# **Appendix C. Factored Construction Cost Estimates for Alto Tunnel**

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Project Client Job No. Estimator Rev Computed on Alto Tunnel Marin County 5581.0 TLP 0 6/20/2017 Tunnel Rehab Study 4:19 PM

#### OPINION OF PROBABLE ESCALATED CONSTRUCTION BID INCLUDING OWNER CONTINGENCY

No. Item or Group Item Description	Group Item Cost	Item Quantity/Unit	Item Unit Cost	Status Item Cost
001 South Site Preparation		LS		\$56,669
002 North Site Preparation		LS		\$56,669
Site Preparation	\$113,337			
003 South Site-Excav./Supp. Collapsed w/o Spiles		377 If	\$3,918 /lf	\$1,475,385
004 South Site-Excav./Supp. Collapsed w Spiles		488 If	\$5,933 /lf	\$2,894,295
005 North Site - Existing Gunite Lined Section		140 lf	\$2,627 /lf	\$367,713
006 North Site Lean Concrete Backfilled Section		124 lf	\$4,577 /lf	\$567,492
007 North Site - Uncompacted Fill Section		170 lf	\$3,927 /lf	\$667,543
008 North Site Intact Tunnel Section		598 If	\$2,758 /lf	\$1,649,326
009 North Site-Excav./Supp. Collapsed w/o Spiles		107 lf	\$3,933 /lf	\$422,590
010 North Site-Excav./Supp. Collapsed w Spiles		139 lf	\$5,950 /lf	\$828,190
Tunnel - Re-excavation and Support	\$8,872,533	2,173 LF	\$4,083 /LF	
011 Tunnel Sub Base w/ Drainage		2,173 LF	\$380 /LF	\$826,391
012 Tunnel Agg Base		2,173 LF	\$84.19 /LF	\$182,941
013 Tunnel Paving		2,173 LF	\$211 /LF	\$457,899
Tunnel Invert	\$1,467,230	2,173 LF	\$675 /LF	
014 Graffiti Protection		43,460 sf	\$4.12 /sf	\$178,925
015 Tunnel Water / Fire Protection		2,173 LF	\$380 /LF	\$825,740
016 Tunnel Power / Lighting / CCTV		2,173 LF	\$1,213 /LF	\$2,636,805
017 Tunnel Ventilation		2,173 LF	\$140 /LF	\$304,220
Tunnel Fire Life Safety	\$3,945,690	LS		
018 Geotechnical Instrumentation		LS		\$200,000
Instrumentation and Monitoring	\$200,000	LS		
019 Fill Existing boreholes		190 cf	\$137 /cf	\$26,023
020 South Portal Site Restoration		LS		\$41,809
021 North Portal Site Restoration		LS		\$41,809
Site Restoration	\$109,641	LS		
022 Hazardous Material Allowance	Allowance	LS		\$200,000
023 Portal Modifications	Allowance	LS		\$200,000
			Subtotal Direct Cost	\$15,108,432
024 Equipment Ownership not in Direct Cost			2.4% directs	\$362,997
025 General Mobilization		0.5 mo	1.9% unesc.bid	\$465,681
026 Demobilization/Punchlist		0.5 mo	0.6% unesc.bid	\$156,781
027 General Plant Operation/Maintenance		23.8 mo	\$25,906 /mo	\$616,553
028 Field Supervision		26.8 mo	\$112,828 /mo	\$3,023,803
029 Overhead Maintenance/Service		26.8 mo	\$44,240 /mo	\$1,185,620
030 Bonds, Insurance, and Taxes not in General Mob	ilization		2.1% unesc.bid	\$517,144
031 Contractor Markup			12.7% of cost	\$2,820,597
032 Financing Charges			0.4% unesc.bid	\$88,047
033 Contractor Contingency			2.4% unesc.bid	\$604,337
			Subtotal Indirect Cost	\$9,841,561
034 Escalation from NTP			1.8% unesc.bid	\$461,432
26.75 mo project duration after NTP			Escalated Construction Bid	\$25,411,425
035 Owner Contingency			19.7% esc.bid	\$5,002,300

