



Salem 3rd Willamette Bridge Cost Estimating Services

Final Report

October 2016

Prepared for:
City of Salem Public Works Department

Prepared By

Daniel A Pavela

Daniel Pavela P.E.

Reviewed By



Scott Nettleton P.E.

A. PROJECT DESCRIPTION AND OVERVIEW OF SERVICE

City of Salem contracted with the Consultant for the purpose of providing an independent cost estimate for bridge types and other components of the proposed project. Construction of this project will provide much needed relief to traffic congestion at the existing parallel Willamette River crossings at Marion and Center Streets. The project will connect OR22 more directly with the Salem Parkway (Hwy US 99 Business) bypassing the Salem City downtown core. Additionally the bridge will serve as an alternate route crossing the Willamette River should the Center and Marion Street bridges be impassible.

Consultant collaborated with the Salem River Crossing Project Management Team (PMT) to review cost estimates for various components of the project that could be incorporated into the final design.

The Consultant independently developed a cost estimate based on all discussions and information provided for the project components set forth by the PMT. Once quantified, the independent Consultant's quantities could then be compared to those compiled by the PMT. Large discrepancies in costs and/or quantities could then be identified and discussed. The primary objective being that all major costs are accounted for at this early stage of project development in order to have an accurate budget figure today in order to avoid budget overruns in the future.

B. STANDARDS AND GENERAL REQUIREMENTS

In the course of production of the independent cost estimate materials, the Consultant adhered to the standards defined in the Scope of Services document.

C. METHODOLOGY

It was understood from the beginning of the project that methodologies, in terms of how items are categorized and quantified, be established into a consistent number of items and rules. This framework was set up to facilitate quantity comparison. Each estimating team developing their own quantification of items from a bare page would result in significant differences in methodology. This would, in turn, result in great difficulty at the reconciliation stage when attempting to compare two similar items. For example, one team may quantify concrete curb as a standalone item while the other may include it as an incidental to the sidewalk. To achieve reconciliation of the items at a later date would require either combining the items from the first estimate, or deconstructing the items from the second estimate. For this reason it was agreed that the independent estimators would be provided with a blank version of the estimating spreadsheet already developed to avoid this secondary step to reach resolution.

Once received, the Consultant reviewed the provided spreadsheet for completeness and accuracy with respect to the base map and plan overlay provided.

A project quantity takeoff was then performed by the Consultant on the “Preferred Alternative” project layout provided by the PMT. Primary quantities were recorded in the master spreadsheet.

Due to the early stage of development of the project layout, details such as extents of proposed individual retaining walls were estimated independently and overall quantities were compared. Any large discrepancies were identified and discussed in the progress meetings listed below.

D. REVIEW COMMENT AND SCHEDULE OVERVIEW

Consultant attended four meetings with the PMT. The first was a kick-off meeting to become familiar with the project, the team members, and the methodology being developed for the principle cost estimate.

Subsequent to the first meeting, the team re-assembled to discuss cursory progress by the independent estimate team and to delve further into the spreadsheet and methodology that was being employed by the principle cost estimating team. Layout of the projects physical parameters and assumptions were further clarified. Consultant shared our efforts to date with the PMT and noted feedback provided by the team.

A third meeting was held to provide in depth review of Consultant’s progress on all of the components of the project sans the bridge components. The discussion defined how limits for roadway, sidewalk, lighting layout, etc., were being evaluated. Each team’s methodology proved similar in approach to and assembly of the estimate. Some clarification was provided by the PMT regarding layout in specific areas to further refine the independent estimate.

In the final meeting unit pricing of the structures was verified to the limits identified in the project plans, and construction methodology (cast in place vs. pre-cast) confirmed. In addition, the PMT reviewed the final “cut” of the independent estimate including quantities, limits of construction, and pricing. The major cost of the project, is confirmed to be the structure components.

The independent estimator met with the primary estimator for the purpose of discussing the research done and offering advice on various items to be modified in the primary estimate. To preserve the record of independence the same modifications were not applied to every single line item of the estimate attached to this deliverable. However, unit prices for a number of the larger line items, having a large impact on the overall project costs, were discussed in detail and agreed to by the primary estimator, independent estimator, and PMT in the review meeting. The items that were adjusted to agreed upon prices after collaboration are summarized in the table below:

Item	Independent Estimator	Unit	Primary Estimator	Unit	Agreed upon Price	Unit
Steel Tub Girder Bridges	\$205	/SF	\$300	/SF	\$275	/SF
Prestressed I-Girder Bridges	\$147.50	/SF	\$145	/SF	\$145	/SF
Precast Segmental Approach Bridges	\$150	/SF	\$150	/SF	\$150	/SF
Cast-in-place Segmental Bridges	\$295	/SF	\$300	/SF	\$300	/SF
Retaining Walls	\$67.50	/SF	\$60	/SF	\$65	/SF
Earthwork	\$10.46	/CY	\$16	/CY	\$16	/CY
Landscaping	\$5	/SF	\$3	/SF	\$3	/SF
Traffic Signal Interconnect	\$30	/EA	\$22.50	/EA	\$30	/EA
New Traffic Signal Installation	\$275,000	/EA	\$300,000	/EA	\$300,000	/EA
Illumination	\$365,000	/MI	\$420,000	/MI	\$420,000	/MI

The accompanying documentation was adjusted to include these agreed upon unit prices to achieve an agreeable reconciliation, but again other unit costs continued unmodified to preserve

Original Prelim Independent Est	\$ 364,286,052
New Independent Est Agreed Prices	\$ 361,309,108
Difference	0.82%

the independence of the estimate.

With the agreed modifications in the Primary Estimate the construction costs totaled \$361,309,108 versus the bottom line estimate independently prepared, and recorded herein of \$364,286,052 or 99.2% of the planning estimate. The difference, of 0.8%, can be considered well within the margin of the ability to estimate a construction project at this early stage and it was agreed that further research and development of unit costs in support of this estimate are not immediately required.

In conclusion, the Primary Estimating team's methodology appears to be sound based upon the independent review and research performed. Unit prices as applied, with the recommended modifications listed above, are accurate for their purpose and can be confidently relied upon to move forward with planning of construction at this time.

FORMAT REQUIREMENTS

In compliance with the requirements for submittal, deliverables are being made via E-Mail.

All text files are being submitted in .pdf format accompanied by the original source document in Microsoft Office suite formats (i.e. MS Word, Excel, PowerPoint etc.) and will be in a version compatible with city of Salem software version.



Salem 3rd Willamette Bridge Cost Estimating Services

APPENDIX

April 2016

Prepared for:
City of Salem Public Works
Department

Principal Consultant	Consultant			
Project: P034882 Salem River Crossing	INDEPENDENT TAKEOFF			
Cost Estimating Concept Component Matrix	Date	Name	Date	Name
Prepared By:	5/31/2016	Dan Pavela	5/31/2016	Bob Bochsler
Checked By:				

{Preferred Alternative} Summary

Bid Item	Unit	Unit Cost	Quantity	Total
Curb, Gutter, & Drainage with 5' Sidewalk (one side)	Mi.	\$618,596.99	3.43	\$2,124,435.46
Curb, Gutter, & Drainage with 6' Sidewalk (one side)	Mi.	\$643,886.18	0.94	\$603,399.40
Curb, Gutter, & Drainage with 8' Sidewalk (one side)	Mi.	\$699,114.98	0.96	\$674,089.84
Curb, Gutter, & Drainage with 12' Sidewalk (one side)	Mi.	\$809,572.58	1.76	\$1,428,864.94
Earthwork	CY	\$16.00	332,780.84	\$5,324,493.42
New Roadway	Lane-Mi.	\$364,019.00	12.76	\$4,646,119.93
Overlay Existing Roadway	Lane-Mi.	\$118,426.77	2.16	\$256,254.90
Reconstruct Existing Roadway	Lane-Mi.	\$362,640.89	11.38	\$4,125,812.77
Traffic Signal Interconnect	Lin. Ft.	\$30.00	9,416.00	\$282,480.00
New Traffic Signal Installation	EA	\$300,000.00	8.00	\$2,400,000.00
Illumination	Mi.	\$420,000.00	5.91	\$2,481,818.18
Landscaping	SQ. Ft.	\$3.00	179,942.40	\$539,827.20
New Separated Multi-Use Path	Lane-Mi.	\$160,873.51	1.60	\$257,191.95
Cast-in-Place Segmental (Balanced Cantilever) Bridges (Main Channel)	SQ. Ft.	\$300.00	172,451.00	\$51,735,300.00
Precast Segmental (Span-By-Span) Bridges (West Approach Spans)	SQ. Ft.	\$150.00	498,321.00	\$74,748,150.00
Prestressed I-Girder Bridges (HWY 22 Ramp Spans over Old RR Trestle/Multi-Use Path)	SQ. Ft.	\$145.00	28,440.00	\$4,123,800.00
Steel Tub Girder Bridges (Multi-Use Path Structure over Wallace/Edgewater Intersection)	SQ. Ft.	\$275.00	29,100.00	\$8,002,500.00
Retaining Walls	SQ. Ft.	\$65.00	105,165.00	\$6,835,725.00
Subtotal 1:				\$170,590,262.99
Construction Surveying	1.0-2.5%	1%		\$1,705,902.63
TP&DT	3.0-8.0%	3%		\$5,117,707.89
Mobilization	8.0-10.0%	8%		\$13,647,221.04
Erosion Control	0.5-2.0%	0.50%		\$852,951.31
New Right of Way Acquisition (UFS Acquisition Report)				
Subtotal 2:				\$21,323,782.87
Subtotals 1 & 2:				\$191,914,045.86
Contingency	30-40%	40%		\$76,765,618.34
Total:				\$268,679,664.20
Escalation (Build Year 2020)	%	3.00%		\$42,793,704.80
Subtotal 3:				\$311,473,369.00
Design Engineering	8%			\$24,917,869.52
Construction Engineering	8%			\$24,917,869.52
Subtotal 4:				\$49,835,739.04
Grand Total (subtotals 3&4):				\$361,309,108.04

User Determined Values
 Values are linked to Workbook "P034882 Salem River Crossing Unit Cost Calculations DEC 2015.xls" Do not edit on this page

Principal Consultant					
Project: P034882 Salem River Crossing					
Cost Estimating Concept Component Matrix		Date	Name	Date	Name
Prepared By:		5/31/2016	Dan Pavela	5/31/2016	Bob Bochsler
Checked By:					
{Preferred Alternative} Phase R Summary					
Bid Item	Unit	Unit Cost	Quantity	Total	
Curb, Gutter, & Drainage with 5' Sidewalk (one side)	Mi.	\$618,596.99	-	\$0.00	
Curb, Gutter, & Drainage with 6' Sidewalk (one side)	Mi.	\$643,886.18	-	\$0.00	
Curb, Gutter, & Drainage with 8' Sidewalk (one side)	Mi.	\$699,114.98	-	\$0.00	
Curb, Gutter, & Drainage with 12' Sidewalk (one side)	Mi.	\$809,572.58	-	\$0.00	
Earthwork	CY	\$16.00	26,017.19	\$416,274.98	
New Roadway	Lane-Mi.	\$364,019.00	1.75	\$636,924.08	
Overlay Existing Roadway	Lane-Mi.	\$118,426.77	0.85	\$100,535.66	
Reconstruct Existing Roadway	Lane-Mi.	\$362,640.89	0.91	\$331,728.27	
Traffic Signal Interconnect	Lin. Ft.	\$30.00	-	\$0.00	
New Traffic Signal Installation	EA	\$300,000.00	-	\$0.00	
Illumination	Mi.	\$420,000.00	1.46	\$612,500.00	
Landscaping	SQ. Ft.	\$3.00	44,985.60	\$134,956.80	
New Separated Multi-Use Path	Lane-Mi.	\$160,873.51	0.51	\$82,353.73	
Cast-in-Place Segmental (Balanced Cantilever) Bridges (Main Channel)	SQ. Ft.	\$300.00	-	\$0.00	
Precast Segmental (Span-By-Span) Bridges (West Approach Spans)	SQ. Ft.	\$150.00	218,950.00	\$32,842,500.00	
Prestressed I-Girder Bridges (HWY 22 Ramp Spans over Old RR Trestle/Multi-Use Path)	SQ. Ft.	\$145.00	28,440.00	\$4,123,800.00	
Steel Tub Girder Bridges (Multi-Use Path Structure over Wallace/Edgewater Intersection)	SQ. Ft.	\$275.00	29,100.00	\$8,002,500.00	
Retaining Walls	SQ. Ft.	\$65.00	22,543.00	\$1,465,295.00	
Subtotal 1:				\$48,749,368.52	
Construction Surveying	1.0-2.5%	1%		\$487,493.69	
TP&DT	3.0-8.0%	3%		\$1,462,481.06	
Mobilization	8.0-10.0%	8%		\$3,899,949.48	
Erosion Control	0.5-2.0%	0.50%		\$243,746.84	
New Right of Way Acquisition (UFS Acquisition Report)					
Subtotal 2:				\$6,093,671.06	
Subtotals 1 & 2:				\$54,843,039.58	
Contingency	30-40%	40%		\$21,937,215.83	
Total:				\$76,780,255.41	
Escalation (Build Year 2020)	%	3.00%		\$12,229,104.11	
Subtotal 3:				\$89,009,359.52	
Design Engineering	8%			\$7,120,748.76	
Construction Engineering	8%			\$7,120,748.76	
Subtotal 4:				\$14,241,497.52	
Grand Total (subtotals 3&4):				\$103,250,857.04	
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Principal Consultant					
Project: P034882 Salem River Crossing					
Cost Estimating Concept Component Matrix		Date	Name	Date	Name
Prepared By:		5/31/2016	Dan Pavela	5/31/2016	Bob Bochsler
Checked By:					
{Preferred Alternative} Phase B Summary					
Bid Item	Unit	Unit Cost	Quantity	Total	
Curb, Gutter, & Drainage with 5' Sidewalk (one side)	Mi.	\$618,596.99	0.86	\$531,313.89	
Curb, Gutter, & Drainage with 6' Sidewalk (one side)	Mi.	\$643,886.18	0.71	\$456,329.94	
Curb, Gutter, & Drainage with 8' Sidewalk (one side)	Mi.	\$699,114.98	0.96	\$674,089.84	
Curb, Gutter, & Drainage with 12' Sidewalk (one side)	Mi.	\$809,572.58	0.45	\$365,380.96	
Earthwork	CY	\$16.00	198,049.11	\$3,168,785.76	
New Roadway	Lane-Mi.	\$364,019.00	4.39	\$1,596,983.97	
Overlay Existing Roadway	Lane-Mi.	\$118,426.77	0.64	\$75,259.69	
Reconstruct Existing Roadway	Lane-Mi.	\$362,640.89	5.70	\$2,068,323.68	
Traffic Signal Interconnect	Lin. Ft.	\$30.00	3,282.00	\$98,460.00	
New Traffic Signal Installation	EA	\$300,000.00	4.00	\$1,200,000.00	
Illumination	Mi.	\$420,000.00	2.07	\$871,022.73	
Landscaping	SQ. Ft.	\$3.00	44,985.60	\$134,956.80	
New Separated Multi-Use Path	Lane-Mi.	\$160,873.51	1.09	\$174,838.22	
Cast-in-Place Segmental (Balanced Cantilever) Bridges (Main Channel)	SQ. Ft.	\$300.00	172,451.00	\$51,735,300.00	
Precast Segmental (Span-By-Span) Bridges (West Approach Spans)	SQ. Ft.	\$150.00	279,371.00	\$41,905,650.00	
Prestressed I-Girder Bridges (HWY 22 Ramp Spans over Old RR Trestle/Multi-Use Path)	SQ. Ft.	\$145.00	-	\$0.00	
Steel Tub Girder Bridges (Multi-Use Path Structure over Wallace/Edgewater Intersection)	SQ. Ft.	\$275.00	-	\$0.00	
Retaining Walls	SQ. Ft.	\$65.00	82,622.00	\$5,370,430.00	
Subtotal 1:				\$110,427,125.48	
Construction Surveying	1.0-2.5%	1%		\$1,104,271.25	
TP&DT	3.0-8.0%	3%		\$3,312,813.76	
Mobilization	8.0-10.0%	8%		\$8,834,170.04	
Erosion Control	0.5-2.0%	0.50%		\$552,135.63	
New Right of Way Acquisition (UFS Acquisition Report)					
Subtotal 2:				\$13,803,390.68	
Subtotals 1 & 2:				\$124,230,516.16	
Contingency	30-40%	40%		\$49,692,206.46	
Total:				\$173,922,722.63	
Escalation (Build Year 2020)	%	3.00%		\$27,701,380.65	
Subtotal 3:				\$201,624,103.27	
Design Engineering	8%			\$16,129,928.26	
Construction Engineering	8%			\$16,129,928.26	
Subtotal 4:				\$32,259,856.52	
Grand Total (subtotals 3&4):				\$233,883,959.80	
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Principal Consultant					
Project: P034882 Salem River Crossing					
Cost Estimating Concept Component Matrix		Date	Name	Date	Name
Prepared By:		5/31/2016	Dan Pavela	5/31/2016	Bob Bochsler
Checked By:					
{Preferred Alternative} Phase M South Summary					
Bid Item	Unit	Unit Cost	Quantity	Total	
Curb, Gutter, & Drainage with 5' Sidewalk (one side)	Mi.	\$618,596.99	1.61	\$998,073.44	
Curb, Gutter, & Drainage with 6' Sidewalk (one side)	Mi.	\$643,886.18	0.23	\$147,069.46	
Curb, Gutter, & Drainage with 8' Sidewalk (one side)	Mi.	\$699,114.98	-	\$0.00	
Curb, Gutter, & Drainage with 12' Sidewalk (one side)	Mi.	\$809,572.58	0.22	\$174,487.42	
Earthwork	CY	\$16.00	37,362.49	\$597,799.85	
New Roadway	Lane-Mi.	\$364,019.00	3.26	\$1,187,014.47	
Overlay Existing Roadway	Lane-Mi.	\$118,426.77	0.53	\$63,276.83	
Reconstruct Existing Roadway	Lane-Mi.	\$362,640.89	0.47	\$169,776.15	
Traffic Signal Interconnect	Lin. Ft.	\$30.00	3,862.00	\$115,860.00	
New Traffic Signal Installation	EA	\$300,000.00	2.00	\$600,000.00	
Illumination	Mi.	\$420,000.00	1.20	\$505,113.64	
Landscaping	SQ. Ft.	\$3.00	44,985.60	\$134,956.80	
New Separated Multi-Use Path	Lane-Mi.	\$160,873.51	-	\$0.00	
Cast-in-Place Segmental (Balanced Cantilever) Bridges (Main Channel)	SQ. Ft.	\$300.00	-	\$0.00	
Precast Segmental (Span-By-Span) Bridges (West Approach Spans)	SQ. Ft.	\$150.00	-	\$0.00	
Prestressed I-Girder Bridges (HWY 22 Ramp Spans over Old RR Trestle/Multi-Use Path)	SQ. Ft.	\$145.00	-	\$0.00	
Steel Tub Girder Bridges (Multi-Use Path Structure over Wallace/Edgewater Intersection)	SQ. Ft.	\$275.00	-	\$0.00	
Retaining Walls	SQ. Ft.	\$65.00	-	\$0.00	
Subtotal 1:				\$4,693,428.05	
Construction Surveying	1.0-2.5%	1%		\$46,934.28	
TP&DT	3.0-8.0%	3%		\$140,802.84	
Mobilization	8.0-10.0%	8%		\$375,474.24	
Erosion Control	0.5-2.0%	0.50%		\$23,467.14	
New Right of Way Acquisition (UFS Acquisition Report)					
Subtotal 2:				\$586,678.51	
Subtotals 1 & 2:				\$5,280,106.56	
Contingency	30-40%	40%		\$2,112,042.62	
Total:				\$7,392,149.18	
Escalation (Build Year 2020)	%	3.00%		\$1,177,377.72	
Subtotal 3:				\$8,569,526.90	
Design Engineering	8%			\$685,562.15	
Construction Engineering	8%			\$685,562.15	
Subtotal 4:				\$1,371,124.30	
Grand Total (subtotals 3&4):				\$9,940,651.20	
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Principal Consultant					
Project: P034882 Salem River Crossing					
Cost Estimating Concept Component Matrix		Date	Name	Date	Name
Prepared By:		5/31/2016	Dan Pavela	5/31/2016	Bob Bochsler
Checked By:					
{Preferred Alternative} Phase M North Summary					
Bid Item	Unit	Unit Cost	Quantity	Total	
Curb, Gutter, & Drainage with 5' Sidewalk (one side)	Mi.	\$618,596.99	0.96	\$595,048.13	
Curb, Gutter, & Drainage with 6' Sidewalk (one side)	Mi.	\$643,886.18	-	\$0.00	
Curb, Gutter, & Drainage with 8' Sidewalk (one side)	Mi.	\$699,114.98	-	\$0.00	
Curb, Gutter, & Drainage with 12' Sidewalk (one side)	Mi.	\$809,572.58	1.10	\$888,996.56	
Earthwork	CY	\$16.00	29,151.44	\$466,423.11	
New Roadway	Lane-Mi.	\$364,019.00	3.37	\$1,225,197.40	
Overlay Existing Roadway	Lane-Mi.	\$118,426.77	0.15	\$17,182.72	
Reconstruct Existing Roadway	Lane-Mi.	\$362,640.89	0.05	\$18,584.20	
Traffic Signal Interconnect	Lin. Ft.	\$30.00	-	\$0.00	
New Traffic Signal Installation	EA	\$300,000.00	-	\$0.00	
Illumination	Mi.	\$420,000.00	1.17	\$493,181.82	
Landscaping	SQ. Ft.	\$3.00	44,985.60	\$134,956.80	
New Separated Multi-Use Path	Lane-Mi.	\$160,873.51	-	\$0.00	
Cast-in-Place Segmental (Balanced Cantilever) Bridges (Main Channel)	SQ. Ft.	\$300.00	-	\$0.00	
Precast Segmental (Span-By-Span) Bridges (West Approach Spans)	SQ. Ft.	\$150.00	-	\$0.00	
Prestressed I-Girder Bridges (HWY 22 Ramp Spans over Old RR Trestle/Multi-Use Path)	SQ. Ft.	\$145.00	-	\$0.00	
Steel Tub Girder Bridges (Multi-Use Path Structure over Wallace/Edgewater Intersection)	SQ. Ft.	\$275.00	-	\$0.00	
Retaining Walls	SQ. Ft.	\$65.00	-	\$0.00	
Subtotal 1:				\$3,839,570.73	
Construction Surveying	1.0-2.5%	1%		\$38,395.71	
TP&DT	3.0-8.0%	3%		\$115,187.12	
Mobilization	8.0-10.0%	8%		\$307,165.66	
Erosion Control	0.5-2.0%	0.50%		\$19,197.85	
New Right of Way Acquisition (UFS Acquisition Report)					
Subtotal 2:				\$479,946.34	
Subtotals 1 & 2:				\$4,319,517.08	
Contingency	30-40%	40%		\$1,727,806.83	
Total:				\$6,047,323.91	
Escalation (Build Year 2020)	%	3.00%		\$963,181.92	
Subtotal 3:				\$7,010,505.82	
Design Engineering	8%			\$560,840.47	
Construction Engineering	8%			\$560,840.47	
Subtotal 4:				\$1,121,680.93	
Grand Total (subtotals 3&4):				\$8,132,186.76	
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Principal Consultant					
Project: P034882 Salem River Crossing					
Cost Estimating Concept Component Matrix		Date	Name	Date	Name
Prepared By:		5/31/2016	Dan Pavela	5/31/2016	Bob Bochsler
Checked By:					
{Preferred Alternative} Phase OH Summary					
Bid Item	Unit	Unit Cost	Quantity	Total	
Curb, Gutter, & Drainage with 5' Sidewalk (one side)	Mi.	\$618,596.99	-	\$0.00	
Curb, Gutter, & Drainage with 6' Sidewalk (one side)	Mi.	\$643,886.18	-	\$0.00	
Curb, Gutter, & Drainage with 8' Sidewalk (one side)	Mi.	\$699,114.98	-	\$0.00	
Curb, Gutter, & Drainage with 12' Sidewalk (one side)	Mi.	\$809,572.58	-	\$0.00	
Earthwork	CY	\$16.00	42,200.61	\$675,209.73	
New Roadway	Lane-Mi.	\$364,019.00	-	\$0.00	
Overlay Existing Roadway	Lane-Mi.	\$118,426.77	-	\$0.00	
Reconstruct Existing Roadway	Lane-Mi.	\$362,640.89	4.24	\$1,537,400.48	
Traffic Signal Interconnect	Lin. Ft.	\$30.00	2,272.00	\$68,160.00	
New Traffic Signal Installation	EA	\$300,000.00	2.00	\$600,000.00	
Illumination	Mi.	\$420,000.00	-	\$0.00	
Landscaping	SQ. Ft.	\$3.00	-	\$0.00	
New Separated Multi-Use Path	Lane-Mi.	\$160,873.51	-	\$0.00	
Cast-in-Place Segmental (Balanced Cantilever) Bridges (Main Channel)	SQ. Ft.	\$300.00	-	\$0.00	
Precast Segmental (Span-By-Span) Bridges (West Approach Spans)	SQ. Ft.	\$150.00	-	\$0.00	
Prestressed I-Girder Bridges (HWY 22 Ramp Spans over Old RR Trestle/Multi-Use Path)	SQ. Ft.	\$145.00	-	\$0.00	
Steel Tub Girder Bridges (Multi-Use Path Structure over Wallace/Edgewater Intersection)	SQ. Ft.	\$275.00	-	\$0.00	
Retaining Walls	SQ. Ft.	\$65.00	-	\$0.00	
Subtotal 1:				\$2,880,770.21	
Construction Surveying	1.0-2.5%	1%		\$28,807.70	
TP&DT	3.0-8.0%	3%		\$86,423.11	
Mobilization	8.0-10.0%	8%		\$230,461.62	
Erosion Control	0.5-2.0%	0.50%		\$14,403.85	
New Right of Way Acquisition (UFS Acquisition Report)					
Subtotal 2:				\$360,096.28	
Subtotals 1 & 2:				\$3,240,866.48	
Contingency	30-40%	40%		\$1,296,346.59	
Total:				\$4,537,213.08	
Escalation (Build Year 2020)	%	3.00%		\$722,660.41	
Subtotal 3:				\$5,259,873.49	
Design Engineering	8%			\$420,789.88	
Construction Engineering	8%			\$420,789.88	
Subtotal 4:				\$841,579.76	
Grand Total (subtotals 3&4):				\$6,101,453.25	
Values shown are linked to "{Preferred Alt} Concept Summary" tab do not edit on this page					

