

Appendix K

Cost Estimate

Basis of Estimate

Class 3 Estimate

Columbia River Outfall and Effluent Pipeline Project

Prepared for
Discovery Clean Water Alliance
Clark County, Washington

December 06, 2017

ch2m.SM

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Acronyms and Abbreviations

AACEI	Association for the Advancement of Cost Engineering International
GC	General Conditions or General Contractor
NTP	Notice to Proceed
VE	Value Engineering

Executive Summary

1.1 Project Overview

This project involves construction of a 48-inch diameter pipeline from the Salmon Creek Wastewater Treatment Plant (SCTP) to the Columbia River, and 48-inch diameter pipeline at the Columbia River Outfall. The route includes crossing of several properties held in private ownership as well as the Burlington Northern Santa Fe (BNSF) railroad, right-of-way for Washington State, Salmon Creek and Lake River. The project also includes a new outfall and diffuser assembly in the Columbia River, Pump Station Modifications, and Access Roads.

TABLE NUMBER 1.1

Project Overview

Estimate Information

Estimate Classification:	Class 3
Requested By:	Quitterie Cotten/PDX
Estimated By:	Tom Jones/CVO, E.B. Smith/GNV
Estimate Date	December 06, 2017

1.2 Overall Costs

This executive summary provides an overview of the Cost Estimate. Reliance on this information is advised to be in consideration of the full context of this report.

The cost estimate has been prepared for guidance in project evaluation and implementation from the information available at the time of the estimate. The final costs of the project will depend on actual labor and material costs, actual site conditions, productivity, competitive market conditions, bid dates, seasonal fluctuations, final project scope, implementation schedule, and other variable factors. As a result, the final project costs will vary from the estimate presented herein. The following is a summary breakdown of the cost (rounded to the nearest \$100,000).

TABLE NUMBER 1.2

Overall Costs

Estimate Summary

	Low Range [-20%]	Estimated Costs ^a	High Range [+30%]
Overall Costs	\$14,000,000	\$17,500,000	\$22,750,000

^a See Appendix A for cost estimate details

Estimate Information

2.1 Purpose of Estimate

The purpose of this estimate is to document the current assumption on construction costs opinion for the Columbia River Outfall and Effluent Pipeline Project at the 30% level of design.

2.2 Client and Project Location

The client is the Clark Regional Wastewater District and the Discovery Clean Water Alliance. The proposed Outfall connects to the existing plant effluent at the Salmon Creek Treatment plant in Vancouver, Washington and continues west to the Columbia River. The new outfall generally parallels the existing outfall.

2.3 Estimate WBS and General Scope

The detailed cost estimate is organized by the following Work Breakdown Structure (WBS).

- Level 1 – Bid Item
 - Level 2 – Work Package (CSI)
 - Level 3 – Trade Package
 - Level 4 – Work Activity
 - Level 5 – Unit Price

Below are the Level 1 Bid Item codes used within this cost estimate:

- 001.0 – Plant Open Cut (STA 78+02 to STA 81+94)
- 002.0 – Railroad Crossing Auger Bore (STA 72+90 to STA 78+02)
- 003.0 – Salmon Creek Crossing (STA 69+60 to STA 72+90)
- 004.0 – Curtis Lake Ranch (Meyer Property Crossing) (STA 48+10 to STA 69+60)
- 005.0 – Lake River Crossing (STA 43+10 to STA 48+10)
- 006.0 – New Columbia Garden Company (Fazio Property Farm Land w/ Road Crossing) (STA 17+00 to STA 43+10)
- 007.0 – Outfall Section (STA 09+70 to STA 17+00)
- 008.0 – Misc. Sitework
- 010.0 - Pump Station Modifications
- 012.0 – Access Roads Restoration

2.4 Estimate Classification

This cost estimate prepared is considered a Budget Authorization, or Control Class 3 estimate as defined by the Association for the Advancement of Cost Engineering International (AACEI). Refer to Appendix B for more definition.

Project feasibility and funding needs must be carefully reviewed prior to making specific financial decisions to help ensure proper project evaluation and adequate funding. Our estimate is based on material, equipment, and labor pricing as of November 2017.

This Cost Estimate is based on the use of conceptual and stochastic costs and detailed items using separate Labor, Materials and Equipment costs. The estimate uses parametric costs where design information or details are insufficient to allow a detailed item method. Quotations, allowances, and other costs are as described in Section 3.

Basis of Estimate

3.1 Basis Documents

The cost estimate is based upon the follow project documents:

- CH2M Drawings – Plan&Profiles_11022017.pdf

3.2 Estimate Methodology

This cost estimate is considered a bottom rolled up type estimate with cost items and breakdown of Labor, Materials and Equipment.

For the development of this cost estimate, there may be systems that have yet to be defined enough on which to base a scope of work for estimating purposes. CH2M estimating provides parametric costing based on a unit of measurement (i.e. cost per square foot or cost per unit). The cost is assigned per unit and typically is developed by averaging similar projects and analysis of historic costs. Using this approach, CH2M parametric estimators strive to generate a basic system design fitting the parameters of the structure and its proposed function.

Finally, pricing is geographically adjusted to reflect local labor and material rates and job site conditions and requirements. As the design process progresses and the details have increased the parametric costing can be replaced with a detailed takeoff and estimated accordingly.

3.3 Key Assumptions and Allowances

The following is a list of the Key Assumptions on how the estimator interprets how the project will be constructed. Major scope items and Allowances have been listed, but not all work items included in estimate are shown. Allowances are shown are before Prime Contractor Markups and contingencies are applied.

- 001.0 – Plant Open Cut (STA 78+02 to STA 81+94)
 - Trench Dewatering
 - 48” Outfall Pipe – Open Cut – 392 LF
 - 12.8’ average trench depth
 - Connection to Existing 48” Plant Outfall and 42” Forcemain
- 002.0 – Railroad Crossing Auger Bore (STA 72+90 to STA 78+02)
 - 60” Steel Casing Auger Bore – 512 LF
 - Allowance for improvements at RR at grade crossing \$20,000
 - 48” Outfall Pipe – Carrier Pipe – 512 LF
 - Assumed spacers @ 10’ on center
 - Assumed Casing End Seals – 2 each
 - Launch Pit (15’w X 30’l X 10’d)
 - Sheetpile Shoring
 - Pit Dewatering
 - Receiving Pit (15’w X 20’l X 15’d)
 - Sheetpile Shoring
 - Pit Dewatering

- Cofferdam for Receiving Pit included in Salmon Creek Crossing costs
- 003.0 – Salmon Creek Crossing (STA 69+60 to STA 73+00)
 - Cofferd Dam – 600 LF
 - Assumes average water depth to be 10' to 15'
 - Cofferdam and work tressle
 - Requires two (2) setups to allow for creek water flow
 - 11 days of dewatering included
 - Trench Dewatering
 - 48" Outfall Pipe – Open Cut – 340 LF
 - 12.0' average trench depth
- 004.0 – Curtis Lake Ranch - Meyer Property Crossing (STA 48+10 to STA 69+60)
 - Trench Dewatering
 - 48" Outfall Pipe – Open Cut – 2,314 LF
 - 10.0' average trench depth
- 005.0 – Lake River Crossing (STA 43+10 to STA 46+10)
 - Cofferd Dam – 500 LF
 - Assumes average water height to be 10' to 15'
 - Requires two (2) setups to allow for creek water flow
 - 11 days of dewatering included
 - Trench Dewatering
 - 48" Outfall Pipe – Open Cut – 300 LF
 - 14' average trench depth
- 006.0 – New Columbia Garden - Fazio Property Farm Land w/ Road Crossing (STA 17+50 to STA 43+10)
 - Trench Dewatering
 - Revetment Mat
 - Allowance for Restoration of Round Lake Conservation Bank of \$300,716
 - 48" Outfall Pipe – Open Cut – 2,560LF
 - 10.0' average trench depth
 - 20.0' average trench depth from STA 17+50 to STA 20+00
- 007.0 – Outfall Section (STA 09+70 to STA 17+50)
 - Junction Box
 - Navigation Marker
 - Connect to Existing 30" Outfall
 - Trench Dewatering
 - 16" CS Pipe – 150 LF
 - 16" Tideflex Check Valves 10 ea plus 2 spare
 - 48" Outfall Pipe – 774 LF
 - Ball joints
 - Steel piles for Diffuser Support – 11 each
 - Assumed 18" Diameter – 30 vlf depth
- 012.0 – Access Roads Restoration
 - 6" Gravel for access road
 - Geotextile under the gravel
 - After construction remove 50% of the road gravel

- Railroad Crossing Allowance of \$20,000

3.4 Overall Major Assumptions

The following is a list of Major Assumptions included in the estimate:

- Trenching, Backfill, and Compaction Assumptions
 - 12" of Imported Utility Bedding
 - Imported Pipe Zone Material to 12" Above Pipe
 - Utilize native soil for trench zone backfill
 - Trench plugs along entire pipeline alignment.
 - Export of Excess Material
 - Trench protection will be provided by using Trench Boxes or Stacked Trench Boxes
 - All trenches can be dewatered using a 2'x2' gravel trench in excavation using sumps to remove groundwater.
- Outfall Pipe
 - 48" Carbon Steel Pipe = Quote= \$243/LF
 - ¾" Cement Mortar Lining
 - ¾" Cement Mortar Exterior Coating
- Excess excavated material can be dumped without charge within 10 miles of the project site
- Outfall pipe Marine Construction Trenching can be performed by using submerged sheet pile shoring. Shoring can be installed from the Barge Platform using standard sheet pile equipment.
- A working Barge Platform can access and perform work along all the entire Outfall Pipe alignment within the Columbia River.
- The General Contractor will self-perform the majority of the work with the exception of the Auger Bore and the Marine Construction work within the Columbia River (it is assumed that these trades will be a subcontractor to the General).
- Access roads are 12' wide

3.5 Estimate Exclusions

The cost estimate excludes the following costs:

- Hazardous Material Handling or Disposal
- Rock Excavation
- Non-construction or soft costs for design, services during construction, land, legal and owner administration costs
- Material Adjustment allowances above and beyond what is included at the time of the cost estimate

3.6 Project Delivery and Methodology

It is assumed that this project will be procured using the traditional Design/Bid/Build method. The general contractor will contract directly with the owner.

The estimate is based on the assumption the work will be done on a competitive bid basis and the contractor will have a reasonable amount of time to complete the work. All contractors are equal, with a reasonable project schedule, constructed as under a single contract, no liquidated damages.

3.7 Labor, Material, Subcontracts and Other Direct Costs

3.7.1 Labor

The estimate has been adjusted for local area labor rates, based upon 2017 national open shop rates. RS Means 2017 City Cost Index weighted average factor for Vancouver, WA used to adjust Labor (98.7).

Labor unit prices reflect a burdened rate, including: workers compensation, unemployment taxes, Fringe Benefits, and medical insurance.

3.7.2 Material

Materials pricing is national average as determined by RS Means or other data sources. Quotes on certain items may have been obtained and included in this estimate. Many quotes given for engineering estimates are budgetary and may not reflect actual contractor pricing.

3.7.3 Subcontracts

It is assumed that General Contractors will subcontract a portion of the work. Items listed in the cost estimate as subcontractor includes all anticipated markups that a general contractor would receive. An additional 15% Overhead and Profit (OH&P) markup was applied to items assumed to be subcontracted.

Allowances assumed to include Subcontractor OH&P have no additional subcontractor markup applied.

3.7.4 Construction Equipment

Equipment items listed in this cost estimate are for the construction equipment necessary for the installation of the work. Equipment rates in this estimate are assumed to be 75% of 2017 Blue Book value. This is to account for contractor owned equipment or discounted rental equipment. RS Means 2017 City Cost Index weighted average factor for Vancouver, WA used to adjust Construction Equipment (98.7).

3.8 Escalation Costs

This estimate includes a 3% Escalation Factor to account for this project being constructed in 2018.

This CH2M escalation forecast is based upon economic data from Global Insights, ENR CCI & BCI indexes and other indexes. These index are built from using cost data from the construction industry such as construction material and labor.

3.9 Market Conditions

During volatile economic conditions, an estimate may have a Market Conditions amount applied. This adjustment is done to account for the current volatility in the construction market and/or the location of a project.

A Market Adjustment Factor has not been used for this cost estimate.

3.10 Markups, Taxes, and Other Indirect Costs

It is assumed that this project will be procured using the traditional Design/Bid/Build method.