Opinion of Probable Escalated Construction Bid including Owner Contingency

\$30,413,725

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#### **Estimate Notes:**

0.651395



Project Solom Job No.
Alto Tunnel
Tunnel Rehab Study

#### CONSTRUCTION SCHEDULE AND MONTHLY PROGRESS PAYMENTS

Activity No. and Description Bid Amount Dur. Start End			YΕ	AR ·	1			YEAR 2	?				ΥI	EAR	₹3				ΥE	AR 4	ı					YEA	R 5				
	BIQ AMOUNT	(mos)	mo	mo	J F M A	M J	J	ASONI	J	FN	I A M J J	AS	O N	D	J F M A	M	JJ	JASONI	D,	J F	МА	MJ	J	A S	ON	ID,	JFN	ИΑ	M J	JA	SON
NTP			1.00		NTP: N	Month	1.0																							$\Box$	
Preliminary Submittals		2.00	1.00	3.00																											
024 Equipment Mobilization	\$0	1.00	3.00	4.00																											
025 General Mobilization	\$465,681	0.50	3.00	3.50																											
026 Demobilization/Punchlist	\$156,781	0.50	27.25	27.75																											
001 South Site Preparation	\$108,693	0.50	4.00	4.50																											
002 North Site Preparation	\$108,693	0.50	4.00	4.50																											
·																															
2000 South Site Frage / Supp. Collegeed w/s Spiles	\$2,829,860	4.75	4.50	9.25															-											ш	
003 South Site-Excav./Supp. Collapsed w/o Spiles	\$5,551,399													+					-				+							+	+
004 South Site-Excav./Supp. Collapsed w Spiles	\$5,551,399	10.25	9.25	19.50															-							+			+	+	+++
005 North Site - Existing Gunite Lined Section	\$705,292	1.25	4.50	5.75															t				H			$\dagger \dagger$				+	+
006 North Site Lean Concrete Backfilled Section	\$1,088,477	2.00	5.75	7.75																											
007 North Site - Uncompacted Fill Section	\$1,280,380	2.25	7.75	10.00																											
008 North Site Intact Tunnel Section	\$3,163,488	5.50	10.00	15.50																											
009 North Site-Excav./Supp. Collapsed w/o Spiles	\$810,549	1.50	15.50	17.00																											
010 North Site-Excav./Supp. Collapsed w Spiles	\$1,588,509	2.75	17.00	19.75																											
011 Tunnel Sub Base w/ Drainage	\$1,585,058	1.00	19.75	20.75																											
012 Tunnel Agg Base	\$350,890	1.00	20.75	21.75																											
013 Tunnel Paving (Note 4b)	\$480,794	1.25	21.75	23.00																											
014 Graffiti Protection (Note 4b)	\$187,871	0.50	23.00	23.50																											
015 Tunnel Water / Fire Protection (Note 4b)	\$867,027	1.75	23.00	24.75																											
016 Tunnel Power / Lighting / CCTV (Note 4b)	\$2,768,646		23.00																												
017 Tunnel Ventilation (Note 4b)	\$319,431	3.25	23.00	26.25																											
018 Geotechnical Instrumentation	\$383,610	15.75	3.50	19.25																											
																														$\perp \!\!\! \perp$	
019 Fill Existing boreholes	\$49,914	0.25	19.75	20.00			H									+			+							+				+	+
020 South Portal Site Restoration	\$80,192		26.25			+	H		1					Ħ					T										$\Box$	+	+
021 North Portal Site Restoration	\$80,192		26.25				H							H		$\Box$													$\blacksquare$	+	
022 Hazardous Material Allowance (Note 4a)	\$200,000		_00				$\vdash$							H		$\Box$	$\top$		1										$\Box$	+	+
023 Portal Modifications (Note 4a)	\$200,000						H									$\top$										$\dagger \dagger$			$\top$	+	+
Opinion of Probable Escalated Construction Bid, Duration, and Monthly Progress Payments	\$25,411,425	26.8	month	าร		\$430.1K \$739.6K	\$1,061.4K	\$1,047.9K \$1,053.5K \$1,070.3K \$1,033.7K	\$1,027.0K	\$1,027.0K	\$1,027.0K \$1,027.0K \$995.7K \$1,029.2K	\$1,029.2K \$1,967.2K	\$1,212.7K \$341.4K	\$365.4K	\$1,551.8K \$1,255.7K \$902.7K \$339.9K	\$1,437.6K															
						\$7,4	63.F	 5K			\$12.060.3	3K		4		\$5	.487	'.7K	+		Ш	\$0	0.0K						\$0.	ok	