Principal Consultant
 Project: P034882 Salem River Crossing
 Cost Estimating Quantity Calculations Summary

Consultant
 INDEPENDENT TAKEOFF SUMMARY

	Date	Name	Date	Name
Prepared By:	5/31/2016	Dan Pavela	5/31/2016	Bob Bochsler
Checked By:				

Summary of Roadway Tab

New Roadway		Overlay Existing Roadway		Reconstruct Existing Roadway		Multi-Use Path	
Type Code	Lane-Mi.	Type Code	Lane-Mi.	Type Code	Lane-Mi.	Type Code	Lane-Mi.
Phase R	1.75	Phase R	0.85	Phase R	0.91	Phase R	0.51
Phase B	4.39	Phase B	0.64	Phase B	5.70	Phase B	1.09
Phase M_South	3.26	Phase M_South	0.53	Phase M_South	0.47	Phase M_South	0.00
Phase M_North	3.37	Phase M_North	0.15	Phase M_North	0.05	Phase M_North	0.00
Phase OH	0.00	Phase OH	0.00	Phase OH	4.24	Phase OH	0.00

Summary of Sidewalk Tab

5' Wide Sidewalk		6' Wide Sidewalk		8' Wide Sidewalk		12' Wide Sidewalk	
Width	Miles	Width	Miles	Width	Miles	Width	Miles
Phase R	0.00	Phase R	0.00	Phase R	0.00	Phase R	0.00
Phase B	0.86	Phase B	0.71	Phase B	0.96	Phase B	0.45
Phase M_South	1.61	Phase M_South	0.23	Phase M_South	0.00	Phase M_South	0.22
Phase M_North	0.96	Phase M_North	0.00	Phase M_North	0.00	Phase M_North	1.10
Phase OH	0.00	Phase OH	0.00	Phase OH	0.00	Phase OH	0.00

Summary of Earthwork Tab

Earthwork		Cu. Yds.
Phase R		26017.19
Phase B		198049.11
Phase M_South		37362.49
Phase M_North		29151.44
Phase OH		42200.61

Summary of Illumination Tab

ILLUMINATION		Miles
Phase R		1.46
Phase B		2.07
Phase M_South		1.20
Phase M_North		1.17
Phase OH		0.00

Summary of Signal Interconnect Tab

Signal Interconnect		Lin. Ft.
Phase R		0.00
Phase B		3282.00
Phase M_South		3862.00
Phase M_North		0.00
Phase OH		2272.00

Summary of Landscape Tab

Landscaping		Sq. Ft.
Phase R		44985.60
Phase B		44985.60
Phase M_South		44985.60
Phase M_North		44985.60
Phase OH		0.00

Summary of Traffic Signals Tab

Traffic Signal Install		Each
Phase R		0.00
Phase B		4.00
Phase M_South		2.00
Phase M_North		0.00
Phase OH		2.00

Summary of Bridge Tab

Cast-in-Place Segmental		Precast Segmental		Prestressed I-Girder		Steel Tub Girder	
Type Code	Sq. Ft.	Type Code	Sq. Ft.	Type Code	Sq. Ft.	Type Code	Sq. Ft.
Phase R	0.00	Phase R	218950.00	Phase R	29100.00	Phase R	28440.00
Phase B	172451.00	Phase B	279371.00	Phase B	0.00	Phase B	0.00
Phase M_South	0.00	Phase M_South	0.00	Phase M_South	0.00	Phase M_South	0.00
Phase M_North	0.00	Phase M_North	0.00	Phase M_North	0.00	Phase M_North	0.00

Summary of Walls Tab

Retaining Walls		Sq. Ft.
Phase R		22543.00
Phase B		82622.00
Phase M_South		
Phase M_North		

Principal Consultant
Project: P034882 Salem River Crossing

Prepared By:
Checked By:

Date	Name	Date	Name
Consultant	Dan Pavela	12/9/2015	Bob Bochsler

CONVERTING SQ. FT. TO LANE MILE FOR ROADWAY BID ITEMS

Preferred Alternative

Pine Street - Extg. Street										
Sq Ft	Length	Width	Lanes	Miles	Lane Miles					
		Sq Ft / Length	Width / 12'	Length / 5280'	Lanes * Miles	Segment of Street Description	Phase (R, B, M South, M North, & OH)	Type of Roadway Work (N, O, RC, & MUP)	Remarks	
13,568	274.00	49.52	4.13	0.05	0.21	Pine St: from 4th St to Intersection @ Liberty St.	B	RC		
5,822	78.00	74.64	6.22	0.01	0.09	Pine St: Intersection of Pine and Liberty	B	RC	captures work just in intersection	
1,485	31.00	47.90	3.99	0.01	0.02	Pine St: from Liberty to EB Curve #2 PT	B	RC		
11,581	235.00	49.28	4.11	0.04	0.18	Pine St: from EB Curve #2 PT to Commercial St	B	N		
6,933	75.00	92.44	7.70	0.01	0.11	Intersection of Pine and Commercial	B	N		
34,096	483.10	70.58	5.88	0.09	0.54	From int. @ commercial to Abut. on EB ramp	B	N		
Total Lane miles for Street					1.16					
Hickory Street - Extg. Street										
Sq Ft	Length	Width	Lanes	Miles	Lane Miles					
		Sq Ft / Length	Width / 12'	Length / 5280'	Lanes * Miles	Segment of Street Description	Phase (R, B, M South, M North, & OH)	Type of Roadway Work (N, O, RC, & MUP)	Remarks	
3,356	142.00	23.63	1.97	0.03	0.05	142 ft. East of Liberty to the inter. @ Liberty	B	RC		
13,417	273.00	49.15	4.10	0.05	0.21	West side of inter. @ liberty to the Inter @ commercial	B	RC		
11,472	182.00	63.03	5.25	0.03	0.18	Inter. Of Commercial to WB Curve PT on Hickory	B	N		
18,108	429.00	42.21	3.52	0.08	0.29	From WB Curve PT to WB Ramp Abut	B	N		
Total Lane miles for Street					0.73					
Liberty Street - Extg Street										
Sq Ft	Length	Width	Lanes	Miles	Lane Miles					
		Sq Ft / Length	Width / 12'	Length / 5280'	Lanes * Miles	Segment of Street Description	Phase (R, B, M South, M North, & OH)	Type of Roadway Work (N, O, RC, & MUP)	Remarks	
2,253	53.00	42.51	3.54	0.01	0.04	From south end of constr to the start of Pine St Insect	B	O		
18,975	423.00	44.86	3.74	0.08	0.30	From North end of construction limits to inter. Pine	B	O		
Total Lane miles for Street					0.34					
Commercial Street - Extg. Street										
Sq Ft	Length	Width	Lanes	Miles	Lane Miles					
		Sq Ft / Length	Width / 12'	Length / 5280'	Lanes * Miles	Segment of Street Description	Phase (R, B, M South, M North, & OH)	Type of Roadway Work (N, O, RC, & MUP)	Remarks	
8,477	182.00	46.58	3.88	0.03	0.13	South limits of construction to inter @ Pine	B	O		
10,560	225.00	46.93	3.91	0.04	0.17	From Inter @ Pine to Inter. @ Hickory	B	O		
74,210	1440.00	51.53	4.29	0.27	1.17	Inter. @ Hickory to North limits of Constr. + Curve	B	RC		
Total Lane miles for Street					1.47					
Front Street - Proposed Street										
Sq Ft	Length	Width	Lanes	Miles	Lane Miles					
		Sq Ft / Length	Width / 12'	Length / 5280'	Lanes * Miles	Segment of Street Description	Phase (R, B, M South, M North, & OH)	Type of Roadway Work (N, O, RC, & MUP)	Remarks	
66,829	1944.00	34.38	2.86	0.37	1.05	Frm Insection @ Columbia to End Constr north end	B	N		
7,132	197.00	36.20	3.02	0.04	0.11	New access to new Front street southend (Complete)	B	N		
16,219	531.00	30.54	2.55	0.10	0.26	New access to new Front street Northend (Complete)	B	N		
Total Lane miles for Street					1.42					
East + West shore of project Phase B - MUP										
Sq Ft	Length	Width	Lanes	Miles	Lane Miles					
		Sq Ft / Length	Width / 12'	Length / 5280'	Lanes * Miles	Segment of Street Description	Phase (R, B, M South, M North, & OH)	Type of Roadway Work (N, O, RC, & MUP)	Remarks	
29,300	2833.00	10.34	0.86	0.54	0.46	MUP @ grade East phase B	B	MUP		
11,364	947.00	12.00	1.00	0.18	0.18	MUP On MSE Wall to abutments from Grade	B	MUP		
28,196	2350.00	12.00	1.00	0.45	0.45	MUP West End of Phase B North and South to Phase Limits	B	MUP		
Total Lane miles for Street					1.09					

Wallace Road - Extg. Street									
Sq Ft	Length	Width	Lanes	Miles	Lane Miles				
		Sq Ft / Length	Width / 12'	Length / 5280'	Lanes * Miles	Segment of Street Description	Phase (R, B, M South, M North, & OH)	Type of Roadway Work (N, O, RC, & MUP)	Remarks
118,544	1322.00	89.67	7.47	0.25	1.87	Inter. Of Hope/Wallace to the North limits of Const	B	RC	
15,205	131.00	116.07	9.67	0.02	0.24	Insection @ Hope/Wallace	B	RC	
8,200	146.00	56.16	4.68	0.03	0.13	Hope Ave West of Inter. @ Wallace Road	B	RC	Short piece
100,490	1092.00	92.02	7.67	0.21	1.59	Inter Hope/Wallace South to Inter. Beckett St	B	RC	
1,603	41.00	39.10	3.26	0.01	0.03	Turn-Out Wallace/Lynda Lane	B	RC	looks like only curb and sidewalk upgrade, not total reconstruct
3,188	79.00	40.35	3.36	0.01	0.05	Turn-Out Wallace/Empier Street	B	RC	looks like only curb and sidewalk upgrade, not total reconstruct
1,576	38.00	41.47	3.46	0.01	0.02	Turn-Out 200 ft North on Westside of Wallace	B	RC	looks like only curb and sidewalk upgrade, not total reconstruct
105,596	1022.00	103.32	8.61	0.19	1.67	Hope Ave between int of Hope/Marine and Hope/Wallace	B	N	Bob Added this here
710	21.00	33.81	2.82	0.00	0.01	Turn-Out 220' N of Beckett Road W. Side	B	RC	
Total Lane miles for Street					5.60				
Marine Drive (Phase M North)- Extg. Street									
Sq Ft	Length	Width	Lanes	Miles	Lane Miles				
		Sq Ft / Length	Width / 12'	Length / 5280'	Lanes * Miles	Segment of Street Description	Phase (R, B, M South, M North, & OH)	Type of Roadway Work (N, O, RC, & MUP)	Remarks
87,090	1638.00	53.17	4.43	0.31	1.37	Round-About @Riverbend (Complete) to 300' South frm Center	M_North	N	All round about down to MD 88+22.68 PT
27,916	997.00	28.00	2.33	0.19	0.44	Frm 300' south of Round-about to edge of Sub Division	M_North	N	Down to MD curve #9 marker 250ft N of Harritt DR
8,040	246.00	32.68	2.72	0.05	0.13	From edge of Sub Division to Harritt Drive Inter.	M_North	O	
2,690	53.00	50.75	4.23	0.01	0.04	Harritt Drive Wallace Rd/Marine Dr Intersection	M_North	N	
1,153	483.00	2.39	0.20	0.09	0.02	Harritt Drive from Wallace Rd to Marine Dr	M_North	O	
95,558	2177.00	43.89	3.66	0.41	1.51	Marine Drive From Harritt to Hope Ave	M_North	N	
3,247	90.00	36.08	3.01	0.02	0.05	Turn-Out @ River Valley Dr on Marine Drive	M_North	RC	River Valley DR
Total Lane miles for Street					3.56				
Marine Drive (Phase M South) - Extg. Street									
Sq Ft	Length	Width	Lanes	Miles	Lane Miles				
		Sq Ft / Length	Width / 12'	Length / 5280'	Lanes * Miles	Segment of Street Description	Phase (R, B, M South, M North, & OH)	Type of Roadway Work (N, O, RC, & MUP)	Remarks
73,245	1016.00	72.09	6.01	0.19	1.16	From south end Hope Ave Inter.(include Ramp) To Beckett Street	M_South	N	This segment should include the ramp to the WB Bridge
2,229	77.00	28.95	2.41	0.01	0.04	Turn-Out W. Side of Marine Drive 300' N. of Beckett Street	M_South	RC	
4,443	75.00	59.24	4.94	0.01	0.07	Inter. Marine Dr./Beckett Street	M_South	N	
32,277	752.00	42.92	3.58	0.14	0.51	Beckett Street frm Marine Drive to Wallace Rd.	M_South	N	
15,814	394.00	40.14	3.34	0.07	0.25	Frm S. end Beckett St Inter to N end of 5th Av Inter.	M_South	N	New? 5th st into existing development
2,998	58.00	51.69	4.31	0.01	0.05	5th Ave / Marine Drive Intersection	M_South	N	
72,381	2208.00	32.78	2.73	0.42	1.14	from south end of inter. @ 5th Ave to Glen Creek Road inc Inter.	M_South	N	
3,268	68.00	48.06	4.00	0.01	0.05	loop Section W side of Marine Drive @ Cameo Street	M_South	N	
2,182	76.00	28.71	2.39	0.01	0.03	Turn-Out off W. Side Marine Drive @ Calico St.	M_South	N	
2,162	74.00	29.22	2.43	0.01	0.03	Taybin Rd from Marine Dr West to limit	M_South	O	plus 325ft of just right hand curb?
30,255	672.00	45.02	3.75	0.13	0.48	Glen Creek Road from Marine Dr to limit of Construction	M_South	O	
7,048	83.00	84.92	7.08	0.02	0.11	Inter. Marine Drive / Glen Creek Road	M_South	RC	
1,437	38.00	37.82	3.15	0.01	0.02	Turn-Out 500' West off Northside of Glen Creek Rd	M_South	O	
20,386	453.00	45.00	3.75	0.09	0.32	Extension of Glen Creek Rd South of Marine Dr. Inter.	M_South	RC	
Total Lane miles for Street					4.26				
Wallace Road - Extg. Street									
Sq Ft	Length	Width	Lanes	Miles	Lane Miles				
		Sq Ft / Length	Width / 12'	Length / 5280'	Lanes * Miles	Segment of Street Description	Phase (R, B, M South, M North, & OH)	Type of Roadway Work (N, O, RC, & MUP)	Remarks
						NOT USED			
719	21.00	34.24	2.85	0.00	0.01	Turn-Out North End of Inter. @ Beckett St. and Wallace Rd	OH	RC	
87,218	882.00	98.89	8.24	0.17	1.38	S. End of Beckett St Inter to N. End of Orchard Hghts Inter	OH	RC	
17,172	138.00	124.43	10.37	0.03	0.27	Inter @ Orchard Hght / Wallace Rd	OH	RC	
79,375	900.00	88.19	7.35	0.17	1.25	S. End Orchard Hghts Inter to South limits of Construction	OH	RC	
74,407	1432.00	51.96	4.33	0.27	1.17	Orchard Hghts frm Wallace Rd to West Limits of Construction	OH	RC	
1,550	50.00	31.00	2.58	0.01	0.02	Turn-Out Northside of Orchard Hghts at Valley Dr.	OH	RC	
2,180	54.00	40.37	3.36	0.01	0.03	Turn-Out Southside of Orchard Hghts at Valley Ave	OH	RC	
2,613	67.00	39.00	3.25	0.01	0.04	Turn-Out Southside of Orchard Hghts at Overlook Ave	OH	RC	
593	20.00	29.65	2.47	0.00	0.01	Turn-Out Westside off Wallace Rd. @ Taybin Rd.	OH	RC	
1,773	35.00	50.66	4.22	0.01	0.03	Turn-Out Eastside off Wallace Rd. @ Taybin Rd.	OH	RC	
1,012	20.00	50.60	4.22	0.00	0.02	Turn-Out Eastside of Wallace Rd. @ 150' South of Taybin Rd.	OH	RC	
Total Lane miles for Street					4.24				