TABLE NUMBER 3.10
Markups, Taxes, and Other Indirect Costs
Estimate Summary

Item	Unit	Comments
Location Factor for Vancouver, WA	(00.6%)	2017 RS Means Weighted Average 98.7
Subcontractor OH&P	15.00%	Applied to these items: Concrete / Auger Bore / Marine Construction
General Conditions	7.00%	
Mobilization/Demobilization	3.00%	
Home Office Overhead	10.00%	
Profit	5.00%	
Builder's Risk & General Liability	1.00%	
Payment & Performance Bonds	1.16%	
Contingency	25.00%	
Escalation	3.00%	
WA State Sales Tax	8.40%	

^a See Appendix A for cost estimate details

3.11 Cost Resources

The following is a list of the various cost resources used in the development of the cost estimate

- R.S. Means 2017 Data
- CH2M Historical Data
- Vendor Quotes where available
- Estimator Judgment

3.12 Disclaimer

The opinions of cost (estimates) shown, and any resulting conclusions on project financial or economic feasibility or funding requirements, have been prepared for guidance in project evaluation and implementation from the information available at the time the opinion was prepared. The final costs of the project and resulting feasibility will depend on actual labor and material costs, competitive market conditions, actual site conditions, final project scope, implementation schedule, continuity of personnel and engineering, and other variable factors. The recent increases or decreases in material pricing may have a significant impact which is not predictable and careful review or consideration must be used in evaluation of material prices. As a result, the final project costs will vary from the opinions of cost presented herein. Because of these factors, project feasibility, benefit/cost ratios, risks, and funding needs must be carefully reviewed prior to making specific financial decisions or establishing project budgets to help ensure proper project evaluation and adequate funding.

**Appendix A:
Cost Estimate**



Bid Item Summary

Job Size: Project: 663264-02-Salmon Creek Ou Estimator: Jones T & E.B. Smith/GNV
 Duration: Project No.: 663264 Revision / Date: Rev 07- 12/06/2017
 Design Stage: 30% Design Estimate Class: Class 3

Bid Item	Description	Takeoff Quantity	Grand Total Unit Price	Grand Total
001.0	Plant Open Cut	392.00 LF	2,261.83 /LF	886,639
002.0	Railroad Crossing (Auger Bore)	512.00 LF	3,244.39 /LF	1,661,127
003.0	Salmon Creek Crossing	340.00 LF	4,156.12 /LF	1,413,079
004.0	Curtis Lake Ranch (Meyer Property Crossing)	2,350.00 LF	944.80 /LF	2,220,272
005.0	Lake River Crossing	300.00 LF	3,775.22 /LF	1,132,567
006.0	New Columbia Garden Company (Fazio Property Farm Land w/Road Crossing)	2,560.00 LF	1,125.66 /LF	2,881,690
007.0	Outfall Section	1,138.00 LF	3,295.20 /LF	3,749,939
008.0	Misc. Sitework	1.00 LS	453,437.78 /LS	453,438
010.0	Pump Station Modifications	1.00 LS	1,271,340.69 /LS	1,271,341
012.0	Access Road Restoration	1.00 LS	492,455.65 /LS	492,456

Estimate Totals

Construction Costs	Amount	Totals	Rate	% of Total
Labor	2,560,169			14.61%
Material	8,901,776			50.81%
Subcontract	2,477,076			14.14%
Equipment	2,223,454			12.69%
Other	71			0.00%
Total Prime Contractor Costs	16,162,546	16,162,546		92.25
Gross Tax	1,357,654		8.400 %	7.75%
Total Construction Cost w/ GRT	1,357,654	17,520,200		7.75



Job Size:
Duration:

Detail Report

Project: 663264-02-Salmon Creek Ou
Project No.: 663264
Design Stage: 30% Design

Estimator: Jones T & E.B. Smith/GNV
Revision / Date: Rev 07- 12/06/2017
Estimate Class: Class 3

Bid Item	Work Pkg	Trade Pkg	Description	Takeoff Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount	Grand Total Unit Price	Grand Total
001.0			Plant Open Cut										
	31.0		Earthwork										
		31.00	Site/Civil										
			Contractor Staging Area										
			Temporary Works, Fencing										
			Temporary Fence - Site	1,000.00 lf	-	-	12,000	-	-	12.00 /lf	12,000	20.27 /lf	20,273
			Temporary Works, Fencing	1,000.00 LF			12,000			12.00 /LF	12,000	20.27 /LF	20,273
			Site Improvements, Other Paving										
			Geosynthetic soil stabilization, geotextile fabric, non-woven, 120 lb. tensile strength, includes scarifying and compaction	8,305.56 sy	2,066	6,977	-	-	-	1.09 /sy	9,043	1.84 /sy	15,277
			Remove bank run gravel	459.57 ecy	731	0	-	1,259	-	4.33 /ecy	1,990	7.31 /ecy	3,362
			Base course drainage layers, aggregate base course for roadways and large paved areas, gravel bank run, compacted, 2" deep	459.57 ecy	1,045	8,686	-	1,798	-	25.09 /ecy	11,529	42.38 /ecy	19,477
			Base course drainage layers, prepare and roll sub-base, large areas over 2500 S.Y.	459.57 sy	145	-	-	155	-	0.65 /sy	300	1.10 /sy	507
			Site Improvements, Other Paving	8,305.56 SY	3,987	15,663		3,212		2.75 /SY	22,861	4.65 /SY	38,622
			Contractor Staging Area	74,750.00 SF	3,987	15,663	12,000	3,212		0.47 /SF	34,861	0.79 /SF	58,895
			Silt Fence										
			Site Preparation, Erosion Controls / Pre-construction										
			Silt Fence, Heavy-Duty, Subcontracted	1,723.00 lf	-	-	5,169	-	-	3.00 /lf	5,169	5.07 /lf	8,733
			Site Preparation, Erosion Controls / Pre-construction	1.00 AC			5,169			5,169.00 /AC	5,169	8,732.64 /AC	8,733
			Silt Fence	1,723.00 LF			5,169			3.00 /LF	5,169	5.07 /LF	8,733
			Compacted Fill										
			Earthworks, Sitework, Borrow										
			Crushed Stone 3/4"	79.83 cy	2,134	1,557	-	3,120	-	85.31 /cy	6,810	144.12 /cy	11,505
			Backfill, dozer backfill, compact, 6" to 12" lifts, vibr roller	798.33 cy	558	-	-	857	-	1.77 /cy	1,415	2.99 /cy	2,390
			Select fill for shoulders & embankments	798.33 cy	832	15,967	-	1,582	-	23.02 /cy	18,380	38.90 /cy	31,052
			Earthworks, Sitework, Borrow	798.33 CY	3,524	17,523		5,558		33.33 /CY	26,605	56.30 /CY	44,947
			Compacted Fill	798.33 CY	3,524	17,523		5,558		33.33 /CY	26,605	56.30 /CY	44,947
			31.00 Site/Civil	1.00 LS	7,510	33,186	17,169	8,770		66,634.99 /LS	66,635	112,575.01 /LS	112,575
			31.0 Earthwork	1.00 LS	7,510	33,186	17,169	8,770		66,634.99 /LS	66,635	112,575.01 /LS	112,575
	32.0		Exterior Improvements										
		32.35	Site Landscaping										
			Restore Staging Areas with Native Seed Mix										
			Site Improvements, Seeding										
			Native Seed Mix	8,305.56 SY			9,136	-	-	1.10 /SY	9,136	1.86 /SY	15,435
			Site Improvements, Seeding	8,305.56 SY			9,136			1.10 /SY	9,136	1.86 /SY	15,435
			Restore Staging Areas with Native Seed Mix	8,305.56 SY			9,136			1.10 /SY	9,136	1.86 /SY	15,435
			Plantings										
			Site Improvements, Seeding										
			riparian area seedling/shrub plantings.	1.00 LS			50,000	-	-	50,000.00 /LS	50,000	84,471.40 /LS	84,471
			Site Improvements, Seeding	1.00 SY			50,000			50,000.00 /SY	50,000	84,471.40 /SY	84,471
			Plantings	1.00 LS			50,000			50,000.00 /LS	50,000	84,471.40 /LS	84,471
			32.35 Site Landscaping	1.00 AC			59,136			59,136.12 /AC	59,136	99,906.23 /AC	99,906
			32.0 Exterior Improvements	1.00 LS			59,136			59,136.12 /LS	59,136	99,906.23 /LS	99,906
	33.0		Utilities										
		33.05	Buried Process Piping										
			Trench Dewatering										
			Site Preparation, Dewatering										
			Haul spoils, offsite, up to 10 miles	56.54 cy	-	-	565	-	-	10.00 /cy	565	16.89 /cy	955
			Dewatering, excavate drainage trench, with backhoe, 2' wide x 2' deep	56.54 cy	449	-	-	185	-	11.21 /cy	634	18.93 /cy	1,070
			Dewatering, pumping, 8 hr., attended 8 hours per day, 4" diaphragm pump, includes 20 L.F. of suction hose and 100 L.F. of discharge hose	6.88 day	4,807	-	-	847	-	822.29 /day	5,654	1,389.20 /day	9,552
			Dewatering, sump hole construction, includes excavation and gravel pit	1,532.58 cf	1,240	1,686	-	360	-	2.14 /cf	3,286	3.62 /cf	5,552
			Geotextile Subsurface Drainage Filtration, drainage material, gravel fill in trench, 3/4"	56.54 cy	1,244	1,244	-	64	-	27.02 /cy	1,528	45.65 /cy	2,581
			Site Preparation, Dewatering	339.00 LF	6,716	2,930	565	1,456		34.42 /LF	11,667	58.14 /LF	19,710
			Trench Dewatering	392.00 LF	6,716	2,930	565	1,456		29.76 /LF	11,667	50.28 /LF	19,710
			Bypass Piping										
			Pipeline Specials, Other										
			Bypass Piping	1.00 LF			20,000	-	-	20,000.00 /LF	20,000	33,788.57 /LF	33,789
			Pipeline Specials, Other	1.00 LF			20,000			20,000.00 /LF	20,000	33,788.57 /LF	33,789
			Bypass Piping	1.00 LS			20,000			20,000.00 /LS	20,000	33,788.57 /LS	33,789
			48" Outfall Pipe - Open Cut										
			Buried Pipe, Carbon Steel, 48"										
			Trench Box, 8' x 24' x 10'	0.44 mo	-	-	-	1,001	-	2,300.00 /mo	1,001	3,885.72 /mo	1,690
			Excav. pipe trench, w/ 1:1 slopes, for > 30" pipe	1,718.69 CY	1,713	-	-	7,239	-	5.21 /CY	8,952	8.80 /CY	15,124
			Backfill / Compact @ pipe zone, for 30" & larger pipe	371.22 cy	2,067	-	-	3,451	-	14.86 /cy	5,518	25.11 /cy	9,322
			Backfill / Compact above pipe zone, for 30" & larger pipe	1,236.42 cy	1,872	-	-	2,414	-	3.47 /cy	4,286	5.86 /cy	7,242
			Pipe zone material	371.22 cy	-	10,394	-	-	-	28.00 /cy	10,394	47.30 /cy	17,500
			Pipe bedding material	102.84 cy	-	2,880	-	-	-	28.00 /cy	2,880	18.30 /cy	4,885
			Haul spoils, offsite, up to 10 miles	474.06 cy	-	-	4,741	-	-	10.00 /cy	4,741	16.89 /cy	8,009
			48" CS pipe assembly, shop fab, excav/bkfill NOT incl., 3/8" wall	382.00 LF	8,157	92,830	-	6,589	-	281.61 /LF	107,576	475.76 /LF	181,742
			48" CS butt weld, 3/8" wall	19.00 ea	-	-	-	17,167	-	903.50 /ea	17,167	1,526.40 /ea	29,002
			Grout joint, I.D., 48" pipe	19.00 ea	4,549	494	-	-	-	265.43 /ea	5,043	448.42 /ea	8,520
			Diaper and grout joint, O.D., 48" pipe	19.00 ea	4,549	475	-	-	-	264.43 /ea	5,024	446.73 /ea	8,488
			Pipe Marking, Detection Tape	392.00 lf	213	51	-	-	-	0.67 /lf	264	1.14 /lf	488
			Pipe Marking, Copper Wire	392.00 lf	213	86	-	-	-	0.76 /lf	300	1.29 /lf	506
			Buried Pipe, Carbon Steel, 48"	392.00 LF	23,334	107,210	21,907	20,693		441.70 /LF	173,144	746.21 /LF	292,515



Detail Report

Job Size:
Duration:

Project: 663264-02-Salmon Creek Ou
Project No.: 663264
Design Stage: 30% Design

Estimator: Jones T & E.B. Smith/GNV
Revision / Date: Rev 07- 12/06/2017
Estimate Class: Class 3

Table with columns: Bid Item, Work Pkg, Trade Pkg, Description, Takeoff Quantity, Labor Amount, Material Amount, Sub Amount, Equip Amount, Other Amount, Total Cost/Unit, Total Amount, Grand Total Unit Price, Grand Total. Rows include items like Trenchless Technology, Launch Pit, Receiving Pit, Settlement Monitoring, and various site improvement and utility items.



