 feet hot mix asphalt (HMA) over 0.75 crushed surfacing	0.67 feet HMA over 0.75 feet crushed surfacing	
New shoulder section	0.5 feet HMA over 0.75 feet crushed surfacing	0.5 feet HMA over 0.75 feet crushed surfacing	
<b>Highway Geometry</b>			
Centerline	Maintain existing	Maintain existing	
Widening method	Symmetrical	Symmetrical	
Profile	Maintain existing	Maintain existing	

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Parameter/Element	SR 28 Assumption	SR 281 Assumption	Notes
Superelevation	Maintain existing	Maintain existing	
<b>Intersection Treatments</b>			
Interchanges	None	New roundabout at MP 2.65 at SR 281 Spur; upgraded I-90/SR 281 interchange with four ramps and roundabout intersections	Intersection/interchange costs will be listed as lump sums, inclusive of all construction costs, including paving, illumination, landscaping, etc.
Local roadways	New roundabout at MP 22.31; roundabout widening to dual-lane roundabouts at MP 25.73 and 28.73		Intersection/interchange costs will be listed as lump sums, inclusive of all construction costs, including paving, illumination, landscaping, etc.
Other	Rebuild and lengthen railroad bridge at MP 22.06	None	
<b>Roadside Treatments</b>			
Side slopes	Drainage ditch foreslopes (at 4:1) and backslopes (at 3:1) per WSDOT Design Manual Exhibit 1239-5 "Trapezoidal Ditch" with 2-foot-wide ditch	Drainage ditch foreslopes (at 4:1) and backslopes (at 3:1) per WSDOT Design Manual Exhibit 1239-5 "Trapezoidal Ditch" with 2-foot-wide ditch	Perteet to use 1-foot contour data for corridor analysis with side slopes and ditches in CAD.
Retaining wall thresholds	Elevation difference between existing ground and edge of shoulder at or above 4 feet (cut or fill)	Elevation difference between existing ground and edge of shoulder at or above 4 feet (cut or fill)	Elevation difference measured at edge of shoulder position in cross section.  Perteet to use 1-foot contour data for corridor analysis in CAD.
Retaining wall types	Short cut: gravity block Tall cut: soldier pile Short fill: MSE Tall fill: soldier pile	Short cut: gravity block Tall cut: soldier pile Short fill: MSE Tall fill: soldier pile	Short: cut/fill < 6 feet Tall: cut/fill ≥ 6 feet
<b>Other</b>			
Drainage	Ditches on both sides with 18-inch pipes below driveways and cross streets	Ditches on both sides with 18-inch pipes below driveways and cross streets	
Corridor illumination	None	None	
Curbs, gutters, and sidewalks	None	None	
Signing	\$10,000 per mile	\$10,000 per mile	
Culverts	Reconstruct at stream crossings	Reconstruct at stream crossings	Affected culverts based on streams shown in WSDOT GeoPortal using USGS National Map basemap

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Parameter/Element	SR 28 Assumption	SR 281 Assumption	Notes
Environmental permitting	Includes applicable local, state, and federal permits	Includes applicable local, state, and federal permits	Based on Perteet assessment to be completed during cost estimating
<b>Percentage-Based Costs</b>			
Temporary water pollution/erosion control	2%	2%	
Traffic control	10%	10%	
Construction surveying	2%	2%	
Mobilization	10%	10%	
Construction contingency	30%	30%	Reflects uncertainty in project scope at planning level
Preliminary engineering	15%	15%	Perteet to update percentage per judgement once full construction costs are estimated. WSDOT currently estimating 40% PE costs.
Preliminary engineering administration	5%	5%	Agency engineering/administrative time during PE phase; Perteet to update percentage per judgement once full construction costs are estimated
Construction engineering	15%	15%	Perteet to update percentage per judgement once full construction costs are estimated
Construction administration	5%	5%	Agency engineering/administrative time during CN phase; Perteet to update percentage per judgement once full construction costs are estimated
<b>Cost Years</b>			
Index (all phases)	2022	2022	
Preliminary engineering	2025	2025	
Right of way	2027	2027	
Construction	2029	2029	
<b>Annual Inflation Rates</b>			
Preliminary engineering	5%	5%	
Right of way	5%	5%	
Construction	10%	10%	Current best estimate for industry; higher than engineering and administrative cost increases
Construction administration	5%	5%	