<sup>1.</sup> Project calendar is based on 9 observed holidays and 9 critical inclement weather days per year distributed monthly as shown in the Estimate Metrics summary on page 20.



Estimator Rev

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Computed on

6/20/2017

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<sup>2.</sup> Payments are made 30 days after pay applications including 10% retention which is reduced to 5% after 75% is earned, 19 months after NTP. Payments releasing retention bolded. 50% of the contract is earned 17 months after NTP.

<sup>3.</sup> Spread \$9.8M indirects + \$0.5M escalation - \$0.6M mob. Mob/demob paid as scheduled. Bond paid at NTP.

<sup>4. (</sup>a) Allowances cannot be scheduled so progress payments do not reflect their payment and sum to the total bid amount less the \$400K in Allowances. (b) Indirect costs spread limited to a 5% subcontract markup.

Project Client Job No. Estimator Rev Computed on Alto Tunnel Marin County 5581.0 TLP 0 6/20/2017 Tunnel Rehab Study 4:19 PM

#### DIRECT COST DETAIL

No.		escription		Item Quantity/Unit	Produ	uction rate		r fixed time	Total time
001	South	n Site Preparation		1 LS			10	•	10 work days
		manhours <b>240</b>	Labor <b>\$17,064</b>	Equipment \$3,678		Material <b>\$3,426</b>		Subcontract \$32,500	Item Cost <b>\$56,669</b>
		Status (Additive)		Work schedule				her ST pay	Other OT pay
		Schedule factor (Normal)	8 hr/shift	1 shift/day		day/week		) hr/shift	0 hr/shift
R/T	Code	Resource Description	Resource Qty/Unit	Production rate	Factor	Resource Ur		Resource Quanti	,
M	sts	Small tools and supplies	0.00 0000			\$3.00		240.0 mh	
S S	cg	Clearing and grubbing	2.00 acre			\$10,000		2.00 acr	
	tfnc	Temporary Construction Fenc	500.0 lf			\$25.00		500.0 lf	\$12,500 r \$5,051
L	lab	General Labor (Grp 3) Labor FM				\$63.14		80.00 mh	
L	lfm	+ Excavator >.5cy (OG2)				\$67.17 \$82.99		80.00 mh 80.00 mh	
L E		Cat 305 Mini-Exc 11k/.17cy				\$45.98		80.00 hr	\$3,678
M		p Silt Fence / Straw Waddles	500.0 If			\$5.41		500.0 lf	\$2,706
IVI	Swbbl	polit i elice / otraw waddies	300.0 11			φ5.41	/11	300.0 11	φ2,700
No.		escription		Item Quantity/Unit  1 LS	Produ	uction rate		r fixed time	Total time
002	NOIL	Site Preparation	Labor			Matarial	10	-	10 work days
		manhours <b>240</b>	Labor <b>\$17,064</b>	Equipment \$3,678		Material <b>\$3,426</b>		Subcontract \$32,500	Item Cost <b>\$56,669</b>
		Status (Additive)	Ψ17,004	Work schedule		Ψ3,420	Ot	her ST pay	Other OT pay
	1 000	Schedule factor (Normal)	8 hr/shift	1 shift/day	5.0	day/week		) hr/shift	0 hr/shift
R/T	Code	Resource Description	Resource Qty/Unit	Production rate	Factor	Resource Ur		Resource Quanti	
