



Hood River Bridge Replacement Project

WSP Project Cost Estimate – Basis for Estimated Costs 11-18-2021

SR-35 Columbia River Crossing project located in Hood River OR is a proposed Bid-Build Project to replace a bridge approximately 1 mile in length. The project includes 1 roundabout at the intersection of SR 14 in Washington State and modifications to the intersecting roadway to Hwy 84 on the Oregon side.

KMC was provided documentation to include WSP Project Scope Assumptions Document dated September 29, 2021, Selected 1940 Bridge Drawings, HRB_BA Final 2020_09_10, Final Bridge Plans V2ments, 2020 SR -35 New Bridge Comp. Substructure Reduced Rollup, WSP Detailed Project Schedule per Bob Lee, and Quantity takeoffs.

KMC provided input on phasing and staging plans to supplement this document. This phasing, work restrictions, and staging plan is the primary driver of project schedule and construction cost.

Cost Estimate by Work Breakdown Structure (WBS) are inclusive of a contractor style cost estimate for the PCE.

KMC completed a thorough review of the draft assumptions document and participated in several meetings with Stuart Bennion and Bob Lee prior to completing the cost estimate. Additional meetings were held with Port of Hood River officials, WSP staff, and KMC during the process of updating to establish the final basis for this PCE.

The following outline the basis by category:

Labor rates are reflective of the 2021-2022 market and have not been escalated. Labor production utilizes a composite crew:

Resource Code	Description	Unit Cost (Scale 1)	Unit Cost (Scale 2)	Utilization Count	Unit of Measure
+ 1 - CARP 80...	GROUP 5 BRIDGE AND HIGHWAY CARP 80% APP	\$65.33	\$82.90	47,089.92	Hour
+ 1 - CARP F/M	GROUP 5 BRIDGE AND HIGHWAY CARP F/M	\$78.66	\$98.80	37,989.82	Hour
+ 1 - CARP JO...	GROUP 5 BRIDGE AND HIGHWAY CARP JOURNEY	\$77.40	\$97.30	88,323.64	Hour
+ 1 - LAB JOU...	LAB JOURNEY	\$63.79	\$82.78	79,713.52	Hour
+ 1 - MASON F...	MASON F/M	\$63.84	\$89.42	1,358.22	Hour
+ 1 - MASON J...	MASON JOURNEY	\$61.32	\$86.42	2,716.43	Hour
+ 1 - MECHANIC	MECHANIC	\$54.20	\$70.43	24,768.00	Hour
+ 1 - OPERAT ...	OPERATOR CRANE - OVER 100 TN	\$85.93	\$103.43	45,098.35	Hour
+ 1 - OPERAT ...	OPERATOR CRANE - UNDER 100 TN	\$83.42	\$100.43	1,358.22	Hour
+ 1 - PILEBUC...	PILEDRIVER 80% APP	\$68.87	\$79.30	2,720.26	Hour
+ 1 - PILEBUC...	PILEDRIVER F/M	\$78.91	\$99.10	25,765.94	Hour
+ 1 - PILEBUC...	PILEDRIVER JOURNEY	\$77.66	\$97.60	33,814.81	Hour
+ 1 - IRON JO...	JOURNEY IRONWORKER	\$67.61	\$104.48	3,165.33	Hour
+ 1-STAFF AVG	STAFF AVERAGE COST	\$110.00	\$110.00	118,717.00	Hour
+ 1-SUPERINT...	PROJECT SUPERINTENDENT	\$108.65	\$0.00	6,228.00	Hour

Production cost rates reflect the impacts due to efforts required to work in a marine environment. Access for the delivery of resources to and from the site required substantial development and use of trestles, marine boats and barges, and marine cranes. Other impacts include public recreational access, commercial and private marine traffic, roadway closures, traffic switches, and the UPPR right-of-way.

Details of production and direct cost work is reflected in the WBS. A labor Register is attached.

Equipment rates were time spanned for general operations and included in specific work activities for equipment intensive operations. The utilization count identifies the number of working hours for a specific piece of equipment.