Job Size:
Duration:

Detail Report

Project: 663264-02-Salmon Creek Ou
Project No.: 663264
Design Stage: 30% Design

Estimator: Jones T & E.B. Smith/GNV
Revision / Date: Rev 07- 12/06/2017
Estimate Class: Class 3

Bid Item	Work Pkg	Trade Pkg	Description	Takeoff Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount	Grand Total Unit Price	Grand Total
			Site Improvements, Other Paving										
			Geosynthetic soil stabilization, geotextile fabric, non-woven, 120 lb. tensile strength, includes scarifying and compaction	7,714.33 sy	1,919	6,480	-	-	-	1.09 /sy	8,399	1.84 /sy	14,189
			Remove bank run gravel	426.86 ecy	679	-	-	1,169	-	4.33 /ecy	1,848	7.31 /ecy	3,122
			Base course drainage layers, aggregate base course for roadways and large paved areas, gravel bank run, compacted, 2" deep	426.86 ecy	970	8,068	-	-	-	25.09 /ecy	10,708	42.38 /ecy	18,900
			Base course drainage layers, prepare and roll sub-base, large areas over 2500 S.Y.	7,714.33 sy	2,434	-	-	2,601	-	0.65 /sy	5,035	1.10 /sy	8,507
			Site Improvements, Other Paving	7,714.33 SY	6,003	14,548		5,440		3.37 /SY	25,991	5.69 /SY	43,909
			Contractor Staging Area	69,429.00 SF	6,003	14,548	12,000	5,440		0.95 /SF	37,991	0.92 /SF	64,182
			31.00 Site/Civil	1.00 LS	6,003	14,548	12,000	5,440		37,990.57 /LS	37,991	64,182.33 /LS	64,182
	31.20		Earthworks, Site										
			Stream Bank Restoration										
			Site Preparation, Other										
			COIR Bio-DFabric	222.22 SY			2,444	-	-	11.00 /SY	2,444	18.58 /SY	4,130
			Herbaceous Vegetation	222.22 SY			244	-	-	1.10 /SY	244	1.86 /SY	413
			Site Preparation, Other	1.00 LS			2,689			2,688.86 /LS	2,689	4,542.65 /LS	4,543
			Stream Bank Restoration	1.00 LS			2,689			2,688.86 /LS	2,689	4,542.65 /LS	4,543
			31.20 Earthworks, Site	1.00 AC			2,689			2,688.86 /AC	2,689	4,542.65 /AC	4,543
	31.30		Site Specialties										
			Cofferdam										
			Site Specialties, Cofferdams										
			Cofferdams, barge driven, includes mobilization, temporary sheeting - East	5,625.00 sf	33,080	115,313	-	30,269	-	31.76 /sf	178,662	53.66 /sf	301,837
			Cofferdams, barge driven, includes mobilization, temporary sheeting - West	3,375.00 sf	19,848	69,188	-	18,162	-	31.76 /sf	107,197	53.66 /sf	181,102
			Site Specialties, Cofferdams	832.00 LF	52,929	184,500		48,431		343.58 /LF	285,859	580.46 /LF	482,939
			Cofferdam	600.00 LF	52,929	184,500		48,431		476.43 /LF	285,859	804.90 /LF	482,939
			31.30 Site Specialties	1.00 LS	52,929	184,500		48,431		285,859.49 /LS	285,859	482,939.01 /LS	482,939
			31.0 Earthwork	1.00 LS	81,784	306,475	14,689	109,919		512,866.91 /LS	512,867	866,451.71 /LS	866,452
	32.0		Exterior Improvements										
			Site Landscaping										
			Restore Staging Areas with Native Seed Mix										
			Site Improvements, Seeding										
			Native Seed Mix	7,714.33 SY			8,486	-	-	1.10 /SY	8,486	1.86 /SY	14,336
			Site Improvements, Seeding	7,714.33 SY			8,486			1.10 /SY	8,486	1.86 /SY	14,336
			Restore Staging Areas with Native Seed Mix	7,714.33 SY			8,486			1.10 /SY	8,486	1.86 /SY	14,336
			Plantings										
			Site Improvements, Seeding										
			riparian area seedling/shrub plantings.	1.00 LS			50,000	-	-	50,000.00 /LS	50,000	84,471.41 /LS	84,471
			Site Improvements, Seeding	1.00 SY			50,000			50,000.00 /SY	50,000	84,471.41 /SY	84,471
			Plantings	1.00 LS			50,000			50,000.00 /LS	50,000	84,471.41 /LS	84,471
			32.35 Site Landscaping	1.00 AC			58,486			58,485.76 /AC	58,486	98,807.50 /AC	98,808
			32.0 Exterior Improvements	1.00 LS			58,486			58,485.76 /LS	58,486	98,807.50 /LS	98,808
	33.0		Utilities										
			Site Preparation										
			Erosion Control & Noise Disturbance										
			Site Preparation, Temporary Access Roads										
			Underwater Air Bubble Curtain allowance	1.00 LS	1	0	15,000	-	-	15,000.52 /LS	15,001	25,342.29 /LS	25,342
			Floating Silt Curtain allowance	1,042.00 lf	540	28,655	-	-	-	28.02 /lf	29,195	47.33 /lf	49,323
			Site Preparation, Temporary Access Roads	1.00 AC	540	28,655	15,000			44,195.38 /AC	44,195	74,664.90 /AC	74,665
			Erosion Control & Noise Disturbance	1.00 LS	540	28,655	15,000			44,195.38 /LS	44,195	74,664.90 /LS	74,665
			31.15 Site Preparation	1.00 AC	540	28,655	15,000			44,195.38 /AC	44,195	74,664.90 /AC	74,665
	33.00		Utilities General										
			Trench Plunges along pipeline alignment										
			Buried Pipe, Other										
			CLSM Trench Plugs	2.00 ea			2,000	-	-	1,000.00 /ea	2,000	1,689.43 /ea	3,379
			Buried Pipe, Other	1.00 LF			2,000			2,000.00 /LF	2,000	3,378.86 /LF	3,379
			Trench Plunges along pipeline alignment	2.00 EA			2,000			1,000.00 /EA	2,000	1,689.43 /EA	3,379
			33.00 Utilities General	1.00 LS			2,000			2,000.00 /LS	2,000	3,378.86 /LS	3,379
	33.05		Buried Process Piping										
			Coffer Dam Dewatering										
			Site Preparation, Dewatering										
			Dewatering, pumping, 24 hr., attended 12 hours per day, 6" centrifugal pump, includes 20 L.F. of suction hose and 100 L.F. of discharge hose	11.00 day	6,152	-	-	4,794	-	995.11 /day	10,946	1,681.17 /day	18,493
			Site Preparation, Dewatering	340.00 LF	6,152			4,794		32.20 /LF	10,946	54.39 /LF	18,493
			Coffer Dam Dewatering	340.00 LF	6,152			4,794		32.20 /LF	10,946	54.39 /LF	18,493
			Trench Dewatering										
			Site Preparation, Dewatering										
			Haul spoils, offsite, up to 10 miles	50.32 cy	-	-	503	-	-	10.00 /cy	503	16.89 /cy	850
			Dewatering, excavate drainage trench, with backhoe, 2' wide x 2' deep	50.32 cy	400	-	-	164	-	11.21 /cy	564	18.93 /cy	953
			Dewatering, pumping, 8 hr., attended 8 hours per day, 4" diaphragm pump, includes 20 L.F. of suction hose and 100 L.F. of discharge hose	6.12 day	4,278	-	-	754	-	822.29 /day	5,032	1,389.20 /day	8,502
			Dewatering, sump hole construction, includes excavation and gravel pit	1,422.90 cf	1,151	1,565	-	335	-	2.14 /cf	3,051	3.62 /cf	5,154
			Geotextile Subsurface Drainage Filtration, drainage material, gravel fill in trench, 3/4"	50.32 cy	196	1,107	-	57	-	27.02 /cy	1,360	45.65 /cy	2,297
			Site Preparation, Dewatering	340.00 LF	6,025	2,672	503	1,310		30.91 /LF	10,510	52.22 /LF	17,756
			Trench Dewatering	340.00 LF	6,025	2,672	503	1,310		30.91 /LF	10,510	52.22 /LF	17,756
			48" Outfall Pipe - Open Cut										
			Buried Pipe, Carbon Steel, 48"										
			Trench Box, 8' x 24' x 10'	0.53 mo	-	-	-	1,219	-	2,300.00 /mo	1,219	3,885.74 /mo	2,059
			Excav. pipe trench, w/ 1:1 slopes, for > 30" pipe	2,052.83 CY	2,046	-	-	8,646	-	5.21 /CY	10,692	8.80 /CY	18,064



Job Size:
Duration:

Detail Report

Project: 663264-02-Salmon Creek Ou
Project No.: 663264
Design Stage: 30% Design

Estimator: Jones T & E.B. Smith/GNV
Revision / Date: Rev 07- 12/06/2017
Estimate Class: Class 3

Bid Item	Work Pkg	Trade Pkg	Description	Takeoff Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount	Grand Total Unit Price	Grand Total
			31.30 Site Specialties	1.00 LS	44,107	153,750		40,359		238,216.24 /LS	238,216	402,449.18 /LS	402,449
			31.0 Earthwork	1.00 LS	44,107	153,750	136,224	40,359		374,440.24 /LS	374,440	632,589.80 /LS	632,590
32.0			Exterior Improvements										
		32.35	Site Landscaping										
			Plantings										
			Site Improvements, Seeding										
			riparian area seedling/shrub plantings.	1.00 LS			50,000	-	-	50,000.00 /LS	50,000	84,471.40 /LS	84,471
			Site Improvements, Seeding	1.00 SY			50,000			50,000.00 /SY	50,000	84,471.40 /SY	84,471
			Plantings	1.00 LS			50,000			50,000.00 /LS	50,000	84,471.40 /LS	84,471
			32.35 Site Landscaping	1.00 AC			50,000			50,000.00 /AC	50,000	84,471.40 /AC	84,471
			32.0 Exterior Improvements	1.00 LS			50,000			50,000.00 /LS	50,000	84,471.40 /LS	84,471
33.0			Utilities										
		31.15	Site Preparation										
			Erosion Control & Noise Disturbance										
			Site Preparation, Temporary Access Roads										
			Underwater Air Bubble Curtain allowance	1.00 LS	1	0	15,000	-	-	15,000.52 /LS	15,001	25,342.31 /LS	25,342
			Floating Silt Curtain allowance	957.00 lf	496	26,318	-	-	-	28.02 /lf	26,813	47.33 /lf	45,299
			Site Preparation, Temporary Access Roads	1.00 AC	496	26,318	15,000			41,813.84 /AC	41,814	70,641.48 /AC	70,641
			Erosion Control & Noise Disturbance	1.00 LS	496	26,318	15,000			41,813.84 /LS	41,814	70,641.48 /LS	70,641
			31.15 Site Preparation	1.00 AC	496	26,318	15,000			41,813.84 /AC	41,814	70,641.48 /AC	70,641
		33.00	Utilities General										
			Trench Plung along pipeline alignment										
			Buried Pipe, Other										
			CLSM Trench Plugs	2.00 ea			2,000	-	-	1,000.00 /ea	2,000	1,689.43 /ea	3,379
			Buried Pipe, Other	1.00 LF			2,000			2,000.00 /LF	2,000	3,378.86 /LF	3,379
			Trench Plung along pipeline alignment	2.00 EA			2,000			1,000.00 /EA	2,000	1,689.43 /EA	3,379
			33.00 Utilities General	1.00 LS			2,000			2,000.00 /LS	2,000	3,378.86 /LS	3,379
33.05			Buried Process Piping										
			Coffer Dam Dewatering										
			Site Preparation, Dewatering										
			Dewatering, pumping, 24 hr., attended 12 hours per day, 6" centrifugal pump, includes 20 L.F. of suction hose and 100 L.F. of discharge hose	11.00 day	6,152	-	-	4,794	-	995.11 /day	10,946	1,681.17 /day	18,493
			Site Preparation, Dewatering	300.00 LF	6,152			4,794		36.49 /LF	10,946	61.64 /LF	18,493
			Coffer Dam Dewatering	300.00 LF	6,152			4,794		36.49 /LF	10,946	61.64 /LF	18,493
			Trench Dewatering										
			Site Preparation, Dewatering										
			Haul spoils, offsite, up to 10 miles	22.20 cy	-	-	222	-	-	10.00 /cy	222	16.90 /cy	375
			Dewatering,excavate drainage trench, with backhoe, 2' wide x 2' deep	22.20 cy	176	-	-	72	-	11.21 /cy	249	18.93 /cy	420
			Dewatering, pumping, 8 hr., attended 8 hours per day, 4" diaphragm pump, includes 20 L.F. of suction hose and 100 L.F. of discharge hose	7.20 day	5,033	-	-	887	-	822.29 /day	5,920	1,389.20 /day	10,002
			Dewatering, sump hole construction, includes excavation and gravel pit	1,232.40 cf	997	1,356	-	290	-	2.14 /cf	2,643	3.62 /cf	4,464
			Geotextile Subsurface Drainage Filtration, drainage material, gravel fill in trench, 3/4"	22.20 cy	86	488	-	25	-	27.02 /cy	600	45.65 /cy	1,013
			Site Preparation, Dewatering	300.00 LF	6,293	1,844	222	1,274		32.11 /LF	9,634	54.25 /LF	16,275
			Trench Dewatering	300.00 LF	6,293	1,844	222	1,274		32.11 /LF	9,634	54.25 /LF	16,275
			48" Outfall Pipe - Open Cut										
			Buried Pipe, Carbon Steel, 48"										
			Trench Box, 8' x 24' x 10'	0.50 mo	-	-	-	1,150	-	2,300.00 /mo	1,150	3,885.64 /mo	1,943
			Excav. pipe trench, w/ 1:1 slopes, for > 30" pipe	2,396.21 CY	2,388	-	-	10,092	-	5.21 /CY	12,481	8.80 /CY	21,085
			Backfill / Compact @ pipe zone, for 30" & larger pipe	284.10 cy	1,582	-	-	2,641	-	14.86 /cy	4,223	25.11 /cy	7,134
			Backfill / Compact above pipe zone, for 30" & larger pipe	2,135.22 cy	3,233	-	-	4,169	-	3.47 /cy	7,402	5.86 /cy	12,506
			Pipe zone material	284.10 cy	-	7,955	-	-	-	28.00 /cy	7,955	47.30 /cy	13,439
			Pipe bedding material	78.71 cy	-	2,204	-	-	-	28.00 /cy	2,204	47.30 /cy	3,723
			Haul spoils, onsite	362.81 cy	-	-	-	1,088	-	3.00 /cy	1,088	5.07 /cy	1,839
			48" CS pipe assembly, shop fab, excav/bkfill NOT incl., 3/8" wall	300.00 LF	6,406	72,903	-	5,175	-	281.61 /LF	84,484	475.76 /LF	142,729
			48" CS butt weld, 3/8" wall	15.00 ea	-	-	-	13,553	-	903.50 /ea	13,553	1,526.40 /ea	22,896
			Grout joint, I.D., 48" pipe	15.00 ea	3,591	390	-	-	-	265.43 /ea	3,981	448.42 /ea	6,726
			Diaper and grout joint, O.D., 48" pipe	15.00 ea	3,591	375	-	-	-	264.43 /ea	3,966	446.73 /ea	6,701
			Pipe Marking, Detection Tape	300.00 lf	163	39	-	-	-	0.67 /lf	202	1.14 /lf	342
			Pipe Marking, Copper Wire	300.00 lf	163	66	-	-	-	0.76 /lf	229	1.29 /lf	387
			Buried Pipe, Carbon Steel, 48"	300.00 LF	21,119	83,932	14,641	23,227		476.40 /LF	142,919	804.84 /LF	241,451
			48" Outfall Pipe - Open Cut	300.00 LF	21,119	83,932	14,641	23,227		476.40 /LF	142,919	804.84 /LF	241,451
			Fittings										
			Buried Pipe, Carbon Steel, 48"										
			48" CS Ell, 45	2.00 ea	1,100	4,710	-	888	-	3,349.01 /ea	6,698	5,657.92 /ea	11,316
			Buried Pipe, Carbon Steel, 48"	1.00 LF	1,100	4,710		888		6,698.02 /LF	6,698	11,315.83 /LF	11,316
			Fittings	1.00 LS	1,100	4,710		888		6,698.02 /LS	6,698	11,315.83 /LS	11,316
			33.05 Buried Process Piping	300.00 LF	34,664	90,486	14,863	30,184		567.32 /LF	170,197	958.45 /LF	287,535
			33.0 Utilities	300.00 LF	35,160	116,803	31,863	30,184		713.37 /LF	214,010	1,205.18 /LF	361,555
			005.0 Lake River Crossing	300.00 LF	80,292	270,553	218,087	101,452		2,234.62 /LF	670,385	3,775.22 /LF	1,132,567
006.0			New Columbia Garden Company (Fazio Property Farm Land w/Road Crossing)										
			Concrete Work										
		03.10	Cast-In-Place Concrete Work										
			Junction Box										
			Cast-In-Place Concrete, Slabs on Grade, 12" thick										
			Fine grade, for slab on grade, by hand	238.00 sf	63	7	-	-	-	0.30 /sf	70	0.54 /sf	130
			Fill, gravel subbase, under building slab on grade	8.82 cy	167	260	-	-	-	48.49 /cy	427	89.20 /cy	786