Principal Consultant
Project: P034882 Salem River Crossing

Prepared By:	Date	Name	Date	Name
	Consultant	Dan Pavela	12/9/2015	Bob Bochsler
Checked By:				
User Input quantities from CAD Drawing Measurements		Input Phase for Street Segement	Input Sidewalk Width	
Input Description of Street Segment that Quantity is from				

CONVERTING LINEAR FT. TO MILES FOR SIDEWALK BID ITEMS

Preferred Alternative

Length		Segment of Street Description	Phase (R, B, M South, M North, & OH)	Sidewalk Width (5, 6, 8, & 12)	Remarks
Feet	Miles				
Pine Street					
610.00	0.12	Pine St: from 4th St to Intersection @ Liberty St.	B	6	Per bid Assumption provided all items are for one sided measured independently Sidewalk terminal points from middle of radius to middle of radius.
626.00	0.12	Pine St: from Liberty to Commercial	B	6	
Hickory Street					
260.00	0.05	142 ft. East of Liberty to the inter. @ Liberty	B	6	CAD measurement was 10 feet wide
555.00	0.11	Inter. @ Liberty Street to the Inter @ Commercial Street	B	6	
114.00	0.02	Inter. Of Commercial to WB Curve PT on Hickory	B	12	
Liberty Street					
130.00	0.02	From south end of constr to Pine St Insect	B	6	
578.00	0.11	From Intersection of Pine Street to Intersection of Hickory	B	6	
165.00	0.03	From intersection of Hickory to North end of Construction on Liberty	B	6	
Commercial Street					
505.00	0.10	From Intersection of Pine Street to Intersection of Hickory	B	6	Section of S/W south of Pine on Commercial was included as part of MUP West side was captured as MUP
313.00	0.06	From intersection of Hickory to Locust Street Intersection	B	6	
Front Street					
4,535.00	0.86	From South end limits of construction to the North end limits of construction (Total)	B	5	Include S/W for Side Streets
Hope Road & Wallace Drive					
1,162.00	0.22	North side From Marine Drive to Wallace Road	B	12	
1,107.00	0.21	South side From Marine Drive to Wallace Road	B	12	
1,514.00	0.29	West Side Wallace Road from north limits of phase B to Hope Ave	B	8	
1,307.00	0.25	East Side Wallace Road from north limits of phase B to Hope Ave	B	8	
1,278.00	0.24	West Side Wallace Road from Hope Ave to Beckitt St.	B	8	
992.00	0.19	East Side Wallace Road from Hope Ave to Beckitt St.	B	8	
Marine Drive					
961.00	0.18	Northside of Round-About at Riverbend Rd	M_North	12	
1,788.00	0.34	Southside of Marine Dr from N. end of Riverbend to Harritt Drive	M_North	5	
402.00	0.08	Riverbend Road Road About Sans 5' Sections	M_North	12	
1,036.00	0.20	North and South on Harritt Dr.	M_North	5	
1,883.00	0.36	West Side Marine Drive from Harritt thru turn out @ River Valley Rd	M_North	5	
372.00	0.07	West Side thru River Valley Road turn-out to Inter Hope Ave	M_North	5	
4,435.00	0.84	East Side from South End of Riverbend Rd to MUP limits near Reiver Valley Rd.	M_North	12	

Marine Drive					
Length		Segment of Street Description	Phase (R, B, M South, M North, & OH)	Sidewalk Width (5, 6, 8, & 12)	Remarks
Feet	Miles				
986.00	0.19	Westside (incl Turn-Outs) from Hope Ave to Beckett Street	M_South	5	
705.00	0.13	Eastside from MUP to Beckett Street	M_South	12	
2,801.00	0.53	Eastside of Marine Drive From Beckett St (incl Inter) to Glen Creek Rd	M_South	5	
433.00	0.08	Westside of Marine Drive from Beckett St to 5th Ave	M_South	12	
1,285.00	0.24	5th Ave (total)	M_South	5	
2,487.00	0.47	Westside from 5th Ave to Taybin Rd (turn outs @ Cameo and Calico inclusive)	M_South	5	
383.00	0.07	Taybin Road South	M_South	5	
577.00	0.11	Westside from Taybin Road to Glen Creek Road	M_South	5	
707.00	0.13	Northside Glen Creek Road (including turn-out) North of Marine Dr	M_South	6	
499.00	0.09	Southside Glen Creek Road North of Marine Dr	M_South	6	

Principal Consultant
 Project: P034882 Salem River Crossing

Prepared By:
 Checked By:

Date	Name	Date	Name
Consultant	Dan Pavel	5/31/2016	Bob Bochsler
User Input quantities from CAD Drawing Measurements		Input Phase for Street Segement	
Input Description of Street Segement that Quantity is from			

CONVERTING LINEAR FT. TO MILES FOR ILLUMINATION BID ITEMS

Preferred Alternative

Length		Segment of Street Description	Phase (R, B, M South, M North, & OH)	Remarks
Feet	Miles			
Pine St:				
250.00	0.05	LIBERTY - COMMERCIAL	B	
500.00	0.09	COMMERCIAL - BRIDGE	B	
Total	0.14			
HICKORY ST				
500.00	0.09	COMMERCIAL - BRIDGE	B	
Total	0.09			
MAIN BRIDGE				
1,550.00	0.29	WB MAINSPAN	B	
2,400.00	0.45	WB APPROACH	B	
2,400.00	0.45	EB MS	B	
1,550.00	0.29	EB APPROACH	B	
Total	1.50			
FRONT ST				
1,800.00	0.34	S - N LIMITS	B	
Total	0.34			
RIVER BEND RD				
2,400.00	0.45	LIMITS-LIMITS	M_North	
Total	0.45			
MARINE DR				
3,800.00	0.72	ROUND-A-BOUT - HOPE AVE	M_North	
1,200.00	0.23	HOPE AVE-BECKETT	M_South	
400.00	0.08	BECKETT - 5TH	M_South	
2,400.00	0.45	5TH AVE - GLEN CR DR	M_South	
2,000.00	0.38	GLEN CR DR - WALLACE RD	R	
Total	1.86			
BECKETT				
Length				

Feet	Miles	Segment of Street Description	Phase (R, B, M South, M North, & OH)	Remarks
750.00	0.14	WALLACE - MARINE DR	M_South	
Total	0.14			
5TH AVE				
Length				
Feet	Miles	Segment of Street Description	Phase (R, B, M South, M North, & OH)	Remarks
500.00	0.09	MARINE DR - EXTENT	M_South	
Total	0.09			
TAYBIN RD				
Length				
Feet	Miles	Segment of Street Description	Phase (R, B, M South, M North, & OH)	Remarks
400.00	0.08	MARIND DR - EXTENTS	M_SOUTH	
Total	0.08			
GLEN CR DR				
Length				
Feet	Miles	Segment of Street Description	Phase (R, B, M South, M North, & OH)	Remarks
700.00	0.13	MARINE DR - EXTENT	M_South	
Total	0.13			
FLYOVER PARALLELING EDGEWATER				
Length				
Feet	Miles	Segment of Street Description	Phase (R, B, M South, M North, & OH)	Remarks
4,600.00	0.87	PARALLEL EDGEWATER	R	
Total	0.87			
EDGEWATER				
Length				
Feet	Miles	Segment of Street Description	Phase (R, B, M South, M North, & OH)	Remarks
1,100.00	0.21	WALLACE RD - EXTENTS	R	
Total	0.21			

Principal Consultant
 Project: P034882 Salem River Crossing

Prepared By:
 Checked By:

Date	Name	Date	Name
Consultant	DAN PAVELA	5/31/2016	BOB BOCHSLER
Input Intersection Street Names			
User Input quantities	Input Phase for Street Segement		

PER EACH FOR TRAFFIC SIGNAL BID ITEMS

Preferred Alternative

Each	Intersection Name	Phase (R, B, M South, M North, & OH)	Remarks
1.00	COMMERCIAL AND LIBERTY	B	
1.00	COMMERCIAL AND HICKORY	B	
1.00	HOPE AND MARINE DR	B	
1.00	HOPE AND WALLACE	B	
1.00	BECKETT AND WALLACE	OH	
1.00	BECKETT AND MARINE DR	M_South	
1.00	ORCH HTS AND WALLACE	OH	
1.00	GLEN CR DR AND MARINE DR	M_South	
Total			

Principal Consultant
 Project: P034882 Salem River Crossing

Prepared By:
 Checked By:

Date	Name	Date	Name
Consultant	Dan Pavela	5/31/2016	Bob Bochsler
Input Name of the Beginning and Ending Cross Streets that Quantity is from			
User Input quantities from CAD Drawing Measurements		Input Phase for Street Segement	

LINEAR FT. FOR INTERCONNECT BID ITEM

Preferred Alternative

Pine St				
Length				
Feet	Beginning Cross Street	Ending Cross Street	Phase (R, B, M South, M North, & OH)	Remarks
345.00	Liberty	Commercial	B	
Total				
345.00				
Commercial St				
Length				
Feet	Beginning Cross Street	Ending Cross Street	Phase (R, B, M South, M North, & OH)	Remarks
314.00	Pine	Hickory	B	
Total				
314.00				
Liberty St				
Length				
Feet	Beginning Cross Street	Ending Cross Street	Phase (R, B, M South, M North, & OH)	Remarks
376.00	Hickory	Pine	B	
Total				
376.00				
Hope Ave				
Length				
Feet	Beginning Cross Street	Ending Cross Street	Phase (R, B, M South, M North, & OH)	Remarks
1,150.00	Wallace	Marine Dr.	B	
Total				
1150.00				
Wallace				
Length				
Feet	Beginning Cross Street	Ending Cross Street	Phase (R, B, M South, M North, & OH)	Remarks
1,097.00	Hope	Beckett	B	
2,272.00	Beckett	Southern ext of OH	OH	
Total				
3369.00				
Marine Dr.				
Length				
Feet	Beginning Cross Street	Ending Cross Street	Phase (R, B, M South, M North, & OH)	Remarks
3,862.00	Hope ave	Glen Cr Rd	M_South	
Total				
3862.00				

Principal Consultant
 Project: P034882 Salem River Crossing

Prepared By:	<i>Date</i>	<i>Name</i>	<i>Date</i>	<i>Name</i>
	Consultant	DAN PAVELA	5/31/2016	BOB BOCHSLER
Checked By:				
Input Description of Bridge Segment that Quantity is from				
User Input quantities from CAD Drawing Measurements		Input Phase for Street Segement		

SQUARE FT. FOR LANDSCAPING BID ITEM

Preferred Alternative

PROJECT				
Area				
Square Feet	Segment of Landscaping Description	Phase (R, B, M South, M North, & OH)		Remarks
44,985.60	6' BEHIND SIDEWALKS FOR ENTIRE PROJECT ASSUMED (7.1MILES * 6FT) X 20% FOR EA PH	B		
44,985.60	6' BEHIND SIDEWALKS FOR ENTIRE PROJECT ASSUMED (7.1MILES * 6FT) X 20% FOR EA PH	R		
44,985.60	6' BEHIND SIDEWALKS FOR ENTIRE PROJECT ASSUMED (7.1MILES * 6FT) X 20% FOR EA PH	M_South		
44,985.60	6' BEHIND SIDEWALKS FOR ENTIRE PROJECT ASSUMED (7.1MILES * 6FT) X 20% FOR EA PH	M_North		
44,985.60	6' BEHIND SIDEWALKS FOR ENTIRE PROJECT ASSUMED (7.1MILES * 6FT) X 20% FOR EA PH	OH		
Total	224928.00			

Principal Consultant
Project: P034882 Salem River Crossing

Prepared By:	Date	Name	Date	Name
	Consultant	Dan Pavela	12/10/2015	Bob Bochsler
Checked By:				
Input Description of Bridge Segment that Quantity is from				
User Input quantities from CAD Drawing Measurements		Input Phase for Street Segement	Input Type of Bridge work	

SQUARE FT. FOR BRIDGE BID ITEMS

Preferred Alternative

Cast-in-Place Segmental (Balanced Cantilever) Bridges (Main Channel)				
Area	Segment of Bridge Description	Phase (R, B, M South, M North, & OH)	Type of Bridge Work (CS)	Remarks
Square Feet				
86,448.00	EB Bridge Main Channel	B	CS	excludes center gap
86,003.00	WB Bridge Main Channel	B	CS	excludes center gap
Total	172451.00			
Precast Segmental (Span-By-Span) Bridges (West Approach Spans)				
Area	Segment of Bridge Description	Phase (R, B, M South, M North, & OH)	Type of Bridge Work (PS)	Remarks
Square Feet				
279,371.00	From West End of West Approach to West End at CIP Briddges	B	PS	
Total	279371.00			
Prestressed I-Girder Bridges (HWY 22 Ramp Spans over Old RR Treslts/Multi-Use Path)				
Area	Segment of Bridge Description	Phase (R, B, M South, M North, & OH)	Type of Bridge Work (PI)	Remarks
Square Feet				
167,668.00	NB Hwy 22 spans over Old RR Trestle @ Marine Drive to South limits of Precast I girder Section	R	PS	
51,282.00	SB Hwy 22 spans over Old RR Trestle @ Marine Drive to South limits of Precast I girder Section	R	PS	
15,180.00	NB Hwy 22 spans over Old RR Trestle Precast I girder Section	R	PI	
13,920.00	SB Hwy 22 spans over Old RR Trestle Precast I girder Section	R	PI	
Total	248050.00			
Steel Tub Girder Bridges (Multi-Use Path Structure over Wallace/Edgewater Intersection)				
Area	Segment of Bridge Description	Phase (R, B, M South, M North, & OH)	Type of Bridge Work (STG)	Remarks
Square Feet				
-	Section of Steel Tub Girders (MUP) @ Wallace/Edgewater (repeat of below?)	R	STG	
28,440.00	MUP Ped Crossing at flyover @ Wallace / Edgewood	R	STG	Can't capturee elsewhere
Total	28440.00			

Principal Consultant
Project: P034882 Salem River Crossing

Prepared By:	Date	Name	Date	Name
	Consultant	Dan Pavela	12/9/2015	Bob Bochsler
Checked By:				

SQ. FT. FOR WALLS BID ITEM AND CU. YDS. OF WALL EARTHWORK

Preferred Alternative

User Input Values and quantities from CAD Drawing Measurements										Input Phase for Street Segement	Input Type of Roadway work for wall area
Input Description of Street Segment that Quantity is from											
Sq Ft	Wall both sides of Street (Yes/No)	Wall Total Sq Ft	Roadway Cut or Fill Between Walls Surface Area of Roadway Between Walls (Sq. Ft.)	Length of Wall	Average Width of Roadway Between Walls (Ft.)	CU. Yds. Of Earthwork between Walls	Cut Wall or Fill Wall (Cut/Fill)	Segment of Street Description	Phase (R, B, M South, M North, & OH)	Type of Roadway Work (N, O, RC, & MUP)	
Pine Street - Proposed Street											
3,430	Yes	6,860.00	38,681.00	462.00	83.73	10,636.19	Fill	Wall from Commercial Street to Abut of EB Ramp on East end of Phase B	B	MUP	
Total Sq. Ft. of Walls for Street			6860.00								
Hickory Street - Proposed Street											
2,672	Yes	5,344.00	26,480.00	454.00	58.33	5,772.11	Fill	Wall from Commercial Street to Abut of WB Ramp on East end of Phase B	B	MUP	
Total Sq. Ft. of Walls for Street			5344.00								
EB Hwy 22 to Marine Dr - Proposed Street											
6,107	No	6,107.00	20,530.00	690.00	29.75	6,729.83	Fill	South most approach behind retaining wall (right wall)	R	N	
1,560	No	1,560.00	4,896.00	122.00	40.13	-	Fill	South most approach behind retaining wall (short left wall)	R	N	
600	No	600.00	-	40.00	-	-	Fill	South most approach behind retaining wall (front wall)	R	N	
1,165	Yes	2,330.00	9,440.00	88.00	107.27	4,628.62	Fill	landing at north end of flyover to tie to marine Dr	R	N	
Total Sq. Ft. of Walls for Street			10597.00								
WB Hwy 22 from Marine Dr BPWB Line - Proposed Street											
2,497	Yes	4,994.00	15,270.00	981.00	15.57	1,439.54	Fill	Approach for HWY 22 flyover	R	N	
1,664	Yes	3,328.00	5,292.00	294.00	18.00	1,109.33	Fill	South approach for MUP flyover	R	MUP	
1,812	Yes	3,624.00	3,336.00	273.00	12.22	820.08	Fill	North Approach for MUP Flyover	R	MUP	
Total Sq. Ft. of Walls for Street			11946.00								
Marine Dr - Proposed Street											
15,378	Yes	30,756.00	140,429.00	1,073.00	130.88	74,540.65	Fill	Walls for Marine Dr between River Valley Dr and Turnout N of Beckett St.	B	N	
(4,613)	No	(4,613.00)	-	205.00	-	-	Fill	Less for area that Hope Ave Ties in.	B	N	
Total Sq. Ft. of Walls for Street			26143.00								
Hope Ave - Proposed Street											
13,516	Yes	27,032.00	135,636.00	965.00	140.56	70,361.01	Fill	Walls for Hope Ave between int of wallace and int of marine	B	N	
2,282	Yes	4,564.00	4,407.00	273.00	16.14	1,364.37	Fill	Walls to support MUP path under Hope for new bridge crossing - South Portion	B	MUP	
4,671	Yes	9,342.00	8,628.00	407.00	21.20	3,667.43	Fill	Walls to support MUP path under Hope for new bridge crossing - North Portion	B	MUP	
Total Sq. Ft. of Walls for Street			40938.00								
Orchard Heights - Proposed Street											
	Wall both	Wall Total	Roadway Cut or Fill Between Walls								

Sq Ft	sides of Street (Yes/No)	Sq Ft	Surface Area of Roadway Between Walls (Sq. Ft.)	Length of Wall	Average Width of Roadway Between Walls (Ft.)	CU. Yds. Of Earthwork between Walls	Cut Wall or Fill Wall (Cut/Fill)	Segment of Street Description	Phase (R, B, M South, M North, & OH)	Type of Roadway Work (N, O, RC, & MUP)
9,982	yes	19,964.00	75,701.00	1,026.00	73.78	27,277.72	Cut		OH	N
Total Sq. Ft. of Walls for Street			19964.00							
Beckett St - Proposed Street										
Sq Ft	Wall both sides of Street (Yes/No)	Wall Total Sq Ft	Roadway Cut or Fill Between Walls Surface Area of Roadway Between Walls (Sq. Ft.)	Length of Wall	Average Width of Roadway Between Walls (Ft.)	CU. Yds. Of Earthwork between Walls	Cut Wall or Fill Wall (Cut/Fill)	Segment of Street Description	Phase (R, B, M South, M North, & OH)	Type of Roadway Work (N, O, RC, & MUP)
1,675	Yes	3,350.00	21,812.00	318.00	68.59	4,255.19	Cut	Cut along beckett st	M_South	N
Total Sq. Ft. of Walls for Street			3350.00							
Wallace St - Proposed Street										
Sq Ft	Wall both sides of Street (Yes/No)	Wall Total Sq Ft	Roadway Cut or Fill Between Walls Surface Area of Roadway Between Walls (Sq. Ft.)	Length of Wall	Average Width of Roadway Between Walls (Ft.)	CU. Yds. Of Earthwork between Walls	Cut Wall or Fill Wall (Cut/Fill)	Segment of Street Description	Phase (R, B, M South, M North, & OH)	Type of Roadway Work (N, O, RC, & MUP)
2,953	Yes	5,906.00	34,804.00	765.00	45.50	4,975.85	Cut	Cut along beckett st	M_South	N
Total Sq. Ft. of Walls for Street			5906.00							
Front St - Proposed Street										
Sq Ft	Wall both sides of Street (Yes/No)	Wall Total Sq Ft	Roadway Cut or Fill Between Walls Surface Area of Roadway Between Walls (Sq. Ft.)	Length of Wall	Average Width of Roadway Between Walls (Ft.)	CU. Yds. Of Earthwork between Walls	Cut Wall or Fill Wall (Cut/Fill)	Segment of Street Description	Phase (R, B, M South, M North, & OH)	Type of Roadway Work (N, O, RC, & MUP)
3,337	No	3,337.00	34,268.00	759.00	45.15	5,580.07	Cut	cut along front st (assumed 1 side only with wall)	B	N
Total Sq. Ft. of Walls for Street			3337.00							