M	sts	Small tools and supplies	ricadarde Gry/Orin	1 Todaction Tate	1 actor	\$3.00		240.0 mh	•
S	cg	Clearing and grubbing	2.00 acre			\$10,000		2.00 acr	
S	tfnc	Temporary Construction Fenc	500.0 lf			\$25.00		500.0 lf	\$12,500
Ĺ	lab	General Labor (Grp 3)	000.0 11			\$63.14		80.00 mh	
Ĺ	lfm	Labor FM				\$67.17		80.00 mh	
Ĺ		+ Excavator >.5cy (OG2)				\$82.99		80.00 mh	
E		Cat 305 Mini-Exc 11k/.17cy				\$45.98		80.00 hr	\$3,678
М		p Silt Fence / Straw Waddles	500.0 If			\$5.41		500.0 If	\$2,706
No.	Item De	escription		Item Quantity/Unit	Produ	uction rate	Othe	r fixed time	Total time
003	South	- Cita Fusau /Cuma Callanasal							
		า Site-Excav./Supp. Collapsed	w/o Spiles	377 If	3.68 I	f/day		1	02 work days
		n Site-Excav./Supp. Collapsed manhours	w/o Spiles Labor	377 If Equipment	3.68 I	<b>f/day</b> Material		1 Subcontract	
		• • • • • • • • • • • • • • • • • • • •	•	-	3.68 I	-		Subcontract \$201,088	02 work days
		manhours	Labor	Equipment	3.68	Material		Subcontract	02 work days Item Cost
		manhours 7,775	Labor <b>\$552,580</b>	Equipment <b>\$377,796</b>	3.68 I	Material <b>\$343,921</b>	Ot	Subcontract \$201,088	02 work days Item Cost \$1,475,385
	1.000	manhours <b>7,775</b> 20.647	Labor <b>\$552,580</b>	Equipment <b>\$377,796</b> \$1,003.30		Material <b>\$343,921</b>		Subcontract <b>\$201,088</b> \$534.02	02 work days  Item Cost \$1,475,385 \$3,918.14
R/T	Code	manhours 7,775 20.647 Status (Additive) Schedule factor (Normal) Resource Description	Labor <b>\$552,580</b> \$1,467.47	Equipment \$377,796 \$1,003.30 Work schedule		Material \$343,921 \$913.34 day/week Resource Ur	nit Cost	Subcontract \$201,088 \$534.02 her ST pay 0 hr/shift Resource Quanti	02 work days  Item Cost \$1,475,385 \$3,918.14  Other OT pay 0 hr/shift ty Resource Cost
R/T	Code sts	manhours 7,775 20.647 Status (Additive) Schedule factor (Normal) Resource Description Small tools and supplies	\$552,580 \$1,467.47	\$377,796 \$1,003.30 Work schedule 1 shift/day	5 (	Material \$343,921 \$913.34 day/week Resource Ur \$3.00	nit Cost /mhr	Subcontract \$201,088 \$534.02 her ST pay hr/shift Resource Quanti	02 work days  Item Cost \$1,475,385 \$3,918.14  Other OT pay 0 hr/shift ty Resource Cost r \$23,324
M L	Code sts sh	manhours 7,775 20.647 Status (Additive) Schedule factor (Normal) Resource Description Small tools and supplies Tunnel shifter	\$552,580 \$1,467.47	\$377,796 \$1,003.30 Work schedule 1 shift/day	5 ( Factor	Material \$343,921 \$913.34 day/week Resource Ur \$3.00 \$72.23	nit Cost /mhr /mhr	Subcontract \$201,088 \$534.02 her ST pay hr/shift Resource Quanti 7775 mh 818.4 mh	02 work days  Item Cost \$1,475,385 \$3,918.14  Other OT pay 0 hr/shift ty Resource Cost x \$23,324 x \$59,114