Resource Code	Description	Unit of Measure	Unit Cost (Scale 1)	Utilization Count
COMPR 100	185 CFM Compressor	Hour	\$12.34	5,018.70
COMPRESSOR-375CFM	375 CFM Compressor	Hour	\$20.50	17,570.00
CONCRETE BUCKET	3 CY CONCRETE BUCKET	Hour	\$9.75	3,760.00
CRANE 230 TN	Manitowoc 888	Hour	\$327.30	12,300.00
CRANE 80 TON	80 TON CRANE	Hour	\$197.34	2,080.00
CRANE DEAL STRADLE CRANE	Blue-DEAL Straddle Crane	Hour	\$89.55	7,800.00
CRLWR CR 100	Crwaler Crane 300 T	Hour	\$521.19	4,206.59
DEMO - EXCV - 300	Excavator CAT 345	Hour	\$229.62	6,544.79
DEMO 101	DEMO SHEAR	Hour	\$95.00	5,840.00
DRILL - 966 LOADER	966 LOADER	Hour	\$120.55	6,580.00
DRILL - BG55 - UER-BG55	BG 55 - DRILL RIG	Hour	\$480.31	4,500.00
DRILL - 1600 CFM COMPRESSOR	1600 CFM COMPRESSOR	Hour	\$75.72	1,880.00
DRIVING - 100	Ape 200 Vibro Hammer	Hour	\$82.70	1,569.35
DRIVING - 101	D62 Diesel Pile Hammer	Hour	\$67.73	3,006.85
DRIVING - 102	PILE DRIVING LEADS	Hour	\$55.00	1,150.00
DRIVING - 103	Ape 400 Vibro Hammer	Hour	\$109.07	2,350.00
DRIVING - 104	DRIVING SPOTTER	Hour	\$38.00	1,437.50
MARINE BARGES - 200	BARGE - 40 x 180	Hour	\$62.50	36,638.03
MARINE CR-200 T	DB 200 - MARINE DERRICK 200 T CAP	Hour	\$755.22	2,840.49
MARINE CR-2250 ON SB	2250 ON SPUD BARGE	Hour	\$490.00	3,350.00
MARINE CR-300 T	DB 300 - MARINE DERRICK 300 T CAP	Hour	\$857.87	11,837.50
MARINE CR-888 ON SB	888 ON SPUD BARGE	Hour	\$440.00	3,900.00
MARINE SKIFF	Work Skiff	Hour	\$9.85	24,216.62
MARINE TUG-1000 HP	TWIN SCREW - 1000 HP	Hour	\$327.90	7,680.00
MECHANIC TRUCK	MECHANIC TRUCK	Hour	\$57.76	4,160.00
MISC SUPP - FORK	FORKLIFT - 10k	Hour	\$50.00	7,920.00
MISC SUPP - FRKLIFT	CARYLIFT 30 T	Hour	\$42.27	2,686.59
MISC SUPP - GENERATOR	500 KW	Hour	\$157.49	640.00
MISC SUPP - GENERATOR - 300 K	300 KW GENERATOR	Hour	\$75.00	12,672.00
MISC SUPP - LIGHT PLANT	LIGHT PLANT	Hour	\$10.77	7,520.00
MISC SUPP - WATER-TANK	WATER TANK 12,000 GAL	Hour	\$10.94	28,500.00
MISC SUPP - WELD 100	400 Amp Diesel Welder	Hour	\$9.18	41,568.70
VEHICLE	1/2 TON PICKUP	Hour	\$25.83	63,320.00
	33			347,043.72

Subcontract rates are used for removals, utilities, roadway, and traffic control. Furnish rebar and install, PT stressing are also included in the cost with subcontractor support. The cost used are reflective of current market pricing. Subcontract total cost and unit rates are reflected in the WBS.

Material cost for concrete, steel, asphalt, are based on actual market pricing.

Supply cost for temporary steel and crane mats with a 33% salvage, mobilization on and off site. As well as a craft labor STS ranges from 7.00 to 12.00 per craft hour depending on the operation.

Quantity Take-off is provided by WSP and reviewed by KMC base on 5% design drawings.

Key Indirect Factors

Craft to Staff Ratio: 3.21 Craft to 1 Staff Person

401,082 Craft Hours

124,945 Staff Hours

Design Build Services

Design Engineering – Not included in the PCE

Temporary Construction Engineering – \$3,296,000

Costs for impacts due to environmental, quality, archeologist, migratory bird monitoring requirements have not been clearly identified for this project therefore, these costs have not been included in the PCE.