Principal Consultant
Project: P034882 Salem River Crossing

Prepared By:	Date	Name	Date	Name
	Consultant	Dan Pavela	12/9/2015	Bob Bochsler
Checked By:				

CONVERTING SQ. FT. TO LANE MILE FOR ROADWAY BID ITEMS

Preferred Alternative

User Input Avg Depth										
New Roadway Earthwork										
Lane Miles	Lane Width	Area of New Roadway	Area of New Roadway Covered by Walls	Assume Avg. Depth of Earthwork	Cu. Yds. Of Earthwork From New Roadway	Cu. Yds. Of Earthwork From Walls	Total Cu. Yds. Of Earthwork From Walls And New Roadway	Remarks	Phase (R, B, M South, M North, & OH)	Type of Roadway Work (N, O, RC, RS, & MUP)
1.75	12.00	110,861.00	50,136.00	3.00	6,747.22	12,797.99	19,545.21		R	N
4.39	12.00	277,966.00	276,065.00	3.00	211.22	150,481.73	150,692.95		B	N
3.26	12.00	206,608.00	-	3.00	22,956.44	9,231.05	32,187.49		M_South	N
3.37	12.00	213,254.00	-	3.00	23,694.89	-	23,694.89		M_North	N
-	12.00	-	-	3.00	-	27,277.72	27,277.72		OH	N
Total Cu.Yds. of Earthwork for New Roadways							253,398.26			
Reconstruct Existing Earthwork										
Lane Miles	Lane Width	Area of Reconstruct Existing	Area of Reconstruct Existing Covered by Walls	Assume Avg. Depth of Earthwork	Cu. Yds. Of Earthwork From Reconstruct Existing	Cu. Yds. Of Earthwork From Walls	Total Cu. Yds. Of Earthwork From Walls And Reconstruct Existing	Remarks	Phase (R, B, M South, M North, & OH)	Type of Roadway Work (N, O, RC, RS, & MUP)
0.91	12.00	57,959.00	-	1.50	3,219.94	-	3,219.94		R	RC
5.70	12.00	361,374.00	-	1.50	20,076.33	-	20,076.33		B	RC
0.47	12.00	29,663.00	-	1.50	1,647.94	-	1,647.94		M_South	RC
0.05	12.00	3,247.00	-	1.50	180.39	-	180.39		M_North	RC
4.24	12.00	268,612.00	-	1.50	14,922.89	-	14,922.89		OH	RC
Total Cu.Yds. of Earthwork for Reconstruct Existing							40,047.50			
Multi-Use Path Earthwork										
Lane Miles	Lane Width	Area of Multi-Use Path	Area of Multi-Use Path Covered by Walls	Assume Avg. Depth of Earthwork	Cu. Yds. Of Earthwork From Multi-Use Path	Cu. Yds. Of Earthwork From Walls	Total Cu. Yds. Of Earthwork From Walls And Multi-Use Path	Remarks	Phase (R, B, M South, M North, & OH)	Type of Roadway Work (N, O, RC, RS, & MUP)
0.51	12.00	32,435.00	8,628.00	1.50	1,322.61	1,929.42	3,252.03		R	MUP
1.09	12.00	68,860.00	78,196.00	1.50	(518.67)	21,440.10	20,921.44		B	MUP
-	12.00	-	-	1.50	-	-	-		M_South	MUP
-	12.00	-	-	1.50	-	-	-		M_North	MUP
-	12.00	-	-	1.50	-	-	-		OH	MUP
Total Cu.Yds. of Earthwork for Multi-Use Path							24,173.46			
Sidewalk Earthwork										
Miles of Sidewalk	Sidewalk Width	Area of Sidewalk		Assume Avg. Depth of Earthwork	Cu. Yds. Of Earthwork From Multi-Use Path		Total Cu. Yds. Of Earthwork From Walls And Multi-Use Path	Remarks	Phase (R, B, M South, M North, & OH)	Type of Roadway Work (N, O, RC, RS, & MUP)
-	5.00	-		1.50	-		-		R	
0.86	5.00	22,675.00		1.50	1,259.72		1,259.72		B	
1.61	5.00	42,595.00		1.50	2,366.39		2,366.39		M_South	
0.96	5.00	25,395.00		1.50	1,410.83		1,410.83		M_North	
-	5.00	-		1.50	-		-		OH	
-	6.00	-		1.50	-		-		R	
0.71	6.00	22,452.00		1.50	1,247.33		1,247.33		B	
0.23	6.00	7,236.00		1.50	402.00		402.00		M_South	
-	6.00	-		1.50	-		-		M_North	
-	6.00	-		1.50	-		-		OH	
-	8.00	-		1.50	-		-		R	
0.96	8.00	40,728.00		1.50	2,262.67		2,262.67		B	
-	8.00	-		1.50	-		-		M_South	
-	8.00	-		1.50	-		-		M_North	
-	8.00	-		1.50	-		-		OH	
-	12.00	-		1.50	-		-		R	
0.45	12.00	28,596.00		1.50	1,588.67		1,588.67		B	
0.22	12.00	13,656.00		1.50	758.67		758.67		M_South	
1.10	12.00	69,576.00		1.50	3,865.33		3,865.33		M_North	
-	12.00	-		1.50	-		-		OH	
Total Cu.Yds. of Earthwork for Sidewalk							15,161.61			

	A	B	C	D	E	F	G	H	I	
1	Principal Consultant ODOT COST DATA FROM: "www.oregon.gov/ODOT/HWY/ESTIMATING/docs/bid_item_prices/weighted_average_prices_2014.pdf"									
2	Project: P034882 Salem River Crossing									
3	Cost Estimating Concept Component Matrix									
4		Date	Name	Date	Name					
5	Prepared By:	5/31/2016	Dan Pavela	5/31/2016	Bob Bochsler					
6	Checked By:	1/14/2016	DAN PAVELA							
7	Curb, Gutter, & Drainage with 5' Sidewalk (one side)									
8	Bid Item	ODOT Average Awarded Price	ODOT Average of 3 Low Bidders	User Input Unit Cost	Project Unit of Measure	PUM Value	Final Unit	Cost Per Mile	Remarks	
9	Curb & Gutter / Foot	18.45	\$18.25	\$18.25	5280 Ft. per mile	5280	Ft. per Mile	\$ 96,360.00	Source: ODOT Weighted Avg Item Prices 2014	
10	Conc. Sidewalk / Sq. Ft.	5.13	\$5.23	\$5.23	26400 Sq. Ft. per mile	26400	Sq. Ft. per Mile	\$ 138,072.00	Source: ODOT Weighted Avg Item Prices 2014	
11	Conc. Inlets (CG-2) / Each	1542.41	\$1,547.17	\$1,547.17	1 Inlet per 250 Ft.	21	Inlets per Mile	\$ 32,676.23	Source: ODOT Weighted Avg Item Prices 2014	
12	18-inch Storm Sew Pipe 5' Depth / Ft	64.75	\$62.90	\$62.90	5280 Ft. per mile	5280	Ft. per Mile	\$ 332,112.00	Source: ODOT Weighted Avg Item Prices 2014	
13	Manholes	3480.38	3229.46	\$3,229.46	1 Manhole Per 1000 Ft.	6	Manholes per Mile	\$ 19,376.76	Source: ODOT Weighted Avg Item Prices 2014	
14	Curb, gutter, sidewalks & drainage cost per mile per one side								\$618,596.99	
15	Per both sides								\$1,237,193.98	
16	Curb, Gutter, & Drainage with 6' Sidewalk (one side)									
17	Bid Item	ODOT Average Awarded Price	ODOT Average of 3 Low Bidders	User Input Unit Cost	Project Unit of Measure	PUM Value	Final Unit	Cost Per Mile	Remarks	
18	Curb & Gutter / Foot	18.45	\$18.25	\$18.25	5280 Ft. per mile	5280	Ft. per Mile	\$ 96,360.00	Source: ODOT Weighted Avg Item Prices 2014	
19	Conc. Sidewalk / Sq. Ft.	5.13	\$5.23	\$5.23	26400 Sq. Ft. per mile	31680	Sq. Ft. per Mile	\$ 165,686.40	Source: ODOT Weighted Avg Item Prices 2014	
20	Conc. Inlets (CG-2) / Each	1542.41	\$1,547.17	\$1,547.17	1 Inlet per 250 Ft.	21	Inlets per Mile	\$ 32,676.23	Source: ODOT Weighted Avg Item Prices 2014	
21	18-inch Storm Sew Pipe 5' Depth / Ft	64.75	\$62.90	\$62.90	5280 Ft. per mile	5280	Ft. per Mile	\$ 332,112.00	Source: ODOT Weighted Avg Item Prices 2014	
22	Manholes	3480.38	3229.46	\$3,229.46	1 Manhole Per 1000 Ft.	5.28	Manholes per Mile	\$ 17,051.55	Source: ODOT Weighted Avg Item Prices 2014	
23	Curb, gutter, sidewalks & drainage cost per mile per one side								\$643,886.18	
24	Per both sides								\$1,287,772.36	
25	Curb, Gutter, & Drainage with 8' Sidewalk (one side)									
26	Bid Item	ODOT Average Awarded Price	ODOT Average of 3 Low Bidders	User Input Unit Cost	Project Unit of Measure	PUM Value	Final Unit	Cost Per Mile	Remarks	
27	Curb & Gutter / Foot	18.45	\$18.25	\$18.25	5280 Ft. per mile	5280	Ft. per Mile	\$ 96,360.00	Source: ODOT Weighted Avg Item Prices 2014	
28	Conc. Sidewalk / Sq. Ft.	5.13	\$5.23	\$5.23	26400 Sq. Ft. per mile	42240	Sq. Ft. per Mile	\$ 220,915.20	Source: ODOT Weighted Avg Item Prices 2014	
29	Conc. Inlets (CG-2) / Each	1542.41	\$1,547.17	\$1,547.17	1 Inlet per 250 Ft.	21	Inlets per Mile	\$ 32,676.23	Source: ODOT Weighted Avg Item Prices 2014	
30	18-inch Storm Sew Pipe 5' Depth / Ft	64.75	\$62.90	\$62.90	5280 Ft. per mile	5280	Ft. per Mile	\$ 332,112.00	Source: ODOT Weighted Avg Item Prices 2014	
31	Manholes	3480.38	3229.46	\$3,229.46	1 Manhole Per 1000 Ft.	5.28	Manholes per Mile	\$ 17,051.55	Source: ODOT Weighted Avg Item Prices 2014	
32	Curb, gutter, sidewalks & drainage cost per mile per one side								\$699,114.98	
33	Per both sides								\$1,398,229.96	
34	Curb, Gutter, & Drainage with 12' Sidewalk (one side)									
35	Bid Item	ODOT Average Awarded Price	ODOT Average of 3 Low Bidders	User Input Unit Cost	Project Unit of Measure	PUM Value	Final Unit	Cost Per Mile	Remarks	
36	Curb & Gutter / Foot	18.45	\$18.25	\$18.25	5280 Ft. per mile	5280	Ft. per Mile	\$ 96,360.00	Source: ODOT Weighted Avg Item Prices 2014	
37	Conc. Sidewalk / Sq. Ft.	5.13	\$5.23	\$5.23	26400 Sq. Ft. per mile	63360	Sq. Ft. per Mile	\$ 331,372.80	Source: ODOT Weighted Avg Item Prices 2014	
38	Conc. Inlets (CG-2) / Each	1542.41	\$1,547.17	\$1,547.17	1 Inlet per 250 Ft.	21	Inlets per Mile	\$ 32,676.23	Source: ODOT Weighted Avg Item Prices 2014	
39	18-inch Storm Sew Pipe 5' Depth / Ft	64.75	\$62.90	\$62.90	5280 Ft. per mile	5280	Ft. per Mile	\$ 332,112.00	Source: ODOT Weighted Avg Item Prices 2014	
40	Manholes	3480.38	3229.46	\$3,229.46	1 Manhole Per 1000 Ft.	5.28	Manholes per Mile	\$ 17,051.55	Source: ODOT Weighted Avg Item Prices 2014	
41	Curb, gutter, sidewalks & drainage cost per mile per one side								\$809,672.58	
42	Per both sides								\$1,619,345.16	
43	Earthwork									
44	Cost Basis			User Input Unit Cost	Project Unit of Measure	PUM Value	Final Unit	Cost Per Cubic Yard		
45	General Excavation		16	\$ 16.00	Cu. Yd.	1	Per Cu. Yd.	\$ 16.00	Source: Consultant Calculated cost based on ODOT Weighted Avg Item Prices 2014 - 16/CY per meeting	
46					Cu. Yd.	1	Per Cu. Yd.	\$ -		
47					Cu. Yd.	1	Per Cu. Yd.	\$ -		
48					Cu. Yd.	1	Per Cu. Yd.	\$ -		
49	Total							\$16.00		
50	New Roadway 10" HMAC on 12" Aggregate Base									
51	Bid Item	ODOT Average Awarded Price	ODOT Average of 3 Low Bidders	User Input Unit Cost	Project Unit of Measure	PUM Value	Final Unit	Cost Per Mile	Remarks	
52	Level 3, 1/2 inch Dense HMAC / Ton Mixture	\$59.29	\$56.26	\$56.26	Per Lane Mile (12')	4093.06	Tons per Lane Mile	\$ 230,275.33	Source: ODOT Weighted Avg Item Prices 2014	
53	PG 64-22 Asphalt in HMAC / Ton	\$110	\$146.73	\$146.73	Per Lane Mile (12')	253.77	Tons per Lane Mile	\$ 37,235.59	Source: ODOT Weighted Avg Item Prices 2014	
54	Agg Base / Ton	16.27	\$18.17	\$18.17	Per Lane Mile (12')	4693.33	Tons per Lane Mile	\$ 85,277.87	Source: ODOT Weighted Avg Item Prices 2014	
55	Clearing and Grubbing / Acre	947.45		\$947.45	Per Lane Mile (12')	1.45	Acres per Lane Mile	\$ 1,378.11	Source: ODOT Weighted Avg Item Prices 2014	
56	Removal of Structures & Obstructions / Acre		\$ 3,470.02	\$3,470.02	Per Lane Mile (12')	1.45	Acres per Lane Mile	\$ 5,047.30	Source: Consultant Calculated cost based on ODOT Weighted Avg Item Prices 2014	
57	Striping Thermoplastic Extruded, Surface, Profile	0.89	\$0.91	\$0.91	4" Strip for 1 mile	5280	Lane Mile	\$ 4,804.80	Source: ODOT Weighted Avg Item Prices 2014	
58	New Roadway - 10" HMAC on 12" Aggregate Base	Per Lane (12') Mile						\$364,019.00		
59	Overlay Existing Roadway									
60	Bid Item	ODOT Average Awarded Price	ODOT Average of 3 Low Bidders	User Input Unit Cost	Project Unit of Measure	PUM Value	Final Unit	Cost Per Mile	Remarks	
61	Cold Plane Pavement Removal 2 - inch / Sq Yd	0.74	\$0.94	\$0.94	Per Lane Mile (12')	7040	Sq Yd per Lane Mile	\$ 6,617.60	Source: ODOT Weighted Avg Item Prices 2014	
62	Level 3, 1/2 inch Dense HMAC / Ton - 2" inlay + 2" overlay	\$59.29	\$56.26	\$56.26	Per Lane Mile (12')	1637	Tons per Lane Mile	\$ 92,110.13	Source: ODOT Weighted Avg Item Prices 2014	
63	PG 64-22 Asphalt in HMAC / Ton	\$110	\$146.73	\$146.73	Per Lane Mile (12')	101.51	Tons per Lane Mile	\$ 14,894.24	Source: ODOT Weighted Avg Item Prices 2014	

	A	B	C	D	E	F	G	H	I
1	Principal Consultant ODOT COST DATA FROM: "www.oregon.gov/ODOT/HWY/ESTIMATING/docs/bid_item_prices/weighted_average_prices_2014.pdf"								
2	Project: P034882 Salem River Crossing								
3	Cost Estimating Concept Component Matrix								
4	Prepared By:		Date	Name	Date	Name			
5	Checked By:		5/31/2016	Dan Pavea	5/31/2016	Bob Bochsler			
6	Curb, Gutter, & Drainage with 5' Sidewalk (one side)								
7	Bid Item	ODOT Average Awarded Price	ODOT Average of 3 Low Bidders	User Input Unit Cost	Project Unit of Measure	PUM Value	Final Unit	Cost Per Mile	Remarks
74	Striping Thermoplastic Extruded, Surface, Profile	0.89	\$0.91	\$0.91	4" Strip for 1 mile	5280	Lane Mile	\$ 4,804.80	Source: ODOT Weighted Avg Item Prices 2014
75									
76	Overlay Existing Roadway							\$118,426.77	
77	Reconstruct Existing Roadway 10" HMAC on 12" Aggregate Base								
78	Bid Item	ODOT Average Awarded Price	ODOT Average of 3 Low Bidders	User Input Unit Cost	Project Unit of Measure	PUM Value	Final Unit	Cost Per Mile	Remarks
80	Level 3, 1/2 inch Dense HMAC / Ton Mixture	\$59.29	\$56.26	\$56.26	Per Lane Mile (12')	4093.06	Tons per Lane Mile	\$ 230,275.33	Source: ODOT Weighted Avg Item Prices 2014
81	PG 64-22 Asphalt in HMAC / Ton	\$110	\$146.73	\$146.73	Per Lane Mile (12')	253.77	Tons per Lane Mile	\$ 37,235.59	Source: ODOT Weighted Avg Item Prices 2014
82	Agg Base / Ton	16.27	\$18.17	\$18.17	Per Lane Mile (12')	4693.33	Tons per Lane Mile	\$ 85,277.87	Source: ODOT Weighted Avg Item Prices 2014
83	Removal of Structures & Obstructions / Acre		\$ 3,470.02	\$3,470.02	Per Lane Mile (12')	1.45	Acre per Lane Mile	\$ 5,047.30	Source: Consultant Calculated cost based on ODOT Weighted Avg Item Prices 2014
84	Striping Thermoplastic Extruded, Surface, Profile	0.89	\$0.91	\$0.91	4" Strip for 1 mile	5280	Lane Mile	\$ 4,804.80	Source: ODOT Weighted Avg Item Prices 2014
85									
86	Total							\$362,640.69	
87	Traffic Signal Interconnect								
88	Cost Basis			User Input Unit Cost	Project Unit of Measure	PUM Value	Final Unit	Cost Per Linear Foot	
89									
90	Traffic Signal Interconnect		\$30	\$30	Lin. Ft.	1	Per Lin Ft	\$ 30.00	Source: Consultant internal source document - 30 per mtg
91					Lin. Ft.	1	Per Lin Ft	\$ -	
92					Lin. Ft.	1	Per Lin Ft	\$ -	
93					Lin. Ft.	1	Per Lin Ft	\$ -	
94	Total							\$30.00	
95	Traffic Signal Installation								
96	Cost Basis			User Input Unit Cost	Project Unit of Measure	PUM Value	Final Unit	Cost Per Each	
97									
98	Traffic Signal Installation			\$ 300,000.00	Each	1	Per Each	\$ 300,000.00	\$250k-\$300k ea for three to five lane int in ea direction. Source: Consultant internal source document - 300 per mtg
99					Each	1	Per Each	\$ -	
100					Each	1	Per Each	\$ -	
101					Each	1	Per Each	\$ -	
102	Total							\$300,000.00	
103	Illumination								
104	Cost Basis			User Input Unit Cost	Project Unit of Measure	PUM Value	Final Unit	Cost Per Mile	
105									
106	Illumination		420000	\$ 420,000.00	Mile	1	Mile	\$ 420,000.00	Source: Consultant internal source document - 420k per mtg
107					Mile	1	Mile	\$ -	
108					Mile	1	Mile	\$ -	
109					Mile	1	Mile	\$ -	
110	Total							\$420,000.00	
111	Landscaping								
112	Cost Basis			User Input Unit Cost	Project Unit of Measure	PUM Value	Final Unit	Cost Per Square Foot	
113									
114	Landscaping			\$ 3.00	Sq. Ft.	1	Per Sq. Ft.	\$ 3.00	Source: Green Values National Stormwater Management Calculator - 3.00 per meeting
115					Sq. Ft.	1	Per Sq. Ft.	\$ -	
116					Sq. Ft.	1	Per Sq. Ft.	\$ -	
117					Sq. Ft.	1	Per Sq. Ft.	\$ -	
118	Total							\$3.00	
119	New Separated Multi-Use Path 4" HMAC on 6" Aggregate Base								
120	Bid Item	ODOT Average Awarded Price	ODOT Average of 3 Low Bidders	User Input Unit Cost	Project Unit of Measure	PUM Value	Final Unit	Cost Per Mile	Remarks
121									
122	Level 3, 1/2 inch Dense HMAC / Ton Mixture	\$59.29	\$56.26	\$56.26	Per Lane Mile (12')	1637.22	Tons per Lane Mile	\$ 92,110.13	Source: ODOT Weighted Avg Item Prices 2014
123	PG 64-22 Asphalt in HMAC / Ton	\$110	\$146.73	\$146.73	Per Lane Mile (12')	101.51	Tons per Lane Mile	\$ 14,894.24	Source: ODOT Weighted Avg Item Prices 2014
124	Agg Base / Ton	16.27	\$18.17	\$18.17	Per Lane Mile (12')	2346.67	Tons per Lane Mile	\$ 42,638.93	Source: ODOT Weighted Avg Item Prices 2014
125	Clearing and Grubbing / Acre	947.45		\$947.45	Per Lane Mile (12')	1.45	Acre per Lane Mile	\$ 1,378.11	Source: ODOT Weighted Avg Item Prices 2014
126	Removal of Structures & Obstructions / Acre		\$ 3,470.02	\$3,470.02	Per Lane Mile (12')	1.45	Acre per Lane Mile	\$ 5,047.30	Source: Consultant Calculated cost based on ODOT Weighted Avg Item Prices 2014
127	Striping Thermoplastic Extruded, Surface, Profile	0.89	\$0.91	\$0.91	4" Strip for 1 mile	5280	Lane Mile	\$ 4,804.80	Source: ODOT Weighted Avg Item Prices 2014
128									
129	New Roadway - 4" HMAC on 6" Aggregate Base	Per Lane (12') Mile						\$160,873.51	
130									
131	Cast-in-Place Segmental (Balanced Cantilever) Bridges (Main Channel)								
132	Cost Basis			User Input Unit Cost	Project Unit of Measure	PUM Value	Final Unit	Cost Per Square Foot	
133									
134	Concrete Box Girder Main Span			\$ 300.00	Sq. Ft.	1	Per Sq. Ft.	\$ 300.00	\$215-\$375 - 300 per meeting
135					Sq. Ft.	1	Per Sq. Ft.	\$ -	
136					Sq. Ft.	1	Per Sq. Ft.	\$ -	
137					Sq. Ft.	1	Per Sq. Ft.	\$ -	
138	Total							\$300.00	
139									
140	Precast Segmental (Span-By-Span) Bridges (West Approach Spans)								
141	Cost Basis			User Input Unit Cost	Project Unit of Measure	PUM Value	Final Unit	Cost Per Square Foot	
142									
143	PCPS conc box Girder			\$ 150.00	Sq. Ft.	1	Per Sq. Ft.	\$ 150.00	\$110-\$190 - 150 per meeting
144					Sq. Ft.	1	Per Sq. Ft.	\$ -	
145					Sq. Ft.	1	Per Sq. Ft.	\$ -	
146					Sq. Ft.	1	Per Sq. Ft.	\$ -	
147	Total							\$150.00	
148									
149	Prestressed I-Girder Bridges (HWY 22 Ramp Spans over Old RR Trestle/Multi-Use Path)								
150	Cost Basis			User Input Unit Cost	Project Unit of Measure	PUM Value	Final Unit	Cost Per Square Foot	
151									