Job Size:
Duration:

Detail Report

Project: 663264-02-Salmon Creek Ou
Project No.: 663264
Design Stage: 30% Design

Estimator: Jones T & E.B. Smith/GNV
Revision / Date: Rev 07- 12/06/2017
Estimate Class: Class 3

Bid Item	Work Pkg	Trade Pkg	Description	Takeoff Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount	Grand Total Unit Price	Grand Total
			Access Manhole Detail 2 on D-03	1.00 EA	3,413	10,260		1,131		14,804.30 /EA	14,804	25,010.80 /EA	25,011
			48" Outfall Pipe - Open Cut	2,560.00 LF	173,418	750,115	146,608	156,927		479.32 /LF	1,227,067	809.78 /LF	2,073,041
			Fittings										
			Buried Pipe, Carbon Steel, 48"										
			48" CS Ell, 45	2.00 ea	1,100	4,710		888		3,349.01 /ea	6,698	5,657.91 /ea	11,316
			48" CS Ell, 22.5	2.00 ea	1,100	4,710		888		3,349.01 /ea	6,698	5,657.92 /ea	11,316
			Ball joints, 48" diameter	1.00 ea	888	59,862		7		60,757.40 /ea	60,757	102,645.25 /ea	102,645
			Buried Pipe, Carbon Steel, 48"	1.00 LF	3,088	69,282		1,784		74,153.44 /LF	74,153	125,276.90 /LF	125,277
			Fittings										
			33.05 Buried Process Piping	2,585.00 LF	209,249	835,318	149,685	165,961		526.20 /LF	1,360,213	888.97 /LF	2,297,982
			33.0 Utilities	2,585.00 LF	209,249	835,318	152,685	165,961		527.36 /LF	1,363,213	890.93 /LF	2,303,050
			006.0 New Columbia Garden Company (Fazio Property Farm Land w/Road Crossing)	2,560.00 LF	354,147	901,239	269,908	175,746		664.47 /LF	1,701,040	1,125.66 /LF	2,881,690
007.0			Outfall Section										
	01.0		General Conditions										
		01-01	Construction Operations										
			Mob/Demob Barge Work Platform										
			GC Indirect Services & Support										
			Mobilization or demobilization, Barge Work Platform	1.00 ea	20,101			23,978		44,078.92 /ea	44,079	74,468.14 /ea	74,468
			GC Indirect Services & Support										
			Mobilization or demobilization, Barge Work Platform	1.00 LS	20,101			23,978		44,078.92 /LS	44,079	74,468.14 /LS	74,468
			Mob/Demob Barge Work Platform										
			01-01 Construction Operations	1.00 LS	20,101			23,978		44,078.92 /LS	44,079	74,468.14 /LS	74,468
			01.0 General Conditions										
			Earthwork										
	31.0		Site Specialties										
		31-30	Work Tressle										
			Unit Price Code										
			Mobilization, rule of thumb: complete pile driving set up, small	1.00 ea	6,905			8,981		15,885.77 /ea	15,886	26,837.89 /ea	26,838
			Pile, steel, pipe, 50' L 18" dia, 59 lb/LF, conc filled	1,200.00 vlf	11,845	63,000		15,610		75.38 /vlf	90,456	127.35 /vlf	152,818
			Slabs, precast prestressed, roof and floor members, hollow, 10" thick	9,000.00 sf	4,011	67,500		17,358		9.87 /sf	88,869	16.68 /sf	150,137
			Struct stl, WF, 10' - 20' span, W 10 x 12	900.00 lf	4,623	13,365		20,179		42.41 /lf	38,167	71.64 /lf	64,480
			Rent pile driving hammer diesel type 22400 ft lbs	11.00 day				4,631		421.00 /day	4,631	711.25 /day	7,824
			Unit Price Code										
			Work Tressle	9,000.00 SF	27,384	143,865		66,759		528.91 /SF	238,008	893.55 /SF	402,097
			31-30 Site Specialties	1.00 LS	27,384	143,865		66,759		238,007.67 /LS	238,008	402,096.84 /LS	402,097
	31.00		Site/Civil										
			Contractor Staging Area										
			Temporary Works, Fencing										
			Temporary Fence - Site	1,000.00 lf			12,000			12.00 /lf	12,000	20.27 /lf	20,273
			Temporary Works, Fencing										
			Temporary Fence - Site	1,000.00 LF			12,000			12.00 /LF	12,000	20.27 /LF	20,273
			Site Improvements, Other Paving										
			Geosynthetic soil stabilization, geotextile fabric, non-woven, 120 lb. tensile strength, includes scarifying and compaction	40,480.00 sy	10,069	34,003				1.09 /sy	44,073	1.84 /sy	74,457
			Remove bank run gravel	3,373.33 ecy	5,367			9,239		4.33 /ecy	14,606	7.31 /ecy	24,676
			Base course drainage layers, aggregate base course for roadways and large paved areas, gravel bank run, compacted, 2" deep	3,373.33 ecy	7,667	63,756		13,198		25.09 /ecy	84,622	42.38 /ecy	142,962
			Base course drainage layers, prepare and roll sub-base, large areas over 2500 S.Y.	40,480.00 sy	12,774			13,649		0.65 /sy	26,423	1.10 /sy	44,639
			Site Improvements, Other Paving	40,480.00 SY	35,878	97,759		36,086		4.19 /SY	169,723	7.08 /SY	286,734
			Contractor Staging Area	364,320.00 SF	35,878	97,759	12,000	36,086		0.50 /SF	181,723	0.84 /SF	307,007
			31.00 Site/Civil	1.00 LS	35,878	97,759	12,000	36,086		181,722.66 /LS	181,723	307,007.35 /LS	307,007
	31.20		Earthworks, Site										
			Stream Bank Restoration										
			Site Preparation, Other										
			COIR Bio-D R	720.00 LF			12,168			16.90 /LF	12,168	28.55 /LF	20,557
			Soil Encapsulated Lifts (min 3 lifts high including geotextile) - Brush layer Trees, 2 species mix	720.00 LF			90,000			125.00 /LF	90,000	211.18 /LF	152,049
			Site Preparation, Other	1.00 LS			102,168			102,168.00 /LS	102,168	172,605.48 /LS	172,605
			Stream Bank Restoration	1.00 LS			102,168			102,168.00 /LS	102,168	172,605.48 /LS	172,605
			31.20 Earthworks, Site	1.00 AC			102,168			102,168.00 /AC	102,168	172,605.48 /AC	172,605
			31.0 Earthwork	1.00 LS	63,261	241,624	114,168	102,845		521,898.33 /LS	521,898	881,709.67 /LS	881,710
	32.0		Exterior Improvements										
		32.35	Site Landscaping										
			Restore Staging Areas with Native Seed Mix										
			Site Improvements, Seeding										
			Native Seed Mix	33,267.22 SY	0	0	36,594			1.10 /SY	36,594	1.86 /SY	61,823
			Site Improvements, Seeding	33,267.22 SY			36,594			1.10 /SY	36,594	1.86 /SY	61,823
			Restore Staging Areas with Native Seed Mix	33,267.22 SY			36,594			1.10 /SY	36,594	1.86 /SY	61,823
			Plantings										
			Site Improvements, Seeding										
			riparian area seedling/shrub plantings.	1.00 LS			50,000			50,000.00 /LS	50,000	84,471.41 /LS	84,471
			Site Improvements, Seeding	1.00 SY			50,000			50,000.00 /SY	50,000	84,471.41 /SY	84,471
			Plantings	1.00 LS			50,000			50,000.00 /LS	50,000	84,471.41 /LS	84,471
			32.35 Site Landscaping	1.00 AC			86,594			86,593.94 /AC	86,594	146,294.22 /AC	146,294
			32.0 Exterior Improvements	1.00 LS			86,594			86,593.94 /LS	86,594	146,294.22 /LS	146,294
	33.0		Utilities										
		33.00	Utilities General										



Detail Report

Job Size:
Duration:

Project: 663264-02-Salmon Creek Ou
Project No.: 663264
Design Stage: 30% Design

Estimator: Jones T & E.B. Smith/GNV
Revision / Date: Rev 07- 12/06/2017
Estimate Class: Class 3

Table with 13 columns: Bid Item, Work Pkg, Trade Pkg, Description, Takeoff Quantity, Labor Amount, Material Amount, Sub Amount, Equip Amount, Other Amount, Total Cost/Unit, Total Amount, Grand Total Unit Price, Grand Total. Contains detailed construction estimates including trenching, dewatering, pipe installation, and vaulting.