Project Schedule and Logistics

The project schedule was developed by WSP in concert with KMC reviews and input. Costs are based on current 2021 rates and escalation has not been included in the PCE.

Other Considerations:

- In-water work windows each season from October 1 to March 15.
- Working hours and shifts per week were identified in the schedule and overtime costs included in the PCE.
- Weather conditions causing weather delays have been included in the overall project duration.

Market Contingency and Fee

Margin/Fee Analysis is analyzed in three areas:

1. Margin is 73% of Direct Labor
2. Margin is \$23,100,000 or 60% of Equipment Costs
3. Margin is 10% of Total Cost

Attachments:

Labor Register

KELLY MCNUTT CONSULTING, LLC

WSP Hood River Bridge Replacement--Columbia River Crossing at Hood River

Resource Code	Description					Unit Cost (Scale 1)	Unit Cost (Scale 2)	Utilization Count	Unit of Measure
1 - CARP 80% AP	GROUP 5 BRIDGE AND HIGHWAY CARP 80% APP					\$65.33	\$82.90	47,089.92	Hour
	Scale	Total	Labor	Labor Base	Labor Burden	Labor Fringes			
	1	\$65.33	\$65.33	\$38.40	\$26.93	\$17.02			
	2	\$82.90	\$82.90	\$57.60	\$25.30	\$18.30			
	3	\$102.10	\$102.10	\$76.80	\$25.30	\$18.30			
1 - CARP F/M	GROUP 5 BRIDGE AND HIGHWAY CARP F/M					\$78.66	\$98.80	37,989.82	Hour
	Scale	Total	Labor	Labor Base	Labor Burden	Labor Fringes			
	1	\$78.66	\$78.66	\$49.00	\$29.66	\$17.02			
	2	\$98.80	\$98.80	\$73.50	\$25.30	\$18.30			
	3	\$123.30	\$123.30	\$98.00	\$25.30	\$18.30			
1 - CARP JOURNE	GROUP 5 BRIDGE AND HIGHWAY CARP JOURNEY					\$77.40	\$97.30	88,323.64	Hour
	Scale	Total	Labor	Labor Base	Labor Burden	Labor Fringes			
	1	\$77.40	\$77.40	\$48.00	\$29.40	\$17.02			
	2	\$97.30	\$97.30	\$72.00	\$25.30	\$18.30			
	3	\$121.30	\$121.30	\$96.00	\$25.30	\$18.30			
1 - LAB JOURNEY	LAB JOURNEY					\$63.79	\$82.78	79,713.52	Hour
	Scale	Total	Labor	Labor Base	Labor Burden	Labor Fringes			
	1	\$63.79	\$63.79	\$40.00	\$23.79	\$13.47			
	2	\$82.78	\$82.78	\$60.00	\$22.78	\$15.78			
	3	\$102.78	\$102.78	\$80.00	\$22.78	\$15.78			
1 - MASON F/M	MASON F/M					\$63.84	\$89.42	1,358.22	Hour
	Scale	Total	Labor	Labor Base	Labor Burden	Labor Fringes			
	1	\$63.84	\$63.84	\$42.00	\$21.84	\$11.00			
	2	\$89.42	\$89.42	\$63.00	\$26.42	\$19.42			
	3	\$110.42	\$110.42	\$84.00	\$26.42	\$19.42			
1 - MASON JOUR	MASON JOURNEY					\$61.32	\$86.42	2,716.43	Hour