	A	B	C	D	E	F	G	H	I
1	Principal Consultant								
2	Project: P034882 Salem River Crossing								
3	ODOT COST DATA FROM: "www.oregon.gov/ODOT/HWY/ESTIMATING/docs/bid_item_prices/weighted_average_prices_2014.pdf"								
4	Cost Estimating Concept Component Matrix								
5		Date	Name	Date	Name				
6		Prepared By:	5/31/2016 Dan Pavela	5/31/2016	Bob Bochsler				
7		Checked By:	1/14/2016 DAN PAVELA						
8	Curb, Gutter, & Drainage with 5' Sidewalk (one side)								
9	Bid Item	ODOT Average Awarded Price	ODOT Average of 3 Low Bidders	User Input Unit Cost	Project Unit of Measure	PUM Value	Final Unit	Cost Per Mile	Remarks
152	Prestressed Girder Approach			\$ 145.00	Sq. Ft.	1	Per Sq. Ft.	\$ 145.00	\$125-\$170 - 145 per meeting
153					Sq. Ft.	1	Per Sq. Ft.	\$ -	
154					Sq. Ft.	1	Per Sq. Ft.	\$ -	
155					Sq. Ft.	1	Per Sq. Ft.	\$ -	
156	Total							\$145.00	
157									
158	Steel Tub Girder Bridges (Multi-Use Path Structure over Wallace/Edgewater Intersection)								
159	Cost Basis			User Input Unit Cost	Project Unit of Measure	PUM Value	Final Unit	Cost Per Square Foot	
160									
161	Steel Tub Girder Bridges			\$ 275.00	Sq. Ft.	1	Per Sq. Ft.	\$ 275.00	\$190-\$220 - 275 per meeting.
162					Sq. Ft.	1	Per Sq. Ft.	\$ -	
163					Sq. Ft.	1	Per Sq. Ft.	\$ -	
164					Sq. Ft.	1	Per Sq. Ft.	\$ -	
165	Total							\$275.00	
166									
167	Retaining Walls								
168	Cost Basis			User Input Unit Cost	Project Unit of Measure	PUM Value	Final Unit	Cost Per Square Foot	
169									
170	MSE Ret Wall			\$ 65.00	Sq. Ft.	1	Per Sq. Ft.	\$ 65.00	Source: Consultant Calculated cost based on ODOT Weighted Avg Item Prices 2011-2014 - 65 per mtg
171					Sq. Ft.	1	Per Sq. Ft.	\$ -	
172					Sq. Ft.	1	Per Sq. Ft.	\$ -	
173					Sq. Ft.	1	Per Sq. Ft.	\$ -	
174	Total							\$65.00	

Research into Bridge Cost for Third Willamette River Crossing (12.21.12)

Forecasting the 2013 bridge spending pattern through to 2020, average annual growth of 1.7 percent is expected for FY14 through FY20ⁱ

Bridge Demolition:	Low	High
Typical Bridge Removal	\$35	\$60
Movable Span Bridge (Bascule)	\$60	\$70
Widening:		
Bridge Widening Construction	\$85	\$160

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Florida DOT Transportation Costs Reports, April 2014

Bridge Type	Low	High
Short Span Bridges:		
Reinforced Concrete Flat Slab Simple Span*	\$115	\$160
Pre-cast Concrete Slab Simple Span*	\$110	\$200
Reinforced Concrete Flat Slab Continuous Span*	NA	NA
Medium and Long Span Bridges:		
Concrete Deck/ Steel Girder - Simple Span*	\$125	\$142
Concrete Deck/ Steel Girder - Continuous Span*	\$135	\$170
Concrete Deck/ Pre-stressed Girder - Simple Span	\$90	\$145
Concrete Deck/ Pre-stressed Girder - Continuous Span	\$95	\$211
Concrete Deck/ Steel Box Girder – Span Range from 150' to 280' (for curvature, add a 15% premium)	\$140	\$180
Segmental Concrete Box Girders - Cantilever Construction, Span Range from 150' to 280'	\$140	\$160
Movable Bridge - Bascule Spans and Piers	\$1,800	\$2,000
* Increase the cost by twenty percent for phased construction.		

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Florida DOT Transportation Costs Reports, April 2014

How to use this section 1. Compare costs from city to city. In using the RSMeans Indexes, remember that an index number is not a fixed number but a ratio: It's a percentage ratio of a building component's cost at any stated time to the National Average cost of that same component at the same time period. Put in the form of an equation: Specific City Cost National Average Cost x 100 = City Index Number Therefore, when making cost comparisons between cities, do not subtract one city's index number from the index number of another city and read the result as a percentage difference. Instead, divide one city's index number by that of the other city. The resulting number may then be used as a multiplier to calculate cost differences from city to city. The formula used to find cost differences between cities for the purpose of comparison is as follows: City A Index City B Index x City B Cost (Known) = City A Cost (Unknown) In addition, you can use RSMeans CCI to calculate and compare costs division by division between cities using the same basic formula. (Just be sure that you're comparing similar divisions.)^{iv}

Historical Cost Indexes

The table below lists both the RSMeans® historical cost index based on Jan. 1, 1993 = 100 as well as the computed value of an index based on Jan. 1, 2015 costs. Since the Jan. 1, 2015 figure is estimated, space is left to write in the actual index figures as they become available through either the quarterly *RSMeans Construction Cost Indexes* or as printed in

the *Engineering News-Record*. To compute the actual index based on Jan. 1, 2015 = 100, divide the historical cost index for a particular year by the actual Jan. 1, 2015 construction cost index. Space has been left to advance the index figures as the year progresses.

Year	Historical Cost Index Jan. 1, 1993 = 100		Current Index Based on Jan. 1, 2015 = 100		Year	Historical Cost Index Jan. 1, 1993 = 100		Current Index Based on Jan. 1, 2015 = 100		Year	Historical Cost Index Jan. 1, 1993 = 100		Current Index Based on Jan. 1, 2015 = 100	
	Est.	Actual	Est.	Actual		Actual	Est.	Actual	Actual		Est.	Actual		
Oct 2015*					July 2000	120.9	58.5			July 1982	76.1	36.8		
July 2015*					1999	117.6	56.9			1981	70.0	33.9		
April 2015*					1998	115.1	55.7			1980	62.9	30.4		
Jan 2015*	206.7		100.0	100.0	1997	112.8	54.6			1979	57.8	28.0		
July 2014		204.9	99.1		1996	110.2	53.3			1978	53.5	25.9		
2013		201.2	97.3		1995	107.6	52.1			1977	49.5	23.9		
2012		194.6	94.1		1994	104.4	50.5			1976	46.9	22.7		
2011		191.2	92.5		1993	101.7	49.2			1975	44.8	21.7		
2010		183.5	88.8		1992	99.4	48.1			1974	41.4	20.0		
2009		180.1	87.1		1991	96.8	46.8			1973	37.7	18.2		
2008		180.4	87.3		1990	94.3	45.6			1972	34.8	16.8		
2007		169.4	82.0		1989	92.1	44.6			1971	32.1	15.5		
2006		162.0	78.4		1988	89.9	43.5			1970	28.7	13.9		
2005		151.6	73.3		1987	87.7	42.4			1969	26.9	13.0		
2004		143.7	69.5		1986	84.2	40.7			1968	24.9	12.0		
2003		132.0	63.9		1985	82.6	40.0			1967	23.5	11.4		
2002		128.7	62.3		1984	82.0	39.7			1966	22.7	11.0		
2001		125.1	60.5		1983	80.2	38.8			1965	21.7	10.5		

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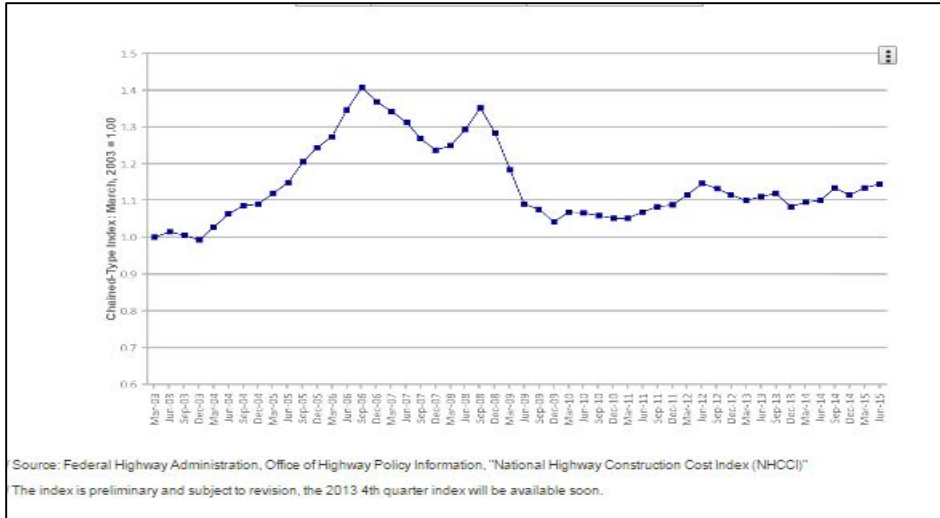
National Highway Construction Cost Index (NHCCI)

Construction Cost Trends For Highways ^{1/}

October 2015

Table PT-1

Year	Quarter	NHCCI Index
2003	March	1.0000
	June	1.0158
	September	1.0038
	December	0.9929
2004	March	1.0260
	June	1.0638
	September	1.0849
	December	1.0910
2005	March	1.1189
	June	1.1489
	September	1.2046
	December	1.2429
2006	March	1.2727
	June	1.3464
	September	1.4084
	December	1.3693
2007	March	1.3425
	June	1.3118
	September	1.2691
	December	1.2363
2008	March	1.2500
	June	1.2938
	September	1.3521
	December	1.2836
2009	March	1.1818
	June	1.0901
	September	1.0752
	December	1.0410
2010	March	1.0683
	June	1.0671
	September	1.0596
	December	1.0520
2011	March	1.0524
	June	1.0691
	September	1.0817
	December	1.0880
2012	March	1.1147
	June	1.1468
	September	1.1315
	December	1.1148
2013	March	1.1002
	June	1.1092
	September	1.1195
	December	1.0827
2014	March	1.0947
	June	1.1007
	September	1.1354
	December	1.1158
2015	March	1.1334
	June	1.1436



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STEEL STRUCTURES										
Str. No.	Str. Name	County	Contract	Description	Dwg No.	Deck Area SQFT	Low Bid Total Cost	Low Bid Unit Cost	Ave 3 Bid Total Cost	Ave 3 Bid Unit Cost
Steel Box Girders										
21218	Hwy 2 over Hood River Bridge Connector (Conn 2)	Hood River	14122	Trapezoidal structural steel box girders, single span, 98'-7" ctr-to-ctr end bents	82313	8,710.8	\$ 2,024,491	\$ 232.41	\$ 2,044,651	\$ 234.73
20878	Sandy River, Hwy 2 EB	Multnomah	14165	Steel box girders w/haunch, 4 spans, 200'-220'-220'-200'	81319	68,263.5	\$15,052,888	\$ 220.51	\$15,624,680	\$ 228.89
20879	Sandy River, Hwy 2 WB	Multnomah	14165	Steel box girders w/haunch, 4 spans, 200'-220'-220'-200'	81366	53,484.7	\$11,293,989	\$ 211.16	\$11,512,879	\$ 215.26
Subtotal (per sqft.)						130,459.0	\$28,371,368	\$ 217.47	\$29,182,210	\$ 223.69
Steel Plate Girders										
21358	Valley View Rd Conn #1 over Hwy 1 (N. Ashland Intchg)	Jackson	14244	2 span continuous steel plate girders, 259'-6" ctr-to-ctr end bents	83881	16,596.3	\$ 2,073,034	\$ 124.91	\$ 2,328,288	\$ 140.29

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PRECAST SEGMENTAL BOX GIRDER										
Str. No.	Str. Name	County	Contract	Description	Dwg No.	Deck Area SQFT	Low Bid Total Cost	Low Bid Unit Cost	Ave 3 Bid Total Cost	Ave 3 Bid Unit Cost
110120	BR0252-407 SOUTH OF DOWNTOWN DENVER		U			1760.0000 547.0000	39.0000 149.0000	68640.0 81503.0	\$6,691,822 \$7,102,517	\$97.49 \$87.14
110324	BRR600-297 I-25 BRIDGE OVER SOUTH PLATTE		U			371.0000	197.0000	73087.0	\$6,901,209	\$94.42
110526	STA 0911-005 SH 91 COPPER MOUNTAIN TO COUNT		M	F-12-AG		308.0000	62.0000	19096.0	\$142,321	\$7.45
WEIGHTED AVERAGE COST: NEW STRUCTURES							242326.0	\$20,837,868		\$85.99

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9.3.2 Post - tensioned Concrete Box Girder, Segmental Bridges

Project Name and Description	Letting Date	Deck Area (SF)	Cost per SF
A1A over ICWW (St. Lucie River) (Evans Crany) (890158)	97/98	297,453 Span by Span	\$80.50
Palm Beach Airport Interchange at I-95 (930480)	99/00	77,048 Balanced Cantilever	\$100.73
Palm Beach Airport Interchange at I-95 (930477)	99/00	20,925 Balanced Cantilever	\$96.31
Palm Beach Airport Interchange at I-95 (930479)	99/00	69,233 Balanced Cantilever	\$88.49
Palm Beach Airport Interchange at I-95 (930482)	99/00	47,466 Balanced Cantilever	\$104.96
Palm Beach Airport Interchange at I-95 (930482)	99/00	81,059 Balanced Cantilever	\$101.44
Palm Beach Airport Interchange at I-95 (930483)	99/00	90,926 Balanced Cantilever	\$101.57
Palm Beach Airport Interchange at I-95 (930484)	99/00	41,893 Balanced Cantilever	\$115.11
Palm Beach Airport Interchange at I-95 (930478)	99/00	20,796 Balanced Cantilever	\$95.16
17th Street over ICWW (Ft. Lauderdale) (860623)	96/97	135,962 Balanced Cantilever	\$74.71
SR 704 over ICWW Royal Palm Way (930507 & 930506)	00/01	43,173 each C-I-P on Travelers	\$163.88
US 92 over ICWW (Broadway Bridge) Daytona (790188)	97/98	145,588 Balanced Cantilever	\$81.93
US 92 over ICWW (Broadway Bridge) Daytona (790187)	97/98	145,588 Balanced Cantilever	\$81.93
SR 789 over ICWW (Ringling Bridge) (170021)	00/01	329,096 Balanced Cantilever	\$81.43
US 98 over ICWW (Hathaway Bridge) (460012)	00/01	575,731 Balanced Cantilever	\$87.72

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9.3.3 Post-tensioned Cast-in-place Concrete Box Girder Bridge (low level overpass)

Project Name and Description	Letting Date	Deck Area (SF)	Cost per SF
SR 858 over ICWW Hallandale Beach (860619 & 860618)	97/98	29,888 each	\$83.25
SR 858 Flyover Hallandale Beach (860620)	97/98	21,777	\$81.99
4th Street over I-275	94/95	12,438	\$75.21

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COMPARATIVE BRIDGE COSTS

JANUARY 2015

The following tabular data provides some **general guidelines** for structure type selection and its relative cost. These costs should be used only for **preliminary estimates** until more detailed information is developed. The following factors must be taken into account when determining a price within the cost range:

Factors for Lower End of Cost Range	Factors for Higher End of Cost Range
Short Spans, Low Structure Height, No Environmental Constraints, Large Project, No Aesthetic Issues, Dry Conditions, No Bridge Skew	Long Spans, High Structure Height, Environmental Constraints, Small Project, Aesthetic Issues, Wet Conditions (cofferdams required), Skewed Bridges
Urban Location	Remote Location
Seat Abutment	Cantilever Abutment
Spread Footing	Pile Footing (Large Diameter Piling)
No Stage Construction	2-Stage Construction

Factors that will increase the price from 25% - 150% over the high end of the cost range

Structures with more than 2 construction stages	Unique substructure construction
Widenings less than 15 FT.	

STRUCTURAL SECTION	(STR. DEPTH / MAX SPAN)		COMMON SPAN RANGE (feet)	* COST RANGE (price/sqft)	REMARKS
	SIMPLE	CONTINUOUS			
RC SLAB	0.06	0.045	16 - 44	90 - 200	CAST-IN-PLACE CONCRETE BRIDGES ACCOUNT FOR APPROXIMATELY 65% OF BRIDGES BUILT ON CALIFORNIA STATE HIGHWAYS
RC T-BEAM	0.07	0.065	40 - 60	155 - 250	
RC BOX	0.06	0.055	50 - 120	160 - 250	
CIP/PS SLAB	0.03	0.03	40 - 65	115 - 200	
CIP/PS BOX	0.045	0.04	100 - 250	110 - 315	NO FALSEWORK REQUIRED
PC/PS SLAB	0.03	0.03	20 - 50	250 - 450	
	(+3" AC)	(+3" AC)			
PC/PS	0.06	0.055	30 - 120	No Current Cost Data	
	(+3" AC)	(+3" AC)			
BULB TEE GIRDER	0.05	0.045	90 - 145	115 - 290	
WIDE FLANGE GIRDER	0.045	0.04	90 - 180	125 - 250	
PC/PS I	0.055	0.05	50 - 120	150 - 325	
PC/PS BOX	0.06	0.045	120 - 200	120 - 270	
STRUCT STEEL I GIRDER	0.045	0.04	60 - 300	250 - 450	NO FALSEWORK REQUIRED

NOTE: Removal of a box girder structure costs from \$8 - \$15 per square foot.