Job Size:
Duration:

Detail Report

Project: 663264-02-Salmon Creek Ou
Project No.: 663264
Design Stage: 30% Design

Estimator: Jones T & E.B. Smith/GNV
Revision / Date: Rev 07- 12/06/2017
Estimate Class: Class 3

Bid Item	Work Pkg	Trade Pkg	Description	Takeoff Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount	Grand Total Unit Price	Grand Total
			Site Specialties, Rip Rap										
			Demo 48" Pipe & Diffusers	881.00 If	63,247		-	60,600	-	140.58 /lf	123,847	237.49 /lf	209,231
			Site Specialties, Rip Rap	1,303.70 CY	78,487			70,063		113.95 /CY	148,550	192.50 /CY	250,964
			Site Demolition	1.00 LS	78,487			70,063		148,549.63 /LS	148,550	250,963.90 /LS	250,964
			02.40 Demolition	1.00 LS	78,487			70,063		148,549.63 /LS	148,550	250,963.90 /LS	250,964
	31.00		Site/Civil										
			Wetland Mitigation										
			Site Improvements, Other Improvements										
			Wetland Mitigation Allowance	1.00 LS			10,000	-	-	10,000.00 /LS	10,000	16,894.28 /LS	16,894
			Site Improvements, Other Improvements	1.00 EA			10,000			10,000.00 /EA	10,000	16,894.28 /EA	16,894
			Wetland Mitigation	1.00 LS			10,000			10,000.00 /LS	10,000	16,894.28 /LS	16,894
			Sensitive Areas due to Archeological Sites Allowance										
			Site Improvements, Other Improvements										
			Safety Control Fence 4' height	17,021.00 lf	30,240	19,744	-	-	-	2.94 /lf	49,984	4.96 /lf	84,444
			Site Improvements, Other Improvements	1.00 EA	30,240	19,744				49,984.05 /EA	49,984	84,444.46 /EA	84,444
			Sensitive Areas due to Archeological Sites Allowance	1.00 LS	30,240	19,744				49,984.05 /LS	49,984	84,444.46 /LS	84,444
			Clearing & Grubbing										
			Site Improvements, Other Improvements										
			Clear & grub, grub, ideal cond, incl stumps, cut&chip mdm trees to 12" dia	10.00 acre	28,280	-	-	26,287	-	5,456.67 /acre	54,567	9,218.66 /acre	92,187
			Site Improvements, Other Improvements	1.00 EA	28,280			26,287		54,566.74 /EA	54,567	92,186.57 /EA	92,187
			Clearing & Grubbing	1.00 LS	28,280			26,287		54,566.74 /LS	54,567	92,186.57 /LS	92,187
			31.00 Site/Civil	1.00 LS	58,520	19,744	10,000	26,287		114,550.79 /LS	114,551	193,525.31 /LS	193,525
			31.0 Earthwork	1.00 LS	137,007	19,744	10,000	96,349		263,100.42 /LS	263,100	444,489.21 /LS	444,489
33.0			Utilities										
	33.00		Utilities General										
			Hydrostatic Testing										
			Process Pipe, Testing & Disinfection										
			Add for hydrotesting (% of Total Man Hours Buried Pipe)	1.00 ls	5,297	-	-	-	-	5,296.80 /ls	5,297	8,948.57 /ls	8,949
			Process Pipe, Testing & Disinfection	1.00 LNF	5,297					5,296.80 /LNF	5,297	8,948.57 /LNF	8,949
			Hydrostatic Testing	1.00 LS	5,297					5,296.80 /LS	5,297	8,948.57 /LS	8,949
			33.00 Utilities General	1.00 LS	5,297					5,296.80 /LS	5,297	8,948.57 /LS	8,949
			33.0 Utilities	1.00 LF	5,297					5,296.80 /LF	5,297	8,948.57 /LF	8,949
			008.0 Misc. Sitework	1.00 LS	142,303	19,744	10,000	96,349		268,397.22 /LS	268,397	453,437.78 /LS	453,438
010.0			Pump Station Modifications										
	26.0		Electrical Work										
		26.15	Process Electrical										
			Electrical										
			Electrical, Other	1.00 LS			64,000	-	-	64,000.00 /LS	64,000	108,123.38 /LS	108,123
			Electrical allowance	1.00 LS			64,000			64,000.00 /LS	64,000	108,123.38 /LS	108,123
			Electrical, Other	1.00 LS			64,000			64,000.00 /LS	64,000	108,123.38 /LS	108,123
			Electrical	1.00 LS			64,000			64,000.00 /LS	64,000	108,123.38 /LS	108,123
			26.15 Process Electrical	1.00 LS			64,000			64,000.00 /LS	64,000	108,123.38 /LS	108,123
			26.0 Electrical Work	1.00 LS			64,000			64,000.00 /LS	64,000	108,123.38 /LS	108,123
	33.0		Utilities										
		33.05	Buried Process Piping										
			Existing Pump Station Rehab										
			Process Pipe Demolition										
			Demo existing pipe & Valves	3.00 Days			5,250	-	-	1,750.00 /Days	5,250	2,956.50 /Days	8,870
			Process Pipe Demolition	40.00 LF			5,250			131.25 /LF	5,250	221.74 /LF	8,870
			Process Pipe, Carbon Steel, 30"										
			30" CS Ell, 90	4.00 ea	1,475	7,330	-	1,207	-	2,503.18 /ea	10,013	4,228.95 /ea	16,916
			Temporary Bypass Piping Allowance	1.00 LS			25,000			25,000.00 /LS	25,000	42,235.69 /LS	42,236
			30" CS pipe assembly, shop fabricated, 3/8" wall	40.00 LF	1,636	12,655	-	-	-	357.29 /LF	14,291	803.61 /LF	24,144
			30" CS reducer	4.00 ea	1,507	2,370	-	-	-	969.33 /ea	3,877	1,637.61 /ea	6,550
			30" flanged coupling adapter, 150#	4.00 ea	1,378	2,400	-	-	-	944.53 /ea	3,778	1,595.71 /ea	6,383
			Pipe stand support, CS, 24"	8.00 ea	1,723	9,096	-	-	-	1,352.33 /ea	10,819	2,284.66 /ea	18,277
			Process Pipe, Carbon Steel, 30"	40.00 LF	7,720	33,851	25,000	1,207		1,694.46 /LF	67,778	2,862.66 /LF	114,506
			Butterfly Valves, 30"										
			Install butterfly valve, Flgd, fab. steel, 30"	4.00 ea	2,135	-	-	1,725	-	965.06 /ea	3,860	1,630.40 /ea	6,522
			Butterfly valve, iron body, Flgd, HWO, 150#, 30"	4.00 ea	-	27,840	-	-	-	6,960.00 /ea	27,840	11,758.42 /ea	47,034
			Butterfly Valves, 30"	4.00 EA	2,135	27,840		1,725		7,925.06 /EA	31,700	13,388.82 /EA	53,555
			Check Valves, 30"										
			Install check valve, Flgd, fab. steel, 30"	4.00 ea	2,135	-	-	1,725	-	965.06 /ea	3,860	1,630.39 /ea	6,522
			Check valve, iron body, double door, w/aler, Flgd, 150#, 30"	4.00 ea	-	27,840	-	-	-	6,960.00 /ea	27,840	11,758.42 /ea	47,034
			Check Valves, 30"	4.00 EA	2,135	27,840		1,725		7,925.06 /EA	31,700	13,388.82 /EA	53,555
			Air and Vacuum Relief Valves, 1/2" to 1"										
			Install Air relief valve, 1"	4.00 ea	388	-	-	-	-	96.90 /ea	388	163.70 /ea	655
			FURNISH Air relief valve, iron body, 1"	4.00 ea	-	900	-	-	-	225.00 /ea	900	380.12 /ea	1,520
			Air and Vacuum Relief Valves, 1/2" to 1"	4.00 EA	388	900				321.90 /EA	1,288	543.83 /EA	2,175
			Submersible Pump: 51hp-100hp										
			Furnish & Install 9953 GPM, 75 HP Propeller Pump @ Plant Effluent P200-1,2,3,4	4.00 ea	9,406	500,000	-	-	0	127,351.38 /ea	509,406	215,150.98 /ea	860,604
			Demo existing pumps	4.00 ea	9,406	0	-	-	-	3,972.47 /ea	9,406	15,890	
			Submersible Pump: 51hp-100hp	4.00 EA	18,811	500,000				129,702.75 /EA	518,811	219,123.45 /EA	876,944
			Existing Pump Station Rehab	1.00 LS	31,189	590,431	30,250	4,657		656,527.31 /LS	656,527	1,109,155.62 /LS	1,109,156



Job Size:
Duration:

Detail Report

Project: 663264-02-Salmon Creek Ou
Project No.: 663264
Design Stage: 30% Design

Estimator: Jones T & E.B. Smith/GNV
Revision / Date: Rev 07- 12/06/2017
Estimate Class: Class 3

Bid Item	Work Pkg	Trade Pkg	Description	Takeoff Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount	Grand Total Unit Price	Grand Total
			33.05 Buried Process Piping	40.00 LF	31,189	590,431	30,250	4,657		16,413.18 /LF	656,527	27,728.89 /LF	1,109,156
			33.0 Utilities	40.00 LF	31,189	590,431	30,250	4,657		16,413.18 /LF	656,527	27,728.89 /LF	1,109,156
40.9			Instrumentation & Controls										
		40.90	Instrumentation & Controls										
			Instrumentation & Controls										
			I&C, Other										
			I&C Allowance	1.00 LS			32,000	-	-	32,000.00 /LS	32,000	54,061.69 /LS	54,062
			I&C, Other	1.00 EA			32,000			32,000.00 /EA	32,000	54,061.69 /EA	54,062
			Instrumentation & Controls	1.00 LS			32,000			32,000.00 /LS	32,000	54,061.69 /LS	54,062
			40.90 Instrumentation & Controls	1.00 LS			32,000			32,000.00 /LS	32,000	54,061.69 /LS	54,062
			40.9 Instrumentation & Controls	1.00 LS			32,000			32,000.00 /LS	32,000	54,061.69 /LS	54,062
			010.0 Pump Station Modifications	1.00 LS	31,189	590,431	126,250	4,657		752,527.31 /LS	752,527	1,271,340.69 /LS	1,271,341
012.0			Access Road Restoration										
	31.0		Earthwork										
		31.00	Site/Civil										
			Lower River Road Restoration at Pipeline Crossing										
			Site Improvements, Other Paving										
			Geosynthetic soil stabilization, geotextile fabric, non-woven, 120 lb. tensile strength, includes scarifying and compaction	400.00 sy	100	336	-	-	-	1.09 /sy	436	1.84 /sy	736
			Base course drainage layers, aggregate base course for roadways and large paved areas, bank run gravel, spread and compacted, 6" deep	400.00 sy	101	1,476	-	119	-	4.24 /sy	1,697	7.17 /sy	2,867
			Remove bank run gravel	66.67 ecy	106	-	-	183	-	4.33 /ecy	289	7.31 /ecy	488
			Base course drainage layers, prepare and roll sub-base, large areas over 2500 S.Y.	400.00 sy	126	-	-	135	-	0.65 /sy	261	1.10 /sy	441
			Site Improvements, Other Paving	400.00 SY	433	1,812		437		6.71 /SY	2,682	11.33 /SY	4,531
			Lower River Road Restoration at Pipeline Crossing	120.00 LF	433	1,812		437		22.35 /LF	2,682	37.76 /LF	4,531
			Access Roads Restoration										
			Site Improvements, Other Paving										
			Geosynthetic soil stabilization, geotextile fabric, non-woven, 120 lb. tensile strength, includes scarifying and compaction	17,960.00 sy	4,468	15,086	-	-	-	1.09 /sy	19,554	1.84 /sy	33,035
			Base course drainage layers, aggregate base course for roadways and large paved areas, bank run gravel, spread and compacted, 6" deep	17,960.00 sy	4,554	66,272	-	5,361	-	4.24 /sy	76,187	7.17 /sy	128,713
			Remove bank run gravel	2,993.33 ecy	4,763	-	-	8,198	-	4.33 /ecy	12,961	7.31 /ecy	21,896
			Base course drainage layers, prepare and roll sub-base, large areas over 2500 S.Y.	17,960.00 sy	5,667	-	-	6,056	-	0.65 /sy	11,723	1.10 /sy	19,805
			Site Improvements, Other Paving	17,960.00 SY	19,451	81,359		19,615		6.71 /SY	120,425	11.33 /SY	203,449
			Access Roads Restoration	13,470.00 LF	19,451	81,359		19,615		8.94 /LF	120,425	15.10 /LF	203,449
			Lower River Road Restoration From Gate to Project Site										
			Site Improvements, Paving, Bituminous Asphalt										
			Rubbish handling, loading & trucking, 2 MI haul, machine load truck	711.11 cy	8,083	-	-	10,706	-	26.42 /cy	18,789	44.64 /cy	31,743
			Dump charges, pavement material	42.00 ld	-	-	-	-	42	1.00 /ld	42	1.70 /ld	71
			Cold milling asphalt paving, asphalt pavement, 1" to 3" deep, removal from concrete base, rip, load and sweep, excludes hauling	8,533.33 sy	2,607	-	-	6,516	-	1.07 /sy	9,123	1.81 /sy	15,413
			Plant-mix asphalt paving, for highways and large paved areas, wearing course, 3" thick, no hauling included	8,533.33 sy	7,088	101,120	-	4,086	-	13.16 /sy	112,293	22.23 /sy	189,711
			Site Improvements, Paving, Bituminous Asphalt	8,533.33 SY	17,778	101,120		21,308	42	16.44 /SY	140,248	27.77 /SY	236,938
			Site Improvements, Pavement markings and signage										
			Painted pavement markings, acrylic waterborne, white or yellow, 6" wide, less than 3000 L.F.	6,400.00 lf	1,104	1,088	-	290	-	0.39 /lf	2,482	0.66 /lf	4,193
			Site Improvements, Pavement markings and signage	6,400.00 LF	1,104	1,088		290		0.39 /LF	2,482	0.66 /LF	4,193
			Lower River Road Restoration From Gate to Project Site	3,200.00 LF	18,882	102,208		21,597	42	44.60 /LF	142,729	75.35 /LF	241,131
			Railroad Crossing Improvements										
			Site Improvements, Other Improvements										
			Railroad Crossing Improvements	1.00 LS			20,000	-	-	20,000.00 /LS	20,000	33,788.56 /LS	33,789
			Site Improvements, Other Improvements	1.00 EA			20,000			20,000.00 /EA	20,000	33,788.56 /EA	33,789
			Railroad Crossing Improvements	1.00 LS			20,000			20,000.00 /LS	20,000	33,788.56 /LS	33,789
			Railroad Access Road										
			Site Improvements, Other Paving										
			Base course drainage layers, aggregate base course for roadways and large paved areas, bank run gravel, spread and compacted, 6" deep	1,333.33 sy	338	4,920	-	398	-	4.24 /sy	5,656	7.17 /sy	9,556
			Site Improvements, Other Paving	1,333.33 SY	338	4,920		398		4.24 /SY	5,656	7.17 /SY	9,556
			Railroad Access Road	1,000.00 LF	338	4,920		398		5.66 /LF	5,656	9.56 /LF	9,556
			31.00 Site/Civil	1.00 LS	39,105	190,299	20,000	42,047	42	291,492.38 /LS	291,492	492,455.65 /LS	492,456
			31.0 Earthwork	1.00 LS	39,105	190,299	20,000	42,047	42	291,492.38 /LS	291,492	492,455.65 /LS	492,456
			012.0 Access Road Restoration	1.00 LS	39,105	190,299	20,000	42,047	42	291,492.38 /LS	291,492	492,455.65 /LS	492,456