M L L	Code sts sh min	manhours 7,775 20.647 Status (Additive) Schedule factor (Normal) Resource Description Small tools and supplies Tunnel shifter Tunnel miner	\$552,580 \$1,467.47	\$377,796 \$1,003.30 Work schedule 1 shift/day	5 (	Material \$343,921 \$913.34 day/week Resource Ur \$3.00 \$72.23 \$68.45	nit Cost /mhr /mhr /mhr	Subcontract \$201,088 \$534.02 her ST pay hr/shift Resource Quant 7775 mh 818.4 mh 3274 mh	02 work days  Item Cost \$1,475,385 \$3,918.14  Other OT pay 0 hr/shift ty Resource Cost x \$23,324 x \$59,114 x \$224,090
M L	Code sts sh	manhours 7,775 20.647 Status (Additive) Schedule factor (Normal) Resource Description Small tools and supplies Tunnel shifter	\$552,580 \$1,467.47	\$377,796 \$1,003.30 Work schedule 1 shift/day	5 ( Factor	Material \$343,921 \$913.34 day/week Resource Ur \$3.00 \$72.23 \$68.45 \$63.14	mit Cost /mhr /mhr /mhr /mhr	Subcontract \$201,088 \$534.02 her ST pay hr/shift Resource Quant 7775 mh 818.4 mh 3274 mh 818.4 mh	02 work days  Item Cost \$1,475,385 \$3,918.14  Other OT pay 0 hr/shift  ty Resource Cost x \$23,324 x \$59,114 x \$224,090 x \$51,671
M L L L	sts sh min lab att	manhours 7,775 20.647 Status (Additive) Schedule factor (Normal) Resource Description Small tools and supplies Tunnel shifter Tunnel miner General Labor (Grp 3) Portal Attendant	\$552,580 \$1,467.47	\$377,796 \$1,003.30 Work schedule 1 shift/day	5 ( Factor	Material \$343,921 \$913.34 day/week Resource Ur \$3.00 \$72.23 \$68.45 \$63.14 \$66.60	mit Cost /mhr /mhr /mhr /mhr /mhr	Subcontract \$201,088 \$534.02 her ST pay hr/shift Resource Quant 7775 mh 818.4 mh 3274 mh 818.4 mh 818.4 mh	02 work days  Item Cost \$1,475,385 \$3,918.14  Other OT pay 0 hr/shift  ty Resource Cost x \$23,324 x \$59,114 x \$224,090 x \$51,671 x \$54,507
M L L	sts sh min lab att eo35-	manhours 7,775 20.647 Status (Additive) Schedule factor (Normal) Resource Description Small tools and supplies Tunnel shifter Tunnel miner General Labor (Grp 3) Portal Attendant Excavator Operator (OG3)	\$552,580 \$1,467.47	\$377,796 \$1,003.30 Work schedule 1 shift/day	5 (Factor	Material \$343,921 \$913.34 day/week Resource Ur \$3.00 \$72.23 \$68.45 \$63.14 \$66.60 \$81.13	/mit Cost /mhr /mhr /mhr /mhr /mhr /mhr	Subcontract \$201,088 \$534.02 her ST pay hr/shift Resource Quant 7775 mh 818.4 mh 3274 mh 818.4 mh 818.4 mh 818.4 mh	02 work days  Item Cost \$1,475,385 \$3,918.14  Other OT pay 0 hr/shift  ty Resource Cost x \$23,324 x \$59,114 x \$224,090 x \$51,671 x \$54,507