* "Price/SQFT" is calculated using "Bridge Costs Only" as defined by the Federal Highway Administration. The "Bridge Cost Only" is the sum of the "Superstructure" and "Substructure" bridge items, listed in Chapter 11 of the Bridge Design Aids Manual, multiplied by the bid item price. The "Superstructure" and "Substructure" bridge items do not include items such as: time related overhead, mobilization, bridge removal, approach slabs, slope paving, soundwalls, or retaining walls.

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PRECAST PRESTRESSED REINFORCED CONCRETE BOX GIRDER

Str. No.	Str. Name	County	Contract	Description	Dwg No.	Deck Area SQFT	Low Bid Total Cost	Low Bid Unit Cost	Ave 3 Bid Total Cost	Ave 3 Bid Unit Cost
33 inch Box Girder										
21872*	Pedestrian over Hwy 64	Clackamas	14552	4-33" PCPS box beams, 96'-0" ctr-ctr end bents	90969	\$ 1,552.0	\$ 175,286	\$ 112.94	\$ 193,742	\$ 124.83

* For information only. Pedestrian bridge not included in the deck area unit cost.

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PRECAST PRESTRESSED REINFORCED CONCRETE DECK GIRDER

Str. No.	Str. Name	County	Contract	Description	Dwg No.	Deck Area SQFT	Low Bid Total Cost	Low Bid Unit Cost	Ave 3 Bid Total Cost	Ave 3 Bid Unit Cost
<u>63 inch Bulb T</u>										
21576	Hwy 69 over Hwy 1	Lane	14537	21~precast prestressed BI63, 244'-0" ctr-ctr end bents	89961	31,028.7	\$ 2,884,943	\$ 92.98	\$ 3,265,764	\$ 105.25
<u>Modified 45 inch Bulb T</u>										
21747	Scoggins Creek, Old Tualatin Valley Hwy #47	Washington	14551	5~PCPS Modified DBT45 beams	91063	3,520.0	\$ 343,420	\$ 97.56	\$ 351,858	\$ 99.96
<u>48 inch Bulb T</u>										
22019	Undercrossing 3RD Street Bridge	Deschutes	14576	2~Precast prestressed BT48 girders & 2~pcsp 20" x 48" min. girders (variable depth), 140'-0" ctr-ctr end bents	91303	4,506.6	\$ 1,132,571	\$ 251.32	\$ 1,096,516	\$ 243.32
22021	Undercrossing Murphy Road Bridge	Deschutes	14576	6~Precast prestressed BT48 girders & 2~pcsp 20" x 48" min. girders (variable depth), 185'-0" ctr-ctr end bents	91283	9,984.4	\$ 1,800,825	\$ 180.36	\$ 1,651,904	\$ 165.45
21488	Hwy 42 over Hwy 2	Sherman	14548	17~Modified BT48 girders, 113'-0" ctr-ctr end bents	91137	9,786.0	\$ 1,002,808	\$ 102.47	\$ 1,042,219	\$ 106.50
Subtotal (per sq.ft.)						24,276.9	3,936,204.3	\$ 162.14	3,790,639.3	\$ 156.14
<u>60 inch Bulb T</u>										
21487	Hwy 42 over UPRR	Sherman	14548	17~Modified BT60 girders, 145'-1 5/16" ctr-ctr end bents	91110	13,077.6	\$ 1,500,437	\$ 114.73	\$ 1,337,264	\$ 102.26

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PRECAST PRESTRESSED REINFORCED CONCRETE DECK GIRDER

Str. No.	Str. Name	County	Contract	Description	Dwg No.	Deck Area SQFT	Low Bid Total Cost	Low Bid Unit Cost	Ave 3 Bid Total Cost	Ave 3 Bid Unit Cost
<u>84 inch Bulb T</u>										
22004*	Creek, Hwy 39 at MP 56.40	Yamhill	14584	7~BT84 precast prestressed girders, 155'-6 3/4" ctr-ctr end bents	90367	7,177.7	\$ 550,328	\$ 76.67	\$ 571,864	\$ 79.67
<u>90 inch Bulb T</u>										
21343	Applegate River, Hwy 25	Josephine	14541	PCPS BT90, 520'-0" ctr-ctr end bents	90273	25,202.0	\$ 2,860,815	\$ 113.52	\$ 2,829,792	\$ 112.28

*For information, prestressed BT84 girders (agency provided). Cost intended for loading, transportation, preparation and installation.

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Deck Area Total Cost Summary Fiscal Year 2010

Structure Type	Total Area Square Feet	Total Bid Amount	Cost per Square Feet	Number of Structures
P.S. Slabs - 18 inch	8,850.8	\$ 1,109,896	\$ 125.40	2
P.S. Slabs - 21 inch	2,944.0	\$ 467,776	\$ 158.89	2
P.S. Slabs - 26 inch	17,756.9	\$ 2,840,630	\$ 159.97	4
P.S. Slabs - 30 inch	4,212.0	\$ 702,150	\$ 166.70	1
Precast Prestr. R.C. Deck Girder - Bulb I 51 inch	7,888.0	\$ 1,007,233	\$ 127.69	1
Precast Prestr. R.C. Deck Girder - Bulb I 63 inch	3,483.3	\$ 363,606	\$ 104.38	1
Precast Prestr. R.C. Deck Girder - Bulb T 60 inch	18,295.3	\$ 3,980,091	\$ 217.55	2
Precast Prestr. R.C. Deck Girder - Bulb T 72 inch	4,768.2	\$ 653,328	\$ 137.02	1
Precast Prestr. R.C. Deck Girder - Bulb T 84 inch	21,296.0	\$ 2,458,272	\$ 115.43	1
Precast Prestr. R.C. Deck Girder - Bulb T 90 inch	59,024.9	\$ 7,741,974	\$ 131.16	2
Steel Box Girders	130,459.0	\$ 28,371,368	\$ 217.47	3
Steel Plate Girders	16,596.3	\$ 2,073,034	\$ 124.91	1
Total	295,574.7	\$ 51,769,358	\$ 175.15	21

Deck Area Total Cost Summary Fiscal Year 2011				
Structure Type	Total Area Square Feet	Total Bid Amount	Cost per Square Feet	Number of Structures
P.S. Slabs - 15 inch	5,341.3	\$ 1,182,156	\$ 221.32	2
P.S. Slabs - 21 inch	4,302.8	\$ 567,266	\$ 131.84	2
P.S. Slabs - 30 inch	3,828.0	\$ 418,713	\$ 109.38	1
Precast Prestr. R.C. Box Girder - 39 inch	3,564.0	\$ 449,578	\$ 126.14	1
Precast Prestr. R.C. Box Girder - 48 inch	10,034.5	\$ 1,683,850	\$ 167.81	1
Precast Prestr. R.C. Deck Girder - Bulb I 34 inch	3,356.6	\$ 548,679	\$ 163.46	1
Precast Prestr. R.C. Deck Girder - Bulb T 60 inch	3,402.7	\$ 297,823	\$ 87.53	1
Precast Prestr. R.C. Deck Girder - Bulb T 84 inch	7,526.8	\$ 745,874	\$ 99.10	1
Steel Plate Girders	65,881.8	\$ 8,772,293	\$ 133.15	3
Total	107,238.4	\$ 14,666,232	\$ 136.76	13

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Deck Area Total Cost Summary Fiscal Year 2012				
Structure Type	Total Area Square Feet	Total Bid Amount	Cost per Square Feet	Number of Structures
P.S. Slabs - 15 inch	776.0	\$ 113,682	\$ 146.50	1
P.S. Slabs - 21 inch	5,432.5	\$ 759,567	\$ 139.82	2
P.S. Slabs - 26 inch	2,244.0	\$ 266,437	\$ 118.73	1
P.S. Slabs - 30 inch	13,761.5	\$ 1,705,641	\$ 123.94	5
Precast Prestr. R.C. Box Girder - 33 inch	781.3	\$ 146,220	\$ 187.14	2
Precast Prestr. R.C. Box Girder - 42 inch	14,080.0	\$ 2,383,849	\$ 169.31	4
Precast Prestr. R.C. Box Girder - 48 inch	6,413.0	\$ 723,722	\$ 112.85	1
Precast Prestr. R.C. Deck Girder - Bulb I 63 inch	4,830.0	\$ 416,665	\$ 86.27	1
Precast Prestr. R.C. Deck Girder - Bulb T 90 inch	5,052.4	\$ 1,135,523	\$ 224.75	1
Steel Plate Girders	36,537.5	\$ 5,584,296	\$ 152.84	3
Total	89,908.2	\$ 13,235,602	\$ 147.21	21

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Deck Area Total Cost Summary Fiscal Year 2013

Structure Type	Total Area Square Feet	Total Bid Amount	Cost per Square Feet	Number of Structures
P.S. Slabs - 12 inch	1,413.4	\$ 335,709	\$ 237.52	1
P.S. Slabs - 15 inch	3,511.8	\$ 242,750	\$ 69.12	1
P.S. Slabs - 18 inch	4,092.9	\$ 688,450	\$ 168.20	3
P.S. Slabs - 21 inch	1,272.0	\$ 162,552	\$ 127.79	1
P.S. Slabs - 30 inch	5,993.3	\$ 901,474	\$ 150.41	2
Precast Prestr. R.C. Deck Girder - Bulb I 63 inch	31,028.7	\$ 2,884,943	\$ 92.98	1
Precast Prestr. R.C. Deck Girder - Modified BT45	3,520.0	\$ 343,420	\$ 97.56	1
Precast Prestr. R.C. Deck Girder - Bulb T 48	24,276.9	\$ 3,936,204	\$ 162.14	3
Precast Prestr. R.C. Deck Girder - Bulb T 60	13,077.6	\$ 1,500,437	\$ 114.73	1
Precast Prestr. R.C. Deck Girder - Bulb T 90	25,202.0	\$ 2,860,815	\$ 113.52	1
Steel Plate Girders	44,742.0	\$ 6,978,177	\$ 155.96	2
Total	158,130.7	\$ 20,834,931	\$ 131.76	17

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Deck Area Total Cost Summary Fiscal Year 2014

Structure Type	Total Area Square Feet	Total Bid Amount	Cost per Square Feet	Number of Structures
P.S. Slabs - 18 inch	1,159.6	\$ 176,307	\$ 152.04	1
P.S. Slabs - 21 inch	4,961.3	\$ 810,411	\$ 163.35	2
P.S. Slabs - 26 inch	14,373.0	\$ 4,801,160	\$ 334.04	1
P.S. Slabs - 30 inch	3,382.3	\$ 338,704	\$ 100.14	1
Cast-in-place Post-tensioned Concrete Box	34717.0	\$ 5,571,234	\$ 160.48	1
Precast Pres. R.C. Box Girder 33 inch	16,988.2	\$ 2,393,985	\$ 140.92	1
Precast Pres. R.C. Box Girder 48 inch	3,304.0	\$ 652,351	\$ 197.44	1
Precast Pres. R.C. Box Girder 52 inch	13,794.6	\$ 2,487,165	\$ 180.30	1
Precast Prestr. R.C. Deck Girder - Bulb I 75 inch	23,087.5	\$ 2,291,145	\$ 99.24	1
Precast Prestr. R.C. Deck Girder - Bulb I 84	7,957.8	\$ 1,520,214	\$ 191.04	1
Precast Prestr. R.C. Deck Girder - Bulb T 36	25,512.9	\$ 3,373,074	\$ 132.21	3
Precast Prestr. R.C. Deck Girder - Bulb T 45	6,522.9	\$ 991,097	\$ 151.94	1
Precast Prestr. R.C. Deck Girder - Bulb T 72	58,614.1	\$ 7,893,700	\$ 134.67	3
Precast Prestr. R.C. Deck Girder - Bulb T 84	16,773.0	\$ 2,048,852	\$ 122.15	1
Steel Plate Girders	53,291.6	\$ 9,945,337	\$ 186.62	2
Total	284,439.8	\$ 45,294,735	\$ 2,446.58	21

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PRELIMINARY ESTIMATE SHEET FOR JR_6879										
Title							System: English			
Struct. Name:	Sellwood Bridge Replacement		No:	21493	PCS Key	13762				
Section:	SELLWOOD BRIDGE REPLACEMENT		Sta:		County:	Multnomah				
Highway:	Sellwood Bridge	No.:		M.P.:	Co. Str. No.:	6879				
Primary Project:	BR	Bridge Construction	OtoO Length	1,195.00 ft	OtoO Width	74.65 ft	Rdwy Width	Varies ft	Height	
Added Work (1):										
Description:	Concrete Box Girder Main Spans only					Loading:	HL-93			
Est Made By:	ML	Date:		Calc Bk:		Est Made From:	Quantities			
Checker:	CS	Date:		Calc Bk:		Dwgs:				
Summary										
UNIT COST PRIMARY PROJECT						SUBTOTAL:	48,465,700			
Total Cost w/o Add Items:		\$46,491,900 (incl. mob)		MOBILIZATION AT		% OF SUBTOT:				
Deck Area:	89207	SF	SUBTOTAL WITH MOBILIZATION:	48,465,700						
Cost per	SF	\$521.17	% ENGINEERING and CONTINGENCIES:							
TOTAL PROJECT COSTS:										

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PRELIMINARY ESTIMATE SHEET FOR JR_6879										
Title							System: English			
Struct. Name:	Sellwood Bridge Replacement		No:	21493	PCS Key	13762				
Section:	SELLWOOD BRIDGE REPLACEMENT		Sta:		County:	Multnomah				
Highway:	Sellwood Bridge	No.:		M.P.:	Co. Str. No.:	6879				
Primary Project:	BR	Bridge Construction	OtoO Length	524.00 ft	OtoO Width	68.84 ft	Rdwy Width	Varies ft	Height	
Added Work (1):										
Description:	Prestressed Girder Approach Spans only					Loading:	HL-93			
Est Made By:	ES	Date:		Calc Bk:		Est Made From:	Quantities			
Checker:	AC	Date:		Calc Bk:		Dwgs:				
Summary										
UNIT COST PRIMARY PROJECT						SUBTOTAL:	6,537,200			
Total Cost w/o Add Items:		\$5,950,900 (incl. mob)		MOBILIZATION AT		% OF SUBTOT:				
Deck Area:	36072	SF	SUBTOTAL WITH MOBILIZATION:	6,537,200						
Cost per	SF	\$164.97	% ENGINEERING and CONTINGENCIES:							
TOTAL PROJECT COSTS:										

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PRELIMINARY ESTIMATE SHEET FOR JR_6879

Title		System: English	
Struct. Name: Sellwood Bridge Replacement	No: 21493	PCS Key: 13762	
Section: SELLWOOD BRIDGE REPLACEMENT	Sta: _____	County: Multnomah	
Highway: Sellwood Bridge No.: _____	M.P.: _____	Co. Str. No.: 6879	
Primary Project: BR Bridge Construction	OtoO Length: 524.00 ft	OtoO Width: 68.45 ft	Rdwy Width: Varies ft
Added Work (1): _____	_____ ft	_____ ft	_____ ft
Description: Concrete Box Approach Spans only	Loading: HL-93		Height: _____ ft
Est Made By: MN Date: _____	Calc Bk: _____	Est Made From: Quantities	
Checker: AK Date: _____	Calc Bk: _____	Dwgs: _____	

Summary	UNIT COST PRIMARY PROJECT	SUBTOTAL: 8,002,300
Total Cost w/o Add Items: \$7,415,600 (incl. mob)	MOBILIZATION AT _____ % OF SUBTOT: _____	
Deck Area: 35868 SF	SUBTOTAL WITH MOBILIZATION: 8,002,300	
Cost per SF: \$206.75	_____ % ENGINEERING and CONTINGENCIES: _____	
	TOTAL PROJECT COSTS:	_____

Salem River Crossing Preferred Alternate - Bridge Cost Range Data Analysis: January 6, 2016

Source	Researched Cost			Adjusted to 2015 dollars ¹			Regionalized to Oregon Costs ²			Comments		
	Low	High	Average (Ave 3 Bid)	Annual Correction Factor ³	Low	High	Average	Regional Correction Factor	Low		High	Average (Ave 3 Bid)
Cast-in-Place Segmental (Balanced Cantilever) Bridges (Main Channel)												
Square Foot Costs												
TYLI Sourced Information ⁴	\$350.00	\$420.00	\$375.00	1.0390	\$363.64	\$410.59	\$389.62	1.0578	\$384.67	\$439.63	\$412.15	1. Data was for a TX project. Regional Correction Factor 0.9433 2. Construction was high off the ground (will reduce cost locally) 3. Numbers are construction costs (PM, planning, etc. will add 25-40%)
Seawood Bridge Costing ⁵	n/a	\$521.17	n/a	1.0716850		\$558.53						1. This value is represented by a singular data point
FDOT - Spans 150' to 280' (April 28, 2014) ⁶	\$140.00	\$160.00	\$150.00	1.0390	\$145.46	\$166.24	\$155.85	1.0578	\$153.87	\$175.85	\$164.86	1. Span length 150' to 280'
CA Comparative Bridge Cost 2014 ⁷	\$110.00	\$315.00	n/a	1.0390	\$114.29	\$327.28	n/a	n/a	n/a	n/a	n/a	1. Span length 190' to 290' 2. Subgrade and extent of substructure will affect cost to higher end
Averaged Suggested Cost Range *****									\$214.81	\$372.92	\$284.00	Cost range say \$215.00 to \$375
Precast Segmental (Open-Up-Span) Bridges (West Approach Spans)												
TYLI Sourced Information ⁴	n/a	n/a	\$275.00	1.0390	n/a	n/a	\$285.72	1.0578	n/a	n/a	\$302.24	1. Data was for a TX project. Regional Correction Factor 0.9433
Palm Beach Airport FDOT: circa 99100 (Avg 8 bridges) ⁷	\$86.49	\$116.11	\$100.51	1.1260	\$99.64	\$129.62	\$113.18	1.0578	\$105.41	\$137.11	\$119.72	
CA Comparative Bridge Cost 2014 ⁷	\$120.00	\$270.00	n/a	1.0390	\$124.68	\$280.52	n/a	n/a	n/a	n/a	n/a	1. Span length 120' to 280'
FDOT Colorado Bridge Cost Data Rows ⁸	\$87.14	\$67.49	\$91.91	1.0687	\$93.21	\$154.28	\$99.49	n/a	n/a	n/a	n/a	
Seawood Bridge Costing ⁵	n/a	\$236.96	n/a	1.0717	n/a	\$241.62	n/a	n/a	n/a	n/a	n/a	1. This value is represented by a singular data point
Averaged Suggested Cost Range *****									\$107.77	\$190.86	\$173.82	Cost range say \$110.00 to \$190.00
Assumed Precast - Balanced Cantilever												
Florida DOT Transportation Costs Reports, April 2014 ⁶	\$140.00	\$180.00	\$150.00	1.0390	\$145.46	\$186.24	\$155.85	1.0578	\$153.87	\$175.85	\$164.86	1. Balanced cantilever construction (costs data point) 2. Not used in this evaluation of cost - just another data point
Averaged Suggested Cost Range *****									\$107.77	\$190.86	\$173.82	Cost range say \$110.00 to \$190.00
Prestress I-Girder Bridges (HWY 22 Ramp Spans over Old SR Trestle/Multi-Use Path)												
CA Comparative Bridge Cost 2014 ⁷	\$190.00	\$325.00	n/a	1.0390	\$195.85	\$337.67	n/a	n/a	n/a	n/a	n/a	
Florida DOT Transportation Costs Reports, April 2014 ⁶	\$90.00	\$211.11	n/a	1.0390	\$93.51	\$219.34	n/a	1.057837	\$96.92	\$232.02	n/a	1. Includes simple and continuous span configurations 2. BT48 244 str-01 3. BT48 145 str-01 4. BT50 145 str-01 5. BT50 145 str-01 6. BT50 145 str-01
FDOT 2010 Bridge Cost Data, Steel Structures ⁹	n/a	\$261.32	\$243.32	1.0717	n/a	\$269.34	\$269.76	n/a	n/a	n/a	n/a	
FDOT 2010 Bridge Cost Data, Steel Structures ⁹	n/a	\$180.95	\$165.45	1.0717	n/a	\$189.29	\$177.31	n/a	n/a	n/a	n/a	
FDOT 2010 Bridge Cost Data, Steel Structures ⁹	n/a	\$114.73	\$102.28	1.0717	n/a	\$122.95	\$109.59	n/a	n/a	n/a	n/a	
FDOT 2010 Bridge Cost Data, Steel Structures ⁹	n/a	\$113.52	\$112.28	1.0717	n/a	\$121.66	\$120.33	n/a	n/a	n/a	n/a	
Seawood Bridge Costing ⁵	n/a	\$164.97	n/a	1.0717	n/a	\$175.85	n/a	n/a	n/a	n/a	n/a	1. This value is represented by a singular data point
FDOT 2010 Bridge Cost Data, Steel Structures ⁹	n/a	\$93.00	n/a	1.0717	n/a	\$99.87	n/a	n/a	n/a	n/a	n/a	1. PCPS Rowl - Concrete Box "1-2" Open ¹⁰ 2. PCPS Rowl - Concrete Box "1-3" Open ¹⁰ 3. PCPS Rowl - Concrete Box "1-3" Open ¹⁰ 4. PCPS Rowl - Concrete Box "1-3" Open ¹⁰
FDOT 2010 Bridge Cost Data, Steel Structures ⁹	n/a	\$150.00	n/a	1.0717	n/a	\$160.77	n/a	n/a	n/a	n/a	n/a	
FDOT 2010 Bridge Cost Data, Steel Structures ⁹	n/a	\$191.00	n/a	1.0717	n/a	\$204.69	n/a	n/a	n/a	n/a	n/a	
Averaged Suggested Cost Range *****									\$127.38	\$169.73	\$167.00	Cost range say \$125.00 to \$170.00
Steel Tub Girder Bridges (Multi-Use Path Structure over Wallace/Edgewater Intersection)												
FDOT 2010 Bridge Cost Data, Steel Structures ⁹	\$217.47	n/a	\$223.69	1.0717	\$233.06	n/a	\$238.73	n/a				1. Data derived from average of 3 steel box girder bridges 2010 Oregon 2. All structures just over 6,000 SF of deck area of less of less 3. Span lengths range from 100' to 220', up to 4 spans in length 4. Annualized for 2015 dollars 5. Steel structures are 16' tall over 6' bridge as built to determine SF cost
Florida DOT Transportation Costs Reports, April 2014 ⁶	\$140.00	\$180.00	n/a	1.0390	\$145.46	\$187.02	n/a	1.0578	\$153.87	\$197.83		
Averaged Suggested Cost Range *****									\$193.46	\$197.83	\$218.78	Cost range say \$190 to \$220.00
STEEL PLATE												
FDOT 2010 Bridge Cost Data, Steel Structures ⁹	\$124.81		\$140.29	1.0390	\$129.78	\$0.00	\$145.78	n/a				1. Price is for steel plate girders (extra data point) - Not Used in Anal. 2. Single price point for "Valley View Rd CDNR #1 over Hwy 1 (Alford)
Averaged Suggested Cost Range *****									\$193.46	\$197.83	\$218.78	Cost range say \$190 to \$220.00