Job Size:
Duration:

Detail Report

Project: 663264-02-Salmon Creek Ou
Project No.: 663264
Design Stage: 30% Design

Estimator: Jones T & E.B. Smith/GNV
Revision / Date: Rev 07- 12/06/2017
Estimate Class: Class 3

Estimate Totals

Construction Costs	Amount	Totals	Rate	% of Total
Labor	1,487,347			8.49%
Material	5,159,184			29.45%
Subcontract	1,465,901			8.37%
Equipment	1,288,991			7.36%
Other	42			0.00%
Subtotal Raw Costs	9,401,465	9,401,465		53.66
Location Adj. Factor	(56,409)		(0.600) %	-0.32%
Productivity Adjustment				
Subtotal Adj. Factors	(56,409)	9,345,056		-0.32
Concrete Work I,OH&P	7,905		15.000 %	0.05%
Auger Bore, OH&P	105,793		15.000 %	0.60%
Marine Construction,OH&P	165,750		15.000 %	0.95%
Subtotal Subcontractor I,OH&P	279,448	9,624,504		1.60
Total Cost To Prime Contractor		9,624,504		
General Conditions	673,715		7.000 %	3.85%
Mobilization/Demobilization	288,735		3.000 %	1.65%
Subtotal Indirect Costs	962,450	10,586,954		5.49
Prime Contractor Home OfficeOH	1,058,695		10.000 %	6.04%
Prime Contractor Profit	529,348		5.000 %	3.02%
Blder's Risk & Gen Liab Ins -%	175,202		1.000 %	1.00%
Payment & Performance Bonds	203,234		1.160 %	1.16%
Subtotal OH&P	1,966,479	12,553,433		11.22
Contingency	3,138,359		25.000 %	17.91%
Subtotal Contingency	3,138,359	15,691,792		17.91
Escalation	470,754		3.000 %	2.69%
Subtotal Escalation	470,754	16,162,546		2.69
Total Prime Contractor Costs		16,162,546		
Gross Tax	1,357,654		8.400 %	7.75%
Total GRT	1,357,654	17,520,200		7.75
Total Construction Cost w/ GRT		17,520,200		



Work Activity Summary Report

Job Size:	Project: 663264-02-Salmon Creek Ou	Estimator: Jones T & E.B. Smith/GNV
Duration:	Project No.: 663264	Revision / Date: Rev 07- 12/06/2017
	Design Stage: 30% Design	Estimate Class: Class 3

Bid Item	Work Pkg	Trade Pkg	Description	Takeoff Quantity	Grand Total Unit Price	Grand Total
001.0			Plant Open Cut			
	31.0		Earthwork			
		31.00	Site/Civil			
			Contractor Staging Area	74,750.00 SF	0.79 /SF	58,895
			Silt Fence	1,723.00 LF	5.07 /LF	8,733
			Compacted Fill	798.33 CY	56.30 /CY	44,947
			31.00 Site/Civil	1.00 LS	112,575.01 /LS	112,575
			31.0 Earthwork	1.00 LS	112,575.01 /LS	112,575
	32.0		Exterior Improvements			
		32.35	Site Landscaping			
			Restore Staging Areas with Native Seed Mix	8,305.56 SY	1.86 /SY	15,435
			Plantings	1.00 LS	84,471.40 /LS	84,471
			32.35 Site Landscaping	1.00 AC	99,906.23 /AC	99,906
			32.0 Exterior Improvements	1.00 LS	99,906.23 /LS	99,906
	33.0		Utilities			
		33.05	Buried Process Piping			
			Trench Dewatering	392.00 LF	50.28 /LF	19,710
			Bypass Piping	1.00 LS	33,788.57 /LS	33,789
			48" Outfall Pipe - Open Cut	392.00 LF	746.21 /LF	292,515
			Connection to Existing P.S. Pipe 48" Plant Effluent and 42" Force Main	1.00 LS	292,515.42 /LS	292,515
			Fittings	1.00 LS	35,628.61 /LS	35,629
			33.05 Buried Process Piping	392.00 LF	1,719.79 /LF	674,158
			33.0 Utilities	392.00 LF	1,719.79 /LF	674,158
			001.0 Plant Open Cut	392.00 LF	2,261.83 /LF	886,639
002.0			Railroad Crossing (Auger Bore)			
	31.0		Earthwork			
		31.30	Site Specialties			
			12' x12' x 12' Grout Plug at Launch and Receiving Pits.	128.00 CY	1,062.61 /CY	136,014
			31.30 Site Specialties	1.00 LS	136,014.36 /LS	136,014
			31.0 Earthwork	1.00 LS	136,014.36 /LS	136,014
	33.0		Utilities			
		33.60	Trenchless Technology			
			60" Horizontal Bore (Auger Bore)	512.00 LF	2,498.84 /LF	1,279,405
			Launch Pit (15'w X 30'l X 10'd)	1.00 EA	92,686.46 /EA	92,686
			Receiving Pit (15'w X 20'l X 15'd)	1.00 EA	102,338.61 /EA	102,339
			Settlement Monitoring of Railroad.	1.00 LS	16,894.27 /LS	16,894
			Allowance for improvements of RR at crossings	1.00 LS	33,788.56 /LS	33,789
			33.60 Trenchless Technology	512.00 LF	2,978.74 /LF	1,525,113
			33.0 Utilities	512.00 LF	2,978.74 /LF	1,525,113
			002.0 Railroad Crossing (Auger Bore)	512.00 LF	3,244.39 /LF	1,661,127
003.0			Salmon Creek Crossing			
	01.0		General Conditions			
		01.01	Construction Operations			
			Misc. Equipment	1.00 LS	53,950.23 /LS	53,950
			01.01 Construction Operations	1.00 MO	53,950.23 /MO	53,950
			01.0 General Conditions	1.00 LS	53,950.23 /LS	53,950
	31.0		Earthwork			
		31-30	Site Specialties			
			Work Tressle	6,400.00 SF	49.19 /SF	314,788
			31-30 Site Specialties	1.00 LS	314,787.72 /LS	314,788
		31.00	Site/Civil			
			Contractor Staging Area	69,429.00 SF	0.92 /SF	64,182
			31.00 Site/Civil	1.00 LS	64,182.33 /LS	64,182
		31.20	Earthworks, Site			
			Stream Bank Restoration	1.00 LS	4,542.65 /LS	4,543
			31.20 Earthworks, Site	1.00 AC	4,542.65 /AC	4,543
		31.30	Site Specialties			
			Cofferdam	600.00 LF	804.90 /LF	482,939
			31.30 Site Specialties	1.00 LS	482,939.01 /LS	482,939
			31.0 Earthwork	1.00 LS	866,451.71 /LS	866,452
	32.0		Exterior Improvements			
		32.35	Site Landscaping			
			Restore Staging Areas with Native Seed Mix	7,714.33 SY	1.86 /SY	14,336
			Plantings	1.00 LS	84,471.41 /LS	84,471
			32.35 Site Landscaping	1.00 AC	98,807.50 /AC	98,808
			32.0 Exterior Improvements	1.00 LS	98,807.50 /LS	98,808
	33.0		Utilities			
		31.15	Site Preparation			



Work Activity Summary Report

Job Size:	Project: 663264-02-Salmon Creek Ou	Estimator: Jones T & E.B. Smith/GNV
Duration:	Project No.: 663264	Revision / Date: Rev 07- 12/06/2017
	Design Stage: 30% Design	Estimate Class: Class 3

Bid Item	Work Pkg	Trade Pkg	Description	Takeoff Quantity	Grand Total Unit Price	Grand Total
			Erosion Control & Noise Disturbance	1.00 LS	74,664.90 /LS	74,665
			31.15 Site Preparation	1.00 AC	74,664.90 /AC	74,665
		33.00	Utilities General			
			Trench Plung along pipeline alingment	2.00 EA	1,689.43 /EA	3,379
			33.00 Utilities General	1.00 LS	3,378.86 /LS	3,379
		33.05	Buried Process Piping			
			Coffer Dam Dewatering	340.00 LF	54.39 /LF	18,493
			Trench Dewatering	340.00 LF	52.22 /LF	17,756
			48" Outfall Pipe - Open Cut	340.00 LF	789.00 /LF	268,261
			Fittings	1.00 LS	11,315.81 /LS	11,316
			33.05 Buried Process Piping	340.00 LF	928.90 /LF	315,826
			33.0 Utilities	340.00 LF	1,158.44 /LF	393,870
			003.0 Salmon Creek Crossing	340.00 LF	4,156.12 /LF	1,413,079
004.0			Curtis Lake Ranch (Meyer Property Crossing)			
	31.0		Earthwork			
		31.00	Site/Civil			
			Contractor Staging Area	99,000.00 SF	0.99 /SF	98,190
			Silt Fence	3,511.00 LF	5.07 /LF	17,795
			31.00 Site/Civil	1.00 LS	115,985.00 /LS	115,985
			31.0 Earthwork	1.00 LS	115,985.00 /LS	115,985
	32.0		Exterior Improvements			
		32.35	Site Landscaping			
			Restore Staging Areas with Native Seed Mix	14,792.00 SY	1.86 /SY	27,489
			32.35 Site Landscaping	1.00 AC	27,488.99 /AC	27,489
			32.0 Exterior Improvements	1.00 LS	27,488.99 /LS	27,489
	33.0		Utilities			
		33.00	Utilities General			
			Trench Plung along pipeline alingment	2.00 EA	1,689.43 /EA	3,379
			33.00 Utilities General	1.00 LS	3,378.86 /LS	3,379
		33.05	Buried Process Piping			
			Compacted Fill	953.33 CY	49.10 /CY	46,805
			Trench Dewatering	2,350.00 LF	52.98 /LF	124,502
			48" Outfall Pipe - Open Cut	2,350.00 LF	794.96 /LF	1,868,165
			Fittings	1.00 LS	33,947.47 /LS	33,947
			33.05 Buried Process Piping	2,350.00 LF	882.31 /LF	2,073,419
			33.0 Utilities	2,350.00 LF	883.74 /LF	2,076,798
			004.0 Curtis Lake Ranch (Meyer Property Crossing)	2,350.00 LF	944.80 /LF	2,220,272
005.0			Lake River Crossing			
	01.0		General Conditions			
		01.01	Construction Operations			
			Misc. Equipment	1.00 LS	53,950.24 /LS	53,950
			01.01 Construction Operations	1.00 MO	53,950.24 /MO	53,950
			01.0 General Conditions	1.00 LS	53,950.24 /LS	53,950
	31.0		Earthwork			
		31.20	Earthworks, Site			
			Stream Bank Restoration	1.00 LS	230,140.62 /LS	230,141
			31.20 Earthworks, Site	1.00 AC	230,140.62 /AC	230,141
		31.30	Site Specialties			
			Cofferdam	500.00 LF	804.90 /LF	402,449
			31.30 Site Specialties	1.00 LS	402,449.18 /LS	402,449
			31.0 Earthwork	1.00 LS	632,589.80 /LS	632,590
	32.0		Exterior Improvements			
		32.35	Site Landscaping			
			Plantings	1.00 LS	84,471.40 /LS	84,471
			32.35 Site Landscaping	1.00 AC	84,471.40 /AC	84,471
			32.0 Exterior Improvements	1.00 LS	84,471.40 /LS	84,471
	33.0		Utilities			
		31.15	Site Preparation			
			Erosion Control & Noise Disturbance	1.00 LS	70,641.48 /LS	70,641
			31.15 Site Preparation	1.00 AC	70,641.48 /AC	70,641
		33.00	Utilities General			
			Trench Plung along pipeline alingment	2.00 EA	1,689.43 /EA	3,379
			33.00 Utilities General	1.00 LS	3,378.86 /LS	3,379
		33.05	Buried Process Piping			
			Coffer Dam Dewatering	300.00 LF	61.64 /LF	18,493
			Trench Dewatering	300.00 LF	54.25 /LF	16,275
			48" Outfall Pipe - Open Cut	300.00 LF	804.84 /LF	241,451