Labor Register

PRELIMINARY - PCE ON 5% DESIGN

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Resource Code		Description				Unit Cost (Scale 1)	Unit Cost (Scale 2)	Utilization Count	Unit of Measure
Scale	Total	Labor	Labor Base	Labor Burden	Labor Fringes				
1	\$61.32	\$61.32	\$40.00	\$21.32	\$11.00				
2	\$86.42	\$86.42	\$60.00	\$26.42	\$19.42				
3	\$106.42	\$106.42	\$80.00	\$26.42	\$19.42				
1 - MECHANIC		MECHANIC				\$54.20	\$70.43	24,768.00	Hour
Scale	Total	Labor	Labor Base	Labor Burden	Labor Fringes				
1	\$54.20	\$54.20	\$32.00	\$22.20	\$11.00				
2	\$70.43	\$70.43	\$48.00	\$22.43	\$15.43				
3	\$86.43	\$86.43	\$64.00	\$22.43	\$15.43				
1 - OPERATOR GR		OPERATOR CRANE - OVER 100 TN				\$85.93	\$103.43	45,098.35	Hour
Scale	Total	Labor	Labor Base	Labor Burden	Labor Fringes				
1	\$85.93	\$85.93	\$54.00	\$31.93	\$18.00				
2	\$103.43	\$103.43	\$81.00	\$22.43	\$15.43				
3	\$130.43	\$130.43	\$108.00	\$22.43	\$15.43				
1 - OPERATOR GR		OPERATOR CRANE - UNDER 100 TN				\$83.42	\$100.43	1,358.22	Hour
Scale	Total	Labor	Labor Base	Labor Burden	Labor Fringes				
1	\$83.42	\$83.42	\$52.00	\$31.42	\$18.00				
2	\$100.43	\$100.43	\$78.00	\$22.43	\$15.43				
3	\$126.43	\$126.43	\$104.00	\$22.43	\$15.43				
1 - PILEBUCK 80		PILEDRIVER 80% APP				\$68.87	\$79.30	5,120.26	Hour
Scale	Total	Labor	Labor Base	Labor Burden	Labor Fringes				
1	\$68.87	\$68.87	\$36.00	\$32.87	\$17.02				
2	\$79.30	\$79.30	\$54.00	\$25.30	\$18.30				
3	\$97.30	\$97.30	\$72.00	\$25.30	\$18.30				
1 - PILEBUCK F/M		PILEDRIVER F/M				\$78.91	\$99.10	28,165.94	Hour
Scale	Total	Labor	Labor Base	Labor Burden	Labor Fringes				

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Resource Code		Description				Unit Cost (Scale 1)	Unit Cost (Scale 2)	Utilization Count	Unit of Measure
Scale	Total	Labor	Labor Base	Labor Burden	Labor Fringes				
1	\$78.91	\$78.91	\$49.20	\$29.71	\$17.02				
2	\$99.10	\$99.10	\$73.80	\$25.30	\$18.30				
3	\$123.70	\$123.70	\$98.40	\$25.30	\$18.30				
1 - PILEBUCK JOU		PILEDREIVER JOURNEY				\$77.66	\$97.60	36,214.81	Hour
Scale	Total	Labor	Labor Base	Labor Burden	Labor Fringes				
1	\$77.66	\$77.66	\$48.20	\$29.46	\$17.02				
2	\$97.60	\$97.60	\$72.30	\$25.30	\$18.30				
3	\$121.70	\$121.70	\$96.40	\$25.30	\$18.30				
1 -IRON JOURNEY		JOURNEY IRONWORKER				\$67.61	\$104.48	3,165.33	Hour
Scale	Total	Labor	Labor Base	Labor Burden	Labor Fringes				
1	\$67.61	\$67.61	\$45.00	\$22.61	\$11.00				
2	\$104.48	\$104.48	\$67.50	\$36.98	\$29.98				
3	\$126.98	\$126.98	\$90.00	\$36.98	\$29.98				
1-STAFF AVG		STAFF AVERAGE COST				\$110.00	\$110.00	118,717.00	Hour
Scale	Total	Labor	Labor Base	Labor Burden	Labor Fringes				
1	\$110.00	\$110.00	\$110.00	\$0.00	\$0.00				
2	\$110.00	\$110.00	\$110.00	\$0.00	\$0.00				
3	\$110.00	\$110.00	\$110.00	\$0.00	\$0.00				
1-SUPERINTENDE		PROJECT SUPERINTENDENT				\$108.65	\$0.00	6,228.00	Hour
Scale	Total	Labor	Labor Base	Labor Burden	Labor Fringes				
1	\$108.65	\$108.65	\$70.00	\$38.65	\$32.20				
2	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00				
3	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00				
15								526,027.46	