1. Generally the case when data was available
2. See Workbook AHVDCI
3. National Highway Construction Cost Index
4. United States Department of Labor, Bureau of Labor and Statistics, Consumer Price Index
5. Internal Email from TYLI
6. Seawood Replacement Project, Bridge Procurement Report, 2010
7. Florida Department of Transportation, Transportation Costs Report, April 28, 2014
8. "CostDataRow2010" ODOT Website (see workbook AHVDCI)
9. Florida Department of Transportation, Transportation Costs Report, April 28, 2014
10. http://www.dot.state.fl.us/Projects/InRoads/CDMP_BK_COE136_2014.mpg.pdf

Consumer Price Index - All Urban Consumers
Original Data Value

Series Id: CUUR0400SA0,CUUS0400SA0

Not Seasonally Adjusted

Area: West urban

Item: All items

Base: 1982-84=100

Period:

Years: 2005 to 2015

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	HALF1	HALF2
2005	194.5	195.7	197.1	198.6	198.8	198.0	198.6	199.6	201.7	202.6	201.4	200.0	198.9	197.1	200.7
2006	201.7	202.7	203.8	205.3	206.9	206.4	206.7	207.5	207.8	207.1	206.3	206.2	205.7	204.5	206.9
2007	207.790	208.995	210.778	212.036	213.063	212.680	212.542	212.406	212.920	213.917	214.904	214.733	212.230	210.890	213.570
2008	215.739	216.339	218.533	219.437	221.009	223.040	223.867	222.823	222.132	221.034	217.113	214.685	219.646	219.016	220.276
2009	215.923	217.095	217.357	217.910	218.567	219.865	219.484	219.884	220.294	220.447	219.728	219.307	218.822	217.786	219.857
2010	219.989	220.179	220.809	221.202	221.417	221.147	221.331	221.523	221.384	221.708	221.671	222.081	221.203	220.790	221.616
2011	223.149	224.431	226.558	227.837	228.516	228.075	227.805	228.222	229.147	229.195	228.771	228.117	227.485	226.428	228.543
2012	228.980	229.995	232.039	232.561	233.053	232.701	231.893	233.001	234.083	234.966	233.206	232.029	232.376	231.555	233.196
2013	232.759	234.595	235.511	235.488	235.979	236.227	236.341	236.591	237.146	237.000	236.153	236.096	235.824	235.093	236.555
2014	236.707	237.614	239.092	239.808	241.350	241.616	241.850	241.660	241.920	241.650	240.220	239.095	240.215	239.365	241.066
2015	238.318	239.748	241.690	242.302	244.227	244.332	245.040	244.737	244.257	244.341	243.749				241.770

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Consumer Price Index - All Urban Consumers
Original Data Value

Series Id: CUUR0300SA0,CUUS0300SA0

Not Seasonally Adjusted

Area: South urban

Item: All items

Base: 1982-84=100

Period:

Years: 2005 to 2015

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	HALF1	HALF2
2005	183.6	184.7	185.9	187.3	187.3	187.8	188.5	189.4	192.0	192.5	190.7	190.1	188.3	186.1	190.5
2006	191.5	191.8	192.8	194.7	195.5	196.3	197.0	197.1	195.8	194.7	194.3	194.8	194.7	193.8	195.6
2007	195.021	195.950	197.904	199.618	200.804	201.675	201.571	201.041	201.697	202.155	203.437	203.457	200.361	198.495	202.226
2008	204.510	205.060	206.676	208.085	210.006	212.324	213.304	212.387	212.650	210.108	205.559	203.501	208.681	207.777	209.585
2009	204.288	205.343	206.001	206.657	207.265	209.343	208.819	209.000	208.912	209.292	209.738	209.476	207.845	206.483	209.206
2010	210.056	210.020	211.216	211.528	211.423	211.232	210.988	211.308	211.775	212.026	211.996	212.488	211.338	210.913	211.764
2011	213.589	214.735	217.214	218.820	219.820	219.318	219.682	220.471	220.371	219.969	219.961	219.469	218.618	217.249	219.987
2012	220.497	221.802	223.314	224.275	223.356	223.004	222.667	223.919	225.052	224.504	223.109	223.242	222.708	222.708	223.776
2013	223.933	225.874	226.628	226.202	226.289	227.148	227.548	227.837	227.876	227.420	226.811	227.082	226.721	226.012	227.429
2014	227.673	228.664	230.095	231.346	231.762	232.269	232.013	231.611	231.762	231.131	229.845	228.451	230.552	230.302	230.802
2015	226.855	227.944	229.337	229.957	230.886	232.026	231.719	231.260	230.913	230.860	230.422				229.501

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STEEL STRUCTURES

Str. No.	Str. Name	County	Contract	Description	Dwg No.	Deck Area SQFT	Low Bid Total Cost	Low Bid Unit Cost	Ave 3 Bid Total Cost	Ave 3 Bid Unit Cost
<u>Steel Box Girders</u>										
21218	Hwy 2 over Hood River Bridge Connector (Conn 2)	Hood River	14122	Trapezoidal structural steel box girders, single span, 98'-7" ctr-to-ctr end bents	82313	8,710.8	\$ 2,024,491	\$ 232.41	\$ 2,044,651	\$ 234.73
20878	Sandy River, Hwy 2 EB	Multnomah	14165	Steel box girders w/haunch, 4 spans, 200'-220'-220'-200'	81319	68,263.5	\$15,052,888	\$ 220.51	\$15,624,680	\$ 228.89
20879	Sandy River, Hwy 2 WB	Multnomah	14165	Steel box girders w/haunch, 4 spans, 200'-220'-220'-200'	81366	53,484.7	\$11,293,989	\$ 211.16	\$11,512,879	\$ 215.26
Subtotal (per sqft.)						130,459.0	\$28,371,368	\$ 217.47	\$29,182,210	\$ 223.69
<u>Steel Plate Girders</u>										
21358	Valley View Rd Conn #1 over Hwy 1 (N. Ashland Intchg)	Jackson	14244	2 span continuous steel plate girders, 259'-6" ctr-to-ctr end bents	83881	16,596.3	\$ 2,073,034	\$ 124.91	\$ 2,328,288	\$ 140.29

PRECAST PRESTRESSED REINFORCED CONCRETE BOX GIRDER

Str. No.	Str. Name	County	Contract	Description	Dwg No.	Deck Area SQFT	Low Bid Total Cost	Low Bid Unit Cost	Ave 3 Bid Total Cost	Ave 3 Bid Unit Cost
<u>33 inch Box Girder</u>										
21872*	Pedestrian over Hwy 64	Clackamas	14552	4-33" PCPS box beams, 96'-0" ctr-ctr end bents	90969	\$ 1,552.0	\$ 175,286	\$ 112.94	\$ 193,742	\$ 124.83

* For information only. Pedestrian bridge not included in the deck area unit cost.

PRECAST PRESTRESSED REINFORCED CONCRETE DECK GIRDER

Str. No.	Str. Name	County	Contract	Description	Dwg No.	Deck Area SQFT	Low Bid Total Cost	Low Bid Unit Cost	Ave 3 Bid Total Cost	Ave 3 Bid Unit Cost
<u>63 inch Bulb T</u>										
21576	Hwy 69 over Hwy 1	Lane	14537	21-precast prestressed B163, 244'-0" ctr-ctr end bents	89951	31,028.7	\$ 2,884,943	\$ 92.98	\$ 3,265,764	\$ 105.25
<u>Modified 45 inch Bulb T</u>										
21747	Scoggins Creek, Old Tualatin Valley Hwy #47	Washington	14551	5-PCPS Modified DBT45 beams	91063	3,520.0	\$ 343,420	\$ 97.56	\$ 351,858	\$ 99.96
<u>48 inch Bulb T</u>										
22019	Undercrossing 3RD Street Bridge	Deschutes	14576	2-Precast prestressed BT48 girders & 2-pcsp 20" x 48" min. girders (variable depth), 140'-0" ctr-ctr end bents	91303	4,506.6	\$ 1,132,571	\$ 251.32	\$ 1,096,516	\$ 243.32
22021	Undercrossing Murphy Road Bridge	Deschutes	14576	6-Precast prestressed BT48 girders & 2-pcsp 20" x 48" min. girders (variable depth), 185'-0" ctr-ctr end bents	91283	9,984.4	\$ 1,800,825	\$ 180.36	\$ 1,651,904	\$ 165.45
21488	Hwy 42 over Hwy 2	Sherman	14548	17-Modified BT48 girders, 113'-0" ctr-ctr end bents	91137	9,786.0	\$ 1,002,808	\$ 102.47	\$ 1,042,219	\$ 106.50
Subtotal (per sq ft.)						24,278.9	\$ 3,935,204.3	\$ 162.14	\$ 3,790,639.3	\$ 156.14
<u>80 inch Bulb T</u>										
21487	Hwy 42 over UPRR	Sherman	14548	17-Modified BT60 girders, 145'-1 5/16" ctr-ctr end bents	91110	13,077.6	\$ 1,500,437	\$ 114.73	\$ 1,337,264	\$ 102.26

PRECAST PRESTRESSED REINFORCED CONCRETE DECK GIRDER

Str. No.	Str. Name	County	Contract	Description	Dwg No.	Deck Area SQFT	Low Bid Total Cost	Low Bid Unit Cost	Ave 3 Bid Total Cost	Ave 3 Bid Unit Cost
<u>84 inch Bulb T</u>										
22004*	Creek, Hwy 39 at MP 56.40	Yamhill	14594	7-BT84 precast prestressed girders, 155'-6 3/4" ctr-ctr end bents	90367	7,177.7	\$ 550,328	\$ 76.67	\$ 571,864	\$ 79.67
<u>90 inch Bulb T</u>										
21343	Applegate River, Hwy 25	Josephine	14541	PCPS BT90, 520'-0" ctr-ctr end bents	90273	25,202.0	\$ 2,860,815	\$ 113.52	\$ 2,829,792	\$ 112.28

*For information, prestressed BT84 girders (agency provided). Cost intended for loading, transportation, preparation and installation.

PRECAST PRESTRESSED REINFORCED CONCRETE BOX GIRDER

Str. No.	Str. Name	County	Contract	Description	Dwg No.	Deck Area SQFT	Low Bid Total Cost	Low Bid Unit Cost	Ave 3 Bid Total Cost	Ave 3 Bid Unit Cost
<u>33 inch Box Girder</u>										
21872*	Pedestrian over Hwy 64	Clackamas	14552	4-33" PCPS box beams, 96'-0" ctr-ctr end bents	90969	\$ 1,552.0	\$ 175,286	\$ 112.94	\$ 193,742	\$ 124.83

* For information only. Pedestrian bridge not included in the deck area unit cost.

National Highway Construction Cost Index (NHCCI)

Construction Cost Trends For Highways ^{TV}

October 2015

Table PT-1

Year	Quarter	NHCCI Index
2003	March	1.0000
	June	1.0155
	September	1.0035
	December	0.9929
2004	March	1.0250
	June	1.0639
	September	1.0040
	December	1.0010
2005	March	1.1159
	June	1.1459
	September	1.2045
	December	1.2429
2006	March	1.2727
	June	1.3454
	September	1.4054
	December	1.3593
2007	March	1.3425
	June	1.3118
	September	1.2501
	December	1.2363
2008	March	1.2500
	June	1.2935
	September	1.3521
	December	1.2335
2009	March	1.1815
	June	1.0901
	September	1.0752
	December	1.0410
2010	March	1.0553
	June	1.0671
	September	1.0595
	December	1.0630
2011	March	1.0524
	June	1.0591
	September	1.0617
	December	1.0550
2012	March	1.1147
	June	1.1495
	September	1.1315
	December	1.1148
2013	March	1.1002
	June	1.1062
	September	1.1195
	December	1.0627
2014	March	1.0947
	June	1.1007
	September	1.1354
	December	1.1155
2015	March	1.1334
	June	1.1435

June 2010 to June 2015: 1.1436 / 1.0671 = **1.07169** *do not alt*
 June 2014 to June 2015: 1.1436 / 1.1007 = **1.038975**
 June 2013 to June 2015: 1.1436 / 1.1092 = **1.031013**
 June 2000 to June 2015: 1.1436 / 1.0156 = **1.126034**
 June 2011 to June 2015: 1.1436 / 1.0691 = **1.069685**

Salem 3rd Crossing Qtys	Wall Weighted Avg Ht.	8.38
	Wall Length	8,990.00

Range	
12.56	ft
4.19	ft

Wall Type	Source Ht	Source Length	Source	Source Cost*	Inflation Rate	Source Yr	Build Yr	Forecasted Cost	Unit	Notes
MSE 2011	9.78	250	ODOT	\$ 70.70	2.0%	2011	2016	\$ 77.77	\$/SF	
MSE 2012	6.55	110	ODOT	\$ 34.17	2.0%	2012	2016	\$ 36.90	\$/SF	
MSE 2012	7.96	531.08	ODOT	\$ 22.77	2.0%	2012	2016	\$ 24.59	\$/SF	
MSE 2012	10.99	242.55	ODOT	\$ 50.94	2.0%	2012	2016	\$ 55.02	\$/SF	
MSE 2012	8	1119.94	ODOT	\$ 43.47	2.0%	2012	2016	\$ 46.95	\$/SF	
MSE 2012	7.29	87.5	ODOT	\$ 31.84	2.0%	2012	2016	\$ 34.39	\$/SF	
MSE 2012	6.27	370	ODOT	\$ 31.35	2.0%	2012	2016	\$ 33.86	\$/SF	
MSE 2012	4.79	60	ODOT	\$ 32.35	2.0%	2012	2016	\$ 34.94	\$/SF	
MSE 2012	5.48	65	ODOT	\$ 34.81	2.0%	2012	2016	\$ 37.59	\$/SF	
MSE 2012	4.77	55	ODOT	\$ 34.67	2.0%	2012	2016	\$ 37.44	\$/SF	
MSE 2013	6.04	125	ODOT	\$ 56.56	2.0%	2013	2016	\$ 59.95	\$/SF	
MSE 2013	9.87	352.5	ODOT	\$ 57.76	2.0%	2013	2016	\$ 61.23	\$/SF	
MSE 2013	9.17	90	ODOT	\$ 64.85	2.0%	2013	2016	\$ 68.74	\$/SF	
MSE 2013	7.56	45	ODOT	\$ 79.12	2.0%	2013	2016	\$ 83.87	\$/SF	
MSE 2013	10.14	180.11	ODOT	\$ 59.75	2.0%	2013	2016	\$ 63.34	\$/SF	
MSE 2013	8.43	177.92	ODOT	\$ 65.87	2.0%	2013	2016	\$ 69.82	\$/SF	
MSE 2013	6.67	217	ODOT	\$ 44.44	2.0%	2013	2016	\$ 47.11	\$/SF	
MSE 2013	7.01	98	ODOT	\$ 43.96	2.0%	2013	2016	\$ 46.60	\$/SF	
MSE 2013	10.5	181.75	ODOT	\$ 96.23	2.0%	2013	2016	\$ 102.00	\$/SF	
MSE 2013	10.9	111.6	ODOT	\$ 96.63	2.0%	2013	2016	\$ 102.43	\$/SF	
MSE 2013	11.27	220	ODOT	\$ 75.36	2.0%	2013	2016	\$ 79.88	\$/SF	
MSE 2013	6.16	132.08	ODOT	\$ 41.45	2.0%	2013	2016	\$ 43.94	\$/SF	
MSE 2013	7.4	450	ODOT	\$ 40.72	2.0%	2013	2016	\$ 43.16	\$/SF	
MSE 2013	8.49	470	ODOT	\$ 41.93	2.0%	2013	2016	\$ 44.45	\$/SF	
MSE 2013	12.27	546.5	ODOT	\$ 43.17	2.0%	2013	2016	\$ 45.76	\$/SF	
MSE 2013	10.69	175	ODOT	\$ 64.33	2.0%	2013	2016	\$ 68.19	\$/SF	
MSE 2013	10.31	848.8	ODOT	\$ 80.84	2.0%	2013	2016	\$ 85.69	\$/SF	
MSE 2014	8.74	318.67	ODOT	\$ 54.58	2.0%	2014	2016	\$ 56.76	\$/SF	
MSE 2014	11.01	348.05	ODOT	\$ 54.47	2.0%	2014	2016	\$ 56.65	\$/SF	
MSE 2014	9.99	97.52	ODOT	\$ 67.35	2.0%	2014	2016	\$ 70.04	\$/SF	
MSE 2014	6.06	137.83	ODOT	\$ 69.70	2.0%	2014	2016	\$ 72.49	\$/SF	
MSE 2014	5.76	586	ODOT	\$ 146.52	2.0%	2014	2016	\$ 152.38	\$/SF	
MSE 2014	9.16	308	ODOT	\$ 113.16	2.0%	2014	2016	\$ 117.69	\$/SF	
MSE 2014	4.5	50.25	ODOT	\$ 80.97	2.0%	2014	2016	\$ 84.21	\$/SF	
MSE 2014	4.53	311.81	ODOT	\$ 119.09	2.0%	2014	2016	\$ 123.85	\$/SF	
MSE 2014	11.92	166.76	ODOT	\$ 78.17	2.0%	2014	2016	\$ 81.30	\$/SF	
MSE 2014	8.33	19.08	ODOT	\$ 109.43	2.0%	2014	2016	\$ 113.81	\$/SF	
MSE 2014	12.1	123.75	ODOT	\$ 87.11	2.0%	2014	2016	\$ 90.59	\$/SF	
TOTALS								\$ 67.25	\$/SF	

*3 Low bidders Avg Cost utilized

**Analysis of ODOT past costs for similar walls (range +/- 50% of weighted avg wall height)

Oregon DOT Weighted Average Item Prices - Calendar Year 2014

**WEIGHTED AVERAGE ITEM PRICE REPORT
BY ITEM, REGION AND QUARTER**

ITEM	REGION	CALENDAR QUARTER	NUMBER OF OCCUR'S	TOTAL QUANTITY	TOTAL DOLLARS	AVERAGE AWARDED PRICE	AVERAGE OF LOW 3 BIDDERS
REMOVAL OF PIPES / FOOT							
0310-010000F	0	201402	9	4,973.00	\$58,918	\$11.45	\$9.48
		201403	1	344.00	\$2,322	\$6.75	\$8.92
		201404	2	460.00	\$7,110	\$15.46	\$10.22
	CODE NOT	201404	1	758.00	\$9,096	\$12.00	\$11.00
			13	6,535.00	\$75,446	\$11.54	\$9.68
REMOVAL OF CURBS / FOOT							
0310-0101000F	0	201401	1	200.00	\$300	\$1.50	\$4.17
		201402	3	6,875.00	\$10,075	\$1.47	\$2.54
		201403	2	1,170.00	\$3,762	\$3.22	\$2.69
		201404	1	280.00	\$1,400	\$5.00	\$5.72
	CODE NOT	201403	1	307.00	\$6,140	\$20.00	\$12.17
		201404	1	400.00	\$1,200	\$3.00	\$3.67
			9	9,232.00	\$22,877	\$2.48	\$3.06
REMOVAL OF WALKS AND DRIVEWAYS / SQYD							
0310-0102000J	0	201401	1	250.00	\$3,750	\$15.00	\$12.67
		201402	4	721.00	\$6,109	\$8.47	\$11.93
		201403	1	2,500.00	\$5,750	\$2.30	\$3.00
		201404	2	239.00	\$2,432	\$10.18	\$27.62
	CODE NOT	201403	1	47.00	\$1,410	\$30.00	\$40.00
		201404	1	104.00	\$2,080	\$20.00	\$11.33
			10	3,861.00	\$21,531	\$5.58	\$7.49
REMOVAL OF SURFACINGS / SQYD							
0310-0103000J	0	201402	5	39,569.00	\$102,125	\$2.58	\$4.43
		201403	1	1,800.00	\$5,940	\$3.30	\$4.20
		201404	1	59.00	\$1,770	\$30.00	\$46.00