Work Activity Summary Report

Job Size:	Project: 663264-02-Salmon Creek Ou	Estimator: Jones T & E.B. Smith/GNV
Duration:	Project No.: 663264	Revision / Date: Rev 07- 12/06/2017
	Design Stage: 30% Design	Estimate Class: Class 3

Bid Item	Work Pkg	Trade Pkg	Description	Takeoff Quantity	Grand Total Unit Price	Grand Total
			Fittings	1.00 LS	11,315.83 /LS	11,316
			33.05 Buried Process Piping	300.00 LF	958.45 /LF	287,535
			33.0 Utilities	300.00 LF	1,205.18 /LF	361,555
			005.0 Lake River Crossing	300.00 LF	3,775.22 /LF	1,132,567
006.0			New Columbia Garden Company (Fazio Property Farm Land w/Road Crossing)			
	03.0		Concrete Work			
		03.10	Cast-In-Place Concrete Work			
			Junction Box	39.00 CY	2,485.56 /CY	96,937
			03.10 Cast-In-Place Concrete Work	39.00 CY	2,485.56 /CY	96,937
			03.0 Concrete Work	39.00 CY	2,485.56 /CY	96,937
	31.0		Earthwork			
		31.00	Site/Civil			
			Contractor Staging Area	124,578.00 SF	0.78 /SF	97,685
			Silt Fence	2,264.00 LF	5.07 /LF	11,475
			31.00 Site/Civil	1.00 LS	109,159.25 /LS	109,159
			31.0 Earthwork	1.00 LS	109,159.25 /LS	109,159
	32.0		Exterior Improvements			
		32.35	Site Landscaping			
			Restore Staging Areas with Native Seed Mix	15,183.33 SY	1.86 /SY	28,216
			Restoration of Round Lake Conservation Bank	1.00 LS	300,718.18 /LS	300,718
			32.35 Site Landscaping	1.00 AC	328,934.43 /AC	328,934
		32.40	Paving			
			Remove & Replace Pavement @ Road Crossing	30.00 SY	115.66 /SY	3,470
			32.40 Paving	30.00 SY	115.66 /SY	3,470
		32.50	Site, Improvements			
			Revetmant Mat	7,695.00 SF	5.22 /SF	40,139
			32.50 Site, Improvements	1.00 AC	40,139.39 /AC	40,139
			32.0 Exterior Improvements	1.00 LS	372,543.68 /LS	372,544
	33.0		Utilities			
		33.00	Utilities General			
			Trench Plung along pipeline alingment	3.00 EA	1,689.42 /EA	5,068
			33.00 Utilities General	1.00 LS	5,068.27 /LS	5,068
		33.05	Buried Process Piping			
			Trench Dewatering	2,585.00 LF	38.55 /LF	99,664
			48" Outfall Pipe - Open Cut	2,560.00 LF	809.78 /LF	2,073,041
			Fittings	1.00 LS	125,276.90 /LS	125,277
			33.05 Buried Process Piping	2,585.00 LF	888.97 /LF	2,297,982
			33.0 Utilities	2,585.00 LF	890.93 /LF	2,303,050
			006.0 New Columbia Garden Company (Fazio Property Farm Land w/Road Crossing)	2,560.00 LF	1,125.66 /LF	2,881,690
007.0			Outfall Section			
	01.0		General Conditions			
		01-01	Construction Operations			
			Mob/Demob Barge Work Platform	1.00 LS	74,468.14 /LS	74,468
			01-01 Construction Operations	1.00 LS	74,468.14 /LS	74,468
			01.0 General Conditions	1.00 LS	74,468.14 /LS	74,468
	31.0		Earthwork			
		31-30	Site Specialties			
			Work Tressle	9,000.00 SF	44.68 /SF	402,097
			31-30 Site Specialties	1.00 LS	402,096.84 /LS	402,097
		31.00	Site/Civil			
			Contractor Staging Area	364,320.00 SF	0.84 /SF	307,007
			31.00 Site/Civil	1.00 LS	307,007.35 /LS	307,007
		31.20	Earthworks, Site			
			Stream Bank Restoration	1.00 LS	172,605.48 /LS	172,605
			31.20 Earthworks, Site	1.00 AC	172,605.48 /AC	172,605
			31.0 Earthwork	1.00 LS	881,709.67 /LS	881,710
	32.0		Exterior Improvements			
		32.35	Site Landscaping			
			Restore Staging Areas with Native Seed Mix	33,267.22 SY	1.86 /SY	61,823
			Plantings	1.00 LS	84,471.41 /LS	84,471
			32.35 Site Landscaping	1.00 AC	146,294.22 /AC	146,294
			32.0 Exterior Improvements	1.00 LS	146,294.22 /LS	146,294
	33.0		Utilities			
		33.00	Utilities General			
			Trench Plung along pipeline alingment	1.00 EA	1,689.44 /EA	1,689



Work Activity Summary Report

Job Size:	Project: 663264-02-Salmon Creek Ou	Estimator: Jones T & E.B. Smith/GNV
Duration:	Project No.: 663264	Revision / Date: Rev 07- 12/06/2017
	Design Stage: 30% Design	Estimate Class: Class 3

Bid Item	Work Pkg	Trade Pkg	Description	Takeoff Quantity	Grand Total Unit Price	Grand Total
			33.00 Utilities General	1.00 LS	1,689.44 /LS	1,689
		33.05	Buried Process Piping			
			Trench Dewatering	452.00 LF	63.06 /LF	28,502
			Connect to Existing 30" Outfall Pipe	30.00 LF	4,262.91 /LF	127,887
			48" Outfall Pipe - Open Cut	70.00 LF	2,276.89 /LF	159,383
			Fittings	1.00 LS	216,606.33 /LS	216,606
			33.05 Buried Process Piping	1,138.00 LF	467.82 /LF	532,378
			33.0 Utilities	1,138.00 LF	469.30 /LF	534,067
	35.0		Marine Construction			
		35.00	Marine Construction			
			Navigation Marker	1.00 LS	84,836.95 /LS	84,837
			35.00 Marine Construction	1.00 LS	84,836.95 /LS	84,837
		35.00	Waterway and Marine Construction			
			48" Outfall Pipe & Diffuser Assembly - Marine Construction	774.00 LF	1,597.11 /LF	1,236,166
			Trench, Backfill, Marine Construction	774.00 LF	488.53 /LF	378,119
			Steel Piles For Diffuser Support	11.00 EA	37,661.54 /EA	414,277
			35.00 Waterway and Marine Construction	1.00 LS	2,028,562.37 /LS	2,028,562
			35.0 Marine Construction	1.00 LS	2,113,399.32 /LS	2,113,399
			007.0 Outfall Section	1,138.00 LF	3,295.20 /LF	3,749,939
008.0			Misc. Sitework			
	31.0		Earthwork			
		02.40	Demolition			
			Site Demolition	1.00 LS	250,963.90 /LS	250,964
			02.40 Demolition	1.00 LS	250,963.90 /LS	250,964
		31.00	Site/Civil			
			Wetland Mitigation	1.00 LS	16,894.28 /LS	16,894
			Sensitive Areas due to Archeological Sites Allowance	1.00 LS	84,444.46 /LS	84,444
			Clearing & Grubbing	1.00 LS	92,186.57 /LS	92,187
			31.00 Site/Civil	1.00 LS	193,525.31 /LS	193,525
			31.0 Earthwork	1.00 LS	444,489.21 /LS	444,489
	33.0		Utilities			
		33.00	Utilities General			
			Hydrostatic Testing	1.00 LS	8,948.57 /LS	8,949
			33.00 Utilities General	1.00 LS	8,948.57 /LS	8,949
			33.0 Utilities	1.00 LF	8,948.57 /LF	8,949
			008.0 Misc. Sitework	1.00 LS	453,437.78 /LS	453,438
010.0			Pump Station Modifications			
	26.0		Electrical Work			
		26.15	Process Electrical			
			Electrical	1.00 LS	108,123.38 /LS	108,123
			26.15 Process Electrical	1.00 LS	108,123.38 /LS	108,123
			26.0 Electrical Work	1.00 LS	108,123.38 /LS	108,123
	33.0		Utilities			
		33.05	Buried Process Piping			
			Existing Pump Station Rehab	1.00 LS	1,109,155.62 /LS	1,109,156
			33.05 Buried Process Piping	40.00 LF	27,728.89 /LF	1,109,156
			33.0 Utilities	40.00 LF	27,728.89 /LF	1,109,156
	40.9		Instrumentation & Controls			
		40.90	Instrumentation & Controls			
			Instrumentation & Controls	1.00 LS	54,061.69 /LS	54,062
			40.90 Instrumentation & Controls	1.00 LS	54,061.69 /LS	54,062
			40.9 Instrumentation & Controls	1.00 LS	54,061.69 /LS	54,062
			010.0 Pump Station Modifications	1.00 LS	1,271,340.69 /LS	1,271,341
012.0			Access Road Restoration			
	31.0		Earthwork			
		31.00	Site/Civil			
			Lower River Road Restoration at Pipeline Crossing	120.00 LF	37.76 /LF	4,531
			Access Roads Restoration	13,470.00 LF	15.10 /LF	203,449
			Lower River Road Restoration From Gate to Project Site	3,200.00 LF	75.35 /LF	241,131
			Railroad Crossing Improvements	1.00 LS	33,788.56 /LS	33,789
			Railroad Access Road	1,000.00 LF	9.56 /LF	9,556
			31.00 Site/Civil	1.00 LS	492,455.65 /LS	492,456
			31.0 Earthwork	1.00 LS	492,455.65 /LS	492,456
			012.0 Access Road Restoration	1.00 LS	492,455.65 /LS	492,456



Work Activity Summary Report

Job Size:
Duration:

Project: 663264-02-Salmon Creek Ou
Project No.: 663264
Design Stage: 30% Design

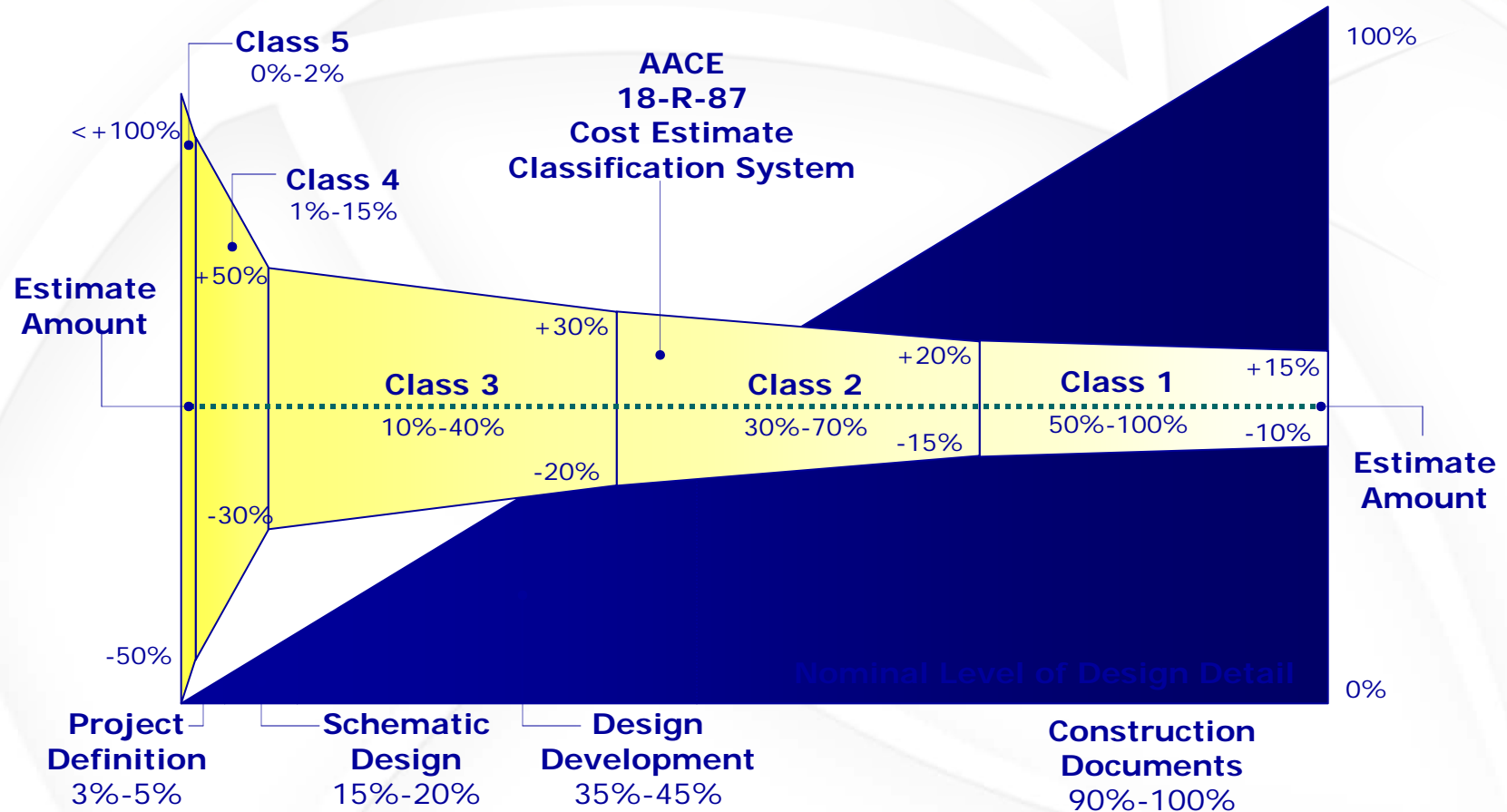
Estimator: Jones T & E.B. Smith/GNV
Revision / Date: Rev 07- 12/06/2017
Estimate Class: Class 3