M L L L	sts sh min lab att	manhours 7,775 20.647 Status (Additive) Schedule factor (Normal) Resource Description Small tools and supplies Tunnel shifter Tunnel miner General Labor (Grp 3) Portal Attendant Excavator Operator (OG3) Loader oper. <3.5cy (OG4)	\$552,580 \$1,467.47	\$377,796 \$1,003.30 Work schedule 1 shift/day	5 (Factor 4	Material \$343,921 \$913.34 day/week Resource Ur \$3.00 \$72.23 \$68.45 \$63.14 \$66.60 \$81.13 \$79.39	mit Cost /mhr /mhr /mhr /mhr /mhr /mhr /mhr	Subcontract \$201,088 \$534.02 her ST pay hr/shift Resource Quant 7775 mh 818.4 mh 3274 mh 818.4 mh 818.4 mh	02 work days  Item Cost \$1,475,385 \$3,918.14  Other OT pay 0 hr/shift  ty Resource Cost  \$23,324  \$59,114  \$224,090  \$51,671  \$54,507  \$66,394  \$32,486
M L L L L L	sts sh min lab att eo35- lo35- MW	manhours 7,775 20.647 Status (Additive) Schedule factor (Normal) Resource Description Small tools and supplies Tunnel shifter Tunnel miner General Labor (Grp 3) Portal Attendant Excavator Operator (OG3) Loader oper. <3.5cy (OG4) HD Mech/Welder (OG4)	\$552,580 \$1,467.47	\$377,796 \$1,003.30 Work schedule 1 shift/day	5 (Factor 4 0.5 0.5 0.5	Material \$343,921 \$913.34 day/week Resource Ur \$3.00 \$72.23 \$68.45 \$63.14 \$66.60 \$81.13 \$79.39 \$79.39	mit Cost /mhr /mhr /mhr /mhr /mhr /mhr /mhr /mhr	Subcontract \$201,088 \$534.02 her ST pay hr/shift Resource Quanti 7775 mh 818.4 mh 3274 mh 818.4 mh 818.4 mh 818.4 mh 409.2 mh	02 work days  Item Cost \$1,475,385 \$3,918.14  Other OT pay 0 hr/shift  ty Resource Cost  \$23,324  \$59,114  \$224,090  \$51,671  \$54,507  \$66,394  \$32,486
M L L L L L	code sts sh min lab att eo35- lo35- MW conc	manhours 7,775 20.647 Status (Additive) Schedule factor (Normal) Resource Description Small tools and supplies Tunnel shifter Tunnel miner General Labor (Grp 3) Portal Attendant Excavator Operator (OG3) Loader oper. <3.5cy (OG4) HD Mech/Welder (OG4) Concrete equip.oper. (OG5)	\$552,580 \$1,467.47	\$377,796 \$1,003.30 Work schedule 1 shift/day	5 (Factor 4	Material \$343,921 \$913.34 day/week Resource Ur \$3.00 \$72.23 \$68.45 \$63.14 \$66.60 \$81.13 \$79.39 \$77.79	hit Cost /mhr /mhr /mhr /mhr /mhr /mhr /mhr /mhr	Subcontract \$201,088 \$534.02 her ST pay hr/shift Resource Quanti 7775 mh 818.4 mh 3274 mh 818.4 mh 818.4 mh 409.2 mh 409.2 mh	02 work days  Item Cost \$1,475,385 \$3,918.14  Other OT pay 0 hr/shift  ty Resource Cost x \$23,324 x \$59,114 x \$224,090 x \$51,671 x \$54,507 x \$66,394 x \$32,486 x \$32,486