(item continued)

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ITEM	REGION	CALENDAR QUARTER	NUMBER OF OCCUR'S	TOTAL QUANTITY	TOTAL DOLLARS	AVERAGE AWARDED PRICE	AVERAGE OF LOW 3 BIDDERS
REMOVAL OF SURFACINGS / SQYD							
0310-0103000J	CODE NOT	2014Q1	1	112.00	\$3,920	\$35.00	\$37.00
		2014Q3	1	320.00	\$1,600	\$5.00	\$6.33
			9	41,860.00	\$115,355	\$2.76	\$4.58
REMOVAL OF INLETS / EACH							
0310-0104000E	0	2014Q2	4	17.00	\$5,065	\$297.94	\$354.45
		2014Q3	1	4.00	\$800	\$200.00	\$331.67
		2014Q4	2	9.00	\$3,000	\$333.33	\$558.64
	CODE NOT	2014Q3	1	10.00	\$4,000	\$400.00	\$436.33
		2014Q4	1	7.00	\$1,750	\$250.00	\$250.00
		9	47.00	\$14,615	\$310.96	\$393.48	
REMOVAL OF MANHOLES / EACH							
0310-0105000E	0	2014Q2	1	1.00	\$750	\$750.00	\$716.67
		2014Q3	1	1.00	\$875	\$875.00	\$498.33
		2014Q4	1	4.00	\$1,600	\$400.00	\$596.67
	CODE NOT	2014Q3	1	9.00	\$4,500	\$500.00	\$925.00
		2014Q4	1	1.00	\$400	\$400.00	\$500.00
		5	16.00	\$8,125	\$507.81	\$776.67	

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Item	Source Unit	Source	Source Unit Cost*	New Unit cost	SR3 Unit	Inflation Rate	Source Yr	Build Yr	Forecasted Cost	Unit	Note
REMOVE WALKS AND DRIVEWAYS	SY	2014	\$ 5.58	\$ 3,273.60	\$/12ftLane-mile	2.0%	2013	2016	\$ 3,470.02	\$/12ftLane-mile	
TOTALS									\$ 3,470.02	\$/12ftLane-mile	\$ 5,047.14 \$/Acre

*3 Low bidders Weighted Avg Cost utilized

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Actual qty to construct		Compared to bid qty							
Total EW	332,781 CY	Total CUT	151,712 CY 36%						
		Total FILL	267,687 CY 80%						
			419,399 CY 126%						
Weight prices based on these									
Retaining Walls		Road Work							
Qty	Excavation: Cut 42089 CY	Excavation: Cut	109,622.83 CY						
	Backfill Walls: Fill 181069 CY	Embankment In Place: Fill	86618 CY						
Assume 5" overlay over all surfaces									
Item	Source	Source \$/Unit	Source Unit	Inflation Rate	Source Yr	Build Yr	Forecasted Cost	Unit	Weighted
General Excavation	ODOT 2014	11.08	CY	2.0%	2014	2016	\$ 11.52	CY	46%
Embankment in Place	ODOT 2014	6.2	CY	2.0%	2014	2016	\$ 6.45	CY	80%
TOTALS							\$ 17.97	CY	\$ 10.46
CHECK									
EXC	151,712 CY	\$ 11.52	\$ 1,748,203.87						
FILL	267,687 CY	\$ 6.45	\$ 1,726,046.89						
		\$ 3,474,250.76		10.4400565	~		\$ 10.46	OK	

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GREEN VALUES[®] NATIONAL STORMWATER MANAGEMENT CALCULATOR

Cost Sheet

Component	Construction Cost		
	Range	Cost	Source
Concrete Sidewalk and Driveway	Low	\$3.400/sq ft	RSMeans Building Construction Cost Data - 63rd Annual Edition (2005)
	Mid	\$5.190/sq ft	RSMeans Site Work & Landscape Cost Data - 28th Annual Edition (2009)
	High	\$10.000/sq ft	Residential Construction and Remodelling Estimates Accessed March 2009 Web Link
Curbs and Gutters	Low	\$13.000/linear foot	"Grassy Swales Fact Sheet." Accessed March 2009 Web Link
	Mid	\$17.250/linear foot	RSMeans. Building Construction Cost Data. 63rd Annual Edition 2005
	High	\$29.500/linear foot	City of Oxnard, California, Streets and Waterways Division. "Street Maintenance & Repair Funding." Accessed July 2005
Street	Low	\$2.830/sq ft	Audit of Pavement Standards in the Upper Saluda-Reedy Watershed, Saluda-Reedy Watershed Consortium, 2006 Web Link
	Mid	\$4.330/sq ft	RSMeans. Site Work and Landscaping Cost Data. 2009
	High	\$12.350/sq ft	City of Oxnard, California, Streets and Waterways Division. "Street Maintenance & Repair Funding." Accessed July 2005
Bioswales (Parking Lot and Roadside)	Low	\$5.500/sq ft	City of Portland, Bureau of Environmental Services, Willamette Watershed Program - Task Memorandum 4.1 August 2005
	Mid	\$15.000/sq ft	Water Environment Research Federation Low Impact Development Best Management Practices Whole Life Cost Model 2007
	High	\$24.000/sq ft	Center for Neighborhood Technology, "Green Infrastructure Data Quantification and Assessment In the Calumet Region" Accessed January 2009 Web Link

Signals, Inter connects, lighting, Landscaping quantities

<u>Signals (assumed new with for lights per intersection)</u>	CHECK*	Illumination (mile)	(LF)	(Mile)
1 Commercial and Liberty	1.00	1 Pine St: Liberty - Commercial	250.00	0.047
2 Commercial and Hickory	1.00	2 Pine St: Commercial - Bridge	500.00	0.095
3 Hope and Marine Drive	1.00	3 Hickory: Commercial - Bridge	500.00	0.095
4 Hope and Wallace	1.00	4 Bridge MS: Westbound	3,400.00	0.644
5 Beckett and Wallace	1.00	5 Bridge MS: Eastbound	3,400.00	0.644
6 Beckett and Marine Drive	1.00	6 Bride: Approach Westbound	1,000.00	0.189
7 Orchard Hts. and Wallace	1.00	7 Bride: Approach Eastbound	1,000.00	0.189
8 Glen Creek and Marine Drive	1.00	8 Front Street: limits - limits	1,800.00	0.341
9		9 River Bend: Round-a-bout	2,400.00	0.455
	Total 8.00	10 Marine Drive: RA - Hope	3,800.00	0.720
	Cost (Ea) \$ 250,000.00	11 Marine Drive: Hope - Beckett	1,200.00	0.227
	Total Cost \$ 2,000,000.00	12 Beckett: Wallace - Marine Dr	750.00	0.142
		13 Marine Drive: Beckett - 5th	400.00	0.076
		14 5th Ave: Marine Dr - limits	500.00	0.095
		15 Marine Drive: 5th Ave - Glen Creek	2,400.00	0.455
		16 Taybin Rd: Marine Dr - limits	400.00	0.076
		17 Glen Creek: Marine Drive - limits	700.00	0.133
		18 Marine Dr: Glen Crk - Wallace Rd	2,000.00	0.379
		19 Edgewater St: Wallace Rd - limits	1,100.00	0.208
		20 I-Girder Ramp: paralleling Edgewater	4,600.00	0.871
			Quantity Total 12,850.00	2.434
			Cost (LF) \$ 365,000.00	8.513
			Total Cost	\$ 3,107,339.02

<u>Traffic Signal Interconnect (LF)</u>			
1 Liberty and Pine (existing)			
2 Liberty and Hickory (Existing)			
3 Commercial/Liberty - Commercial Hickory	300.00		
4 Marine Dr/ Hope - Hope/Wallace Rd	1,000.00		
5 Marine Dr/ Hope - Marine Dr/Beckett	1,000.00		
6 Hope/Wallace Rd - Wallace Rd/Beckett	800.00		
7 Wallace Rd/Beckett - Wallace Rd/Orchard Hghts	900.00		
8 Wallace Rd/Marine Dr - Marine Drive/Glen Creek	1,900.00		
9 Glen Creek/Marine Dr -Beckett/Marine Drive	2,400.00		
	Quantity Total 8,300.00	9416ft	CAD CHECK
	Cost (LF) \$ 30.00		BB 1-13-16
	Total Cost \$ 249,000.00		

Check these too please

APPROX 40:1 SCALE FROM PROJECT PLOT

<u>Landscaping (Estimate based upon 6' behind each sidewalk) from cad take-off = 7.1 miles of sidewalk</u>	
Cost Estimate per Square Foot of Landscaping=	\$ 5.00
Total estimate of square feet of landscaping=	224,928.00 OK
Total Cost	\$ 1,124,640.00

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- i ODOT CONSTRUCTION COSTS FORECAST, October 2013
- ii Florida Department of Transportation, Transportation Costs Report, April 29, 2014
- iii Florida Department of Transportation, Transportation Costs Report, April 29, 2014
- iv [http://www.rsmeansonline.com/References/CCI/2-Assemblies%20\(UniFormat\)/0-How%20To%20Use.pdf](http://www.rsmeansonline.com/References/CCI/2-Assemblies%20(UniFormat)/0-How%20To%20Use.pdf)
- v <http://rsmeansonline.com/References/CCI/3-Historical%20Cost%20Indexes/1-Historical%20Cost%20Indexes.PDF>
- vi <https://www.fhwa.dot.gov/policyinformation/nhcci.cfm>
- vii <https://www.fhwa.dot.gov/policyinformation/nhcci.cfm>
- viii ODOT: Pages from "CostDataBook2010" ODOT Website
- ix 2011 Construction Cost Data Book – Colorado DOT
- x Florida Department of Transportation, Transportation Costs Report, April 29, 2014
- xi Florida Department of Transportation, Transportation Costs Report, April 29, 2014
- xii http://www.dot.ca.gov/hq/esc/estimates/COMP_BR_COSTS_2014-eng.pdf
- xiii ODOT: Pages from "CostDataBook2010" ODOT Website
- xiv ODOT: Pages from "CostDataBook2010" ODOT Website
- xv ODOT: Pages from "CostDataBook2010" ODOT Website
- xvi ODOT: Pages from "CostDataBook2010" ODOT Website
- xvii ODOT: Pages from "CostDataBook2011" ODOT Website
- xviii ODOT: Pages from "CostDataBook2012" ODOT Website
- xix ODOT: Pages from "CostDataBook2013" ODOT Website
- xx ODOT: Pages from "CostDataBook2014" ODOT Website
- xxi Sellwood Bridge Prescreening Report, 2010
- xxii Sellwood Bridge Prescreening Report, 2010
- xxiii Sellwood Bridge Prescreening Report, 2010
- xxiv CONSULTANT BRIDGE COST RANGE CALCULATION SUMMARY BASED ON RESEARCH
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- xxvi CONSULTANT BRIDGE COST RANGE CALCULATION SUMMARY BASED ON RESEARCH
 - xxvii CONSULTANT BRIDGE COST RANGE CALCULATION SUMMARY BASED ON RESEARCH
 - xxviii CONSULTANT BRIDGE COST RANGE CALCULATION SUMMARY BASED ON RESEARCH
 - xxix CONSULTANT MSE WALL COST CALCULATION SUMMARY DERIVED FROM ODOT: "CostDataBook2010-2014"
 - xxx ODOT: Pages from "Oregon DOT Weighted Average Item Prices – Calendar Year 2014"
 - xxxi ODOT: Pages from "Oregon DOT Weighted Average Item Prices – Calendar Year 2014"
 - xxxii CONSULTANT REMOVAL OF STRUCTURE AND OBSTRUCTION COST CALC FROM ODOT HWY COSTS 2014
 - xxxiii CONSULTANT EARTHWORK COST CALC FROM ODOT HWY COSTS 2014
 - xxxiv GREENVALUES STORMWATER TOOLBOX – NATIONAL STORMWATER MANAGEMENT CALCULATOR
 - xxxv CONSULTANT ILLUMINATION, LANDSCAPING AND TRAFFIC SIGNAL/INTERCONNECT TAKEOFF CALCULATION

Salem River Crossing Preferred Alternate - Bridge Cost Range Data Analysis; January 6, 2016

Source	Researched Cost			Adjusted to 2015 dollars ¹			Regionalized to Oregon Costs ²			Comments		
	Low	High	Average (Ave 3 Bid)	Annual Correction Factor**	Low	High	Average	Regional Correction Factor	Low		High	Average (Ave 3 Bid)
Cash-in-Place Segmental (Balanced Cantilever) Bridges (Main Channel)												
Square Foot Costs												
Consultant Sourced Information ³	\$350.00	\$400.00	\$375.00	1.0390	\$363.64	\$415.59	\$389.62	1.0578	\$384.67	\$439.63	\$412.15	1. Data was for a TX project. Regional Correction Factor 0.9453 2. Construction was high off the ground (will reduce cost locally) 3. Numbers are construction costs (PM, planning, etc. will add 35-40%)
Sellwood Bridge Costing ⁴	n/a	\$521.17	n/a	1.0716896		\$558.53						1. This value is represented by a singular data point
FDOT - Spans 150' to 280' (April 29, 2014) ⁵	\$140.00	\$160.00	\$150.00	1.0390	\$145.46	\$166.24	\$155.85	1.0578	\$153.87	\$175.85	\$164.86	1. Span length 150' to 280'
CA Comparative Bridge Cost 2014 ⁶	\$110.00	\$315.00	n/a	1.0390	\$114.29	\$327.28	n/a	n/a	n/a	n/a	n/a	1. Span length 100' to 250' 2. falsework and extent of substructure will effect cost to higher end
Averaged Suggested Cost Range =====>									\$214.81	\$372.92	\$284.00	Cost range say \$215.00 to \$375
Precast Segmental (Span-By-Span) Bridges (West Approach Spans)												
Consultant Sourced Information ³	n/a	n/a	\$275.00	1.0390	n/a	n/a	\$285.72	1.0578	n/a	n/a	\$302.24	1. Data was for a TX project. Regional Correction Factor 0.9453
Palm Beach Airport FDOT; circa 99/00 (Avg 8 bridges) ⁷	\$88.49	\$115.11	\$100.51	1.1260	\$99.64	\$129.62	\$113.18	1.0578	\$105.41	\$137.11	\$119.72	
CA Comparative Bridge Cost 2014 ⁶	\$120.00	\$270.00	n/a	1.0390	\$124.68	\$280.52	n/a	n/a	n/a	n/a	n/a	1. Span length 120' to 200'
2011 Colorado Bridge Cost Data Book ⁸	\$87.14	\$97.49	\$93.01	1.0697	\$93.21	\$104.28	\$99.49	n/a	n/a	n/a	n/a	
Sellwood Bridge Costing ⁴	n/a	\$225.36	n/a	1.0717	n/a	\$241.52	n/a	n/a	n/a	n/a	n/a	1. This value is represented by a singular data point
Assumed Precast - Balanced Cantilever												
Florida DOT Transportation Costs Reports, April 2014 ⁵	\$140.00	\$160.00	\$150.00	1.0390	\$145.46	\$166.24	\$155.85	1.0578	\$153.87	\$175.85	\$164.86	1. balanced cantilever Construction (Extra data point) 2. Not used in this evaluation of cost - just another data point
Averaged Suggested Cost Range =====>									\$107.77	\$190.86	\$173.82	Cost range say \$110.00 to \$190.00
Prestressed I-Girder Bridges (HWY 22 Ramp Spans over Old RR Trestle/Multi-Use Path)												
CA Comparative Bridge Cost 2014 ⁶	\$150.00	\$325.00	n/a	1.0390	\$155.85	\$337.67	n/a	n/a	n/a	n/a	n/a	
Florida DOT Transportation Costs Reports, April 2014 ⁵	\$90.00	\$211.11	n/a	1.0390	\$93.51	\$219.34	n/a	1.057837	\$98.92	\$232.02	n/a	1. Includes simple and continuous span configurations
ODOT 2010 Bridge Cost Data, Steel Structures ⁶	n/a	\$251.32	\$243.32	1.0717	n/a	\$269.34	\$260.76	n/a	n/a	n/a	n/a	1. BT48 244' ctr-ctr
ODOT 2010 Bridge Cost Data, Steel Structures ⁶	n/a	\$180.36	\$165.45	1.0717	n/a	\$193.29	\$177.31	n/a	n/a	n/a	n/a	1. BT48 185' ctr-ctr
ODOT 2010 Bridge Cost Data, Steel Structures ⁶	n/a	\$114.73	\$102.26	1.0717	n/a	\$122.95	\$109.59	n/a	n/a	n/a	n/a	1. BT60 145' ctr-ctr
ODOT 2010 Bridge Cost Data, Steel Structures ⁶	n/a	\$113.52	\$112.28	1.0717	n/a	\$121.66	\$120.33	n/a	n/a	n/a	n/a	1. BT90 520' [sic] ctr-ctr
Sellwood Bridge Costing ⁴	n/a	\$164.97	n/a	1.0717	n/a	\$176.80	n/a	n/a	n/a	n/a	n/a	1. This value is represented by a singular data point
ODOT 2010 Bridge Cost Data, Steel Structures ⁶	n/a	\$93.00	n/a	1.0717	n/a	\$99.67	n/a	n/a	n/a	n/a	n/a	1. PCPS Reinf. Concrete Bulb "I-63" Girder ⁹
ODOT 2010 Bridge Cost Data, Steel Structures ⁶	n/a	\$100.00	n/a	1.0717	n/a	\$107.17	n/a	n/a	n/a	n/a	n/a	1. PCPS Reinf. Concrete Bulb "I-75" Girder ⁹
ODOT 2010 Bridge Cost Data, Steel Structures ⁶	n/a	\$191.00	n/a	1.0717	n/a	\$204.69	n/a	n/a	n/a	n/a	n/a	1. PCPS Reinf. Concrete Bulb "I-84" Girder ⁹
Averaged Suggested Cost Range =====>									\$127.38	\$169.73	\$167.00	Cost range say \$125.00 to \$170.00
Steel Tub Girder Bridges (Multi-Use Path Structure over Wallace/Edgewater Intersection)												
ODOT 2010 Bridge Cost Data, Steel Structures ⁶	\$217.47	n/a	\$223.69	1.0717	\$233.06	n/a	\$239.73	n/a				1. Data derived from average of 3 steel box girder bridges 2010 Oregon 2. All structures just over 8,000 SF of deck area at time of bid 3. Span lengths range from 100' to 220', up to 4 spans in length 4. Annualized for 2015 dollars 5. Steel structures are bid on a per lb basis so hard to determine SF cost
Florida DOT Transportation Costs Reports, April 2014 ⁵	\$140.00	\$180.00	n/a	1.0390	\$145.46	\$187.02	n/a	1.0578	\$153.87	\$197.83		
STEEL PLATE												
ODOT 2010 Bridge Cost Data, Steel Structures ⁶	\$124.91		\$140.29	1.0390	\$129.78	\$0.00	\$145.76	n/a				1. Price is for steel plate girders (extra data point) - Not Used in Anal. 2. Single price point for "Valley View Rd CONN #1 over Hwy 1 (Ashland)
Averaged Suggested Cost Range =====>									\$193.46	\$197.83	\$218.78	Cost range say \$190 to \$220.00

* Generally the case when data was available
 ** See Workbook NHCC
¹ National Highway Construction Cost Index
² United States Department of Labor, Bureau of Labor and Statistics, Consumer Price Index
³ Internal Email from Consultant
⁴ Sellwood Replacement Project, Bridge Prescreening Report, 2010
⁵ Florida Department of Transportation, Transportation Costs Report, April 29, 2014
⁶ "CostDataBook2010" ODOT Website (see workbook\QDOT_CostData2010)
⁷ Florida Department of Transportation, Transportation Costs Report, April 29, 2014
⁸ http://www.dot.ca.gov/hq/esc/estimates/COMP_BR_COSTS_2014-eng.pdf