Estimate Totals

Construction Costs	Amount	Totals	Rate	% of Total
Labor	2,560,169			14.61%
Material	8,901,776			50.81%
Subcontract	2,477,076			14.14%
Equipment	2,223,454			12.69%
Other	71			0.00%
Total Prime Contractor Costs	16,162,546	16,162,546		92.25
Gross Tax	1,357,654		8.400 %	7.75%
Total Construction Cost w/ GRT	1,357,654	17,520,200		7.75

**Appendix B:
AACEI Classification**

AACE – Classification System



Construction Cost Estimate Accuracy Ranges

Estimate Class	Class 5	Class 4	Class 3	Class 2	Class 1
LEVEL OF PROJECT DEFINITION Expressed as a % of complete definition	0% to 2%	1% to 15%	10% to 40%	30% to 70%	50% to 100%
END USAGE Typical Purpose of Estimate	Concept Screening	Study or Feasibility	Budget Authorization, or Control	Control or Bid / Tender	Check Estimate or Bid / Tender
METHODOLOGY Typical estimating method	Capacity Factored, Parametric Models, Judgment, or Analogy	Equipment Factored or Parametric Models	Semi-Detailed Unit Costs with Assembly Level Line Items	Detailed Unit Cost with Forced Detailed Take-Off	Detailed Unit Cost with Detailed Take-Off
EXPECTED ACCURACY RANGE Typical variation in low and high ranges [a]	L: -20% to -50% H: +30% to +100%	L: -15% to -30% H: +20% to +50%	L: -10% to -20% H: +10% to +30%	L: -5% to -15% H: +5% to +20%	L: -3% to -10% H: +3% to +15%
PREPARATION EFFORT Typical degree of effort relative to least cost index of 1 [b]	1	2 to 4	3 to 10	4 to 20	5 to 100
REFINED CLASS DEFINITION	Class 5 estimates are generally prepared based on very limited information, and subsequently have very wide accuracy ranges. As such, some companies and organizations have elected to determine that due to the inherent inaccuracies, such estimates cannot be classified in a conventional and systematic manner. Class 5 estimates, due to the requirements of end use, may be prepared within a very limited amount of time and with very little effort expended - sometimes requiring less than 1 hour to prepare. Often, little more than proposed plant type, location, and capacity are known at the time of estimate preparation.	Class 4 estimates are generally prepared based on very limited information, and subsequently have very wide accuracy ranges. They are typically used for project screening, determination of feasibility, concept evaluation, and preliminary budget approval. Typically, engineering is from 1% to 5% complete, and would comprise at a minimum the following: plant capacity, block schematics, indicated layout, process flow diagrams (PFDs) for main process systems and preliminary engineered process and utility equipment lists. Level of Project Definition Required: 1% to 15% of full project definition.	Class 3 estimates are generally prepared to form the basis for budget authorization, appropriation, and/or funding. As such, they typically form the initial control estimate against which all actual costs and resources will be monitored. Typically, engineering is from 10% to 40% complete, and would comprise at a minimum the following: process flow diagrams, utility flow diagrams, preliminary piping and instrument diagrams, utility flow diagrams, preliminary piping and instrument diagrams, plot plan, developed layout drawings, and essentially complete engineering process and utility equipment lists. Level Of Project Definition Required: 10% to 40% of full project definition.	Class 2 estimates are generally prepared to form a detailed control baseline against which all project work is monitored in terms of cost and progress control. For contractors, this class of estimate is often used as the "bid" estimate to establish contract value. Typically, engineering is from 30% to 70% complete, and would comprise at a minimum the following: Process flow diagrams, utility flow diagrams, piping and instrument flow diagrams, heat and material balances, final plot plan, final layout drawings, complete engineered process and utility equipment lists, single line diagrams for electrical, electrical equipment and motor schedules, vendor quotations, detailed project execution plans, resourcing and work force plans, etc.	Class 1 estimates are generally prepared for discrete parts or sections of the total project rather than generating this level of detail for the entire project. The parts of the project estimated at this level of detail will typically be used by subcontractors for bids, or by owners for check estimates. The updated estimate is often referred to as the current control estimate and becomes the new baseline for cost/schedule control of the project. Class 1 estimates may be prepared for parts of the project to comprise a fair price estimate or bid check estimate to compare against a contractor's bid estimate, or to evaluate/dispute claims. Typically, engineering is from 50% to 100% complete, and would comprise virtually all engineering and design documentation of the project, and complete project execution and commissioning plans. Level for Project Definition Required: 50% to 100% of full project definition.
END USAGE DEFINED	Class 5 estimates are prepared for any number of strategic business planning purposes, such as but not limited to market studies, assessment of initial viability, evaluation of alternate schemes, project screening, project location studies, evaluation of resource needs and budgeting, long-range capital planning, etc.	Class 4 estimates are prepared for a number of purposes, such as but not limited to, detailed strategic planning, business development, project screening at more developed stages, alternative scheme analysis, confirmation of economic and/or technical feasibility, and preliminary budget approval or approval to proceed to next stage.	Class 3 estimates are typically prepared to support full project funding requests, and become the first of the project phase "control estimate" against which all actual costs and resources will be monitored for variations to the budget. They are used as the project budget until replaced by more detailed estimates. In many owner organizations, a Class 3 estimate may be the last estimate required and could well form the only basis for cost/schedule control.	Class 2 estimates are typically prepared as the detailed control baseline against which all actual costs and resources will now be monitored for variation to the budget, and form a part of the change/variation control program.	Class 1 estimates are typically prepared to form a current control estimate to be used as the final control baseline against which all actual costs and resources will now be monitored for variations to the budget, and form a part of the change/variation control program. They may be used to evaluate bid checking, to support vendor/contractor negotiations, or for claim evaluations and dispute resolution.
ESTIMATING METHODS USED	Class 5 estimates virtually always use stochastic estimating methods such as cost/capacity curves and factors, scale of operations factors, Lang factors, Hand factors, Chilton factors, Peters-Timmerhaus factors, Guthrie factors, and other parametric and modeling techniques.	Class 4 estimates virtually always use stochastic estimating methods such as cost/capacity curves and factors, scale of operations factors, Lang factors, Hand factors, Chilton factors, Peters-Timmerhaus factors, Guthrie factors, the Miller method, gross unit costs/ratios, and other parametric and modeling techniques.	Class 3 estimates usually involve more deterministic estimating methods that stochastic methods. They usually involve a high degree of unit cost line items, although these may be at an assembly level of detail rather than individual components. Factoring and other stochastic methods may be used to estimate less-significant areas of the project.	Class 2 estimates always involve a high degree of deterministic estimating methods. Class 2 estimates are prepared in great detail, and often involve tens of thousands of unit cost line items. For those areas of the project still undefined, an assumed level of detailed takeoff (forced detail) may be developed to use as line items in the estimate instead of relying on factoring methods.	Class 1 estimates involve the highest degree of deterministic estimating methods, and require a great amount of effort. Class 1 estimates are prepared in great detail, and thus are usually performed on only the most important or critical areas of the project. All items in the estimate are usually unit cost line items based on actual design quantities.
EXPECTED ACCURACY RANGE	Typical accuracy ranges for Class 5 estimates are -20% to -50% on the low side, and +30% to +100% on the high side, depending on the technological complexity of the project, appropriate contingency determination. Ranges could exceed those shown in unusual circumstances.	Typical accuracy ranges for Class 4 estimates are -15% to -30% on the low side, and +20% to +50% on the high side, depending on the technological complexity of the project, appropriate reference information, and the inclusion of an appropriate contingency determination. Ranges could exceed those shown in unusual circumstances.	Typical accuracy ranges for Class 3 estimates are -10% to -20% on the low side, and +10% to +30% on the high side, depending on the technological complexity of the project, appropriate reference information, and the inclusion of an appropriate contingency determination. Ranges could exceed those shown in unusual circumstances.	Typical accuracy ranges for Class 2 estimates are -5% to -15% on the low side, and +5% to +20% on the high side, depending on the technological complexity of the project, appropriate reference information, and the inclusion of an appropriate contingency determination. Ranges could exceed those shown in unusual circumstances.	Typical accuracy ranges for Class 1 estimates are -3% to -10% on the low side, and +3% to +15% on the high side, depending on the technological complexity of the project, appropriate reference information, and the inclusion of an appropriate contingency determination. Ranges could exceed those shown in unusual circumstances.
EFFORT TO PREPARE (for US\$20MM project):	As little as 1 hour or less to prepare to perhaps more than 200 hours, depending on the project and the estimating methodology used.	Typically, as little as 20 hours or less to perhaps more than 300 hours, depending on the project and the estimating methodology used.	Typically, as little as 150 hours or less to perhaps more than 1500 hours, depending on the project and the estimating methodology used.	Typically, as little as 300 hours or less to perhaps more than 3000 hours, depending on the project and the estimating methodology used. Bid Estimates typically require more effort than estimates used for funding or control purposes	Class 1 estimates require the most effort to create, and as such are generally developed for only selected areas of the project, or for bidding purposes. A complete Class 1 estimate may involve as little as 600 hours or less, to perhaps more than 6,000 hours, depending on the project and the estimating methodology used. Bid estimate typically require more effort than estimates used for funding or control purposes.
ANSI Standard Reference Z94.2-1989 name; Alternate Estimate Names, Terms, Expressions, Synonyms:	Order of Magnitude Estimate; Ratio, ballpark, blue sky, seat-of-pants, ROM, idea study, prospect estimate, concession license estimate, guesstimate, rule-of thumb.	Budget Estimate; Screening, top-down, feasibility, authorization, factored, pre-design, pre-study.	Budget Estimate; Budget, scope, sanction, semi-detailed, authorization, preliminary control, concept study, development, basic engineering phase estimate, target estimate.	Definitive Estimate; Detailed Control, forced detail, execution phase, master control, engineering, bid, tender, change order estimate.	Definitive Estimate; Full detail, release, fall-out, tender, firm price, bottoms-up, final, detailed control, forced detail, execution phase, master control, fair price, definitive, change order estimate.

Estimate Class	Class 5	Class 4	Class 3	Class 2	Class 1
	Class 5	Class 4	Class 3	Class 2	Class 1
GENERAL PROJECT DATA					
Project Scope Description	General	Preliminary	Defined	Defined	Defined
Plant Production / Facility Capacity	Assumed	Preliminary	Defined	Defined	Defined
Plant Location	General	Approximate	Specific	Specific	Specific
Soils & Hydrology	None	Preliminary	Defined	Defined	Defined
Integrated Project Plan	None	Preliminary	Defined	Defined	Defined
Project Master Schedule	None	Preliminary	Defined	Defined	Defined
Escalation Strategy	None	Preliminary	Defined	Defined	Defined
Work Breakdown Structure	None	Preliminary	Defined	Defined	Defined
Project Code of Accounts	None	Preliminary	Defined	Defined	Defined
Contracting Strategy	Assumed	Assumed	Preliminary	Defined	Defined
ENGINEERING DELIVERABLES:	Class 5	Class 4	Class 3	Class 2	Class 1
Block Flow Diagrams	Started / Preliminary	Preliminary / Complete	Complete	Complete	Complete
Plot Plans		Started	Preliminary / Complete	Complete	Complete
Process Flow Diagrams (PFDs)		Started / Preliminary	Preliminary / Complete	Complete	Complete
Utility Flow Diagrams (UFDs)		Started / Preliminary	Preliminary / Complete	Complete	Complete
Piping & Instrument Diagrams (P&IDS)		Started	Preliminary / Complete	Complete	Complete
Heat and Material Balances		Started	Preliminary / Complete	Complete	Complete
Process Equipment List		Started / Preliminary	Preliminary / Complete	Complete	Complete
Utility Equipment List		Started / Preliminary	Preliminary / Complete	Complete	Complete
Electrical One Line Drawings		Started / Preliminary	Preliminary / Complete	Complete	Complete
Specifications and Datasheets		Started	Preliminary / Complete	Complete	Complete
General Equipment Arrangement Drawings		Started	Preliminary / Complete	Complete	Complete
Spare Parts Lists			Started / Preliminary	Preliminary	Complete
Architectural Details / Schedules		Started	Preliminary / Complete	Complete	Complete
Structural Details		Started	Preliminary / Complete	Complete	Complete
Mechanical Discipline Drawings			Started	Preliminary	Preliminary / Complete
Electrical Discipline Drawings			Started	Preliminary	Preliminary / Complete
System Discipline Drawings			Started	Preliminary	Preliminary / Complete
Civil/Site Discipline Drawings			Started	Preliminary	Preliminary / Complete
Demolition Details		Started	Preliminary / Complete	Complete	Complete