M L L L L L L	code sts sh min lab att eo35- lo35- MW conc	manhours 7,775 20.647 Status (Additive) Schedule factor (Normal) Resource Description Small tools and supplies Tunnel shifter Tunnel miner General Labor (Grp 3) Portal Attendant Excavator Operator (OG3) Loader oper. <3.5cy (OG4) HD Mech/Welder (OG4)	\$552,580 \$1,467.47	\$377,796 \$1,003.30 Work schedule 1 shift/day	5 (Factor 4 0.5 0.5 0.5	Material \$343,921 \$913.34 day/week Resource Ur \$3.00 \$72.23 \$68.45 \$63.14 \$66.60 \$81.13 \$79.39 \$77.79 \$59.88	hit Cost /mhr /mhr /mhr /mhr /mhr /mhr /mhr /mhr	Subcontract \$201,088 \$534.02 her ST pay hr/shift Resource Quanti 7775 mh 818.4 mh 3274 mh 818.4 mh 818.4 mh 818.4 mh 409.2 mh	02 work days  Item Cost \$1,475,385 \$3,918.14  Other OT pay 0 hr/shift  ty Resource Cost 1 \$23,324 1 \$59,114 1 \$224,090 1 \$51,671 1 \$54,507 1 \$66,394 1 \$32,486 1 \$32,486 1 \$31,831 \$49,004
M L L L L L E	code sts sh min lab att eo35- lo35- MW conc	manhours 7,775 20.647 Status (Additive) Schedule factor (Normal) Resource Description Small tools and supplies Tunnel shifter Tunnel miner General Labor (Grp 3) Portal Attendant Excavator Operator (OG3) Loader oper. <3.5cy (OG4) HD Mech/Welder (OG4) Concrete equip.oper. (OG5)	\$552,580 \$1,467.47	\$377,796 \$1,003.30 Work schedule 1 shift/day	5 (Factor 4 0.5 0.5 0.5	Material \$343,921 \$913.34 day/week Resource Ur \$3.00 \$72.23 \$68.45 \$63.14 \$66.60 \$81.13 \$79.39 \$77.79 \$59.88 \$45.23	control Cost /mhr /mhr /mhr /mhr /mhr /mhr /mhr /mhr	Subcontract \$201,088 \$534.02 her ST pay hr/shift Resource Quanti 7775 mh 818.4 mh 3274 mh 818.4 mh 818.4 mh 409.2 mh 409.2 mh	02 work days  Item Cost \$1,475,385 \$3,918.14  Other OT pay 0 hr/shift  ty Resource Cost x \$23,324 x \$59,114 x \$224,090 x \$51,671 x \$54,507 x \$66,394 x \$32,486 x \$32,486
M L L L L L E E	sts sh min lab att eo35- lo35- MW conc b320 lhd3	manhours 7,775 20.647 Status (Additive) Schedule factor (Normal) Resource Description Small tools and supplies Tunnel shifter Tunnel miner General Labor (Grp 3) Portal Attendant Excavator Operator (OG3) Loader oper. <3.5cy (OG4) HD Mech/Welder (OG4) Concrete equip.oper. (OG5) Backhoe Cat 320, 44k/1.5cy Load-Haul-Dump 4ton/2.5cy Shotcrete plant, skid 12cy/hr	\$552,580 \$1,467.47	\$377,796 \$1,003.30 Work schedule 1 shift/day	5 (Factor 4 0.5 0.5 0.5	Material \$343,921 \$913.34 day/week Resource Ur \$3.00 \$72.23 \$68.45 \$63.14 \$66.60 \$81.13 \$79.39 \$77.79 \$59.88 \$45.23 \$23.09	control Cost /mhr /mhr /mhr /mhr /mhr /mhr /mhr /mhr	Subcontract \$201,088 \$534.02 her ST pay hr/shift  Resource Quanti 7775 mh 818.4 mh 3274 mh 818.4 mh 818.4 mh 409.2 mh 409.2 mh 409.2 mh 409.2 mh 818.4 hr	02 work days  Item Cost \$1,475,385 \$3,918.14  Other OT pay 0 hr/shift  ty Resource Cost x \$23,324 x \$59,114 x \$224,090 x \$51,671 x \$54,507 x \$66,394 x \$32,486 x \$32,486 x \$31,831 \$49,004 \$37,019 \$18,896
M L L L L L E	sts sh min lab att eo35- lo35- MW conc b320 lhd3	manhours 7,775 20.647 Status (Additive) Schedule factor (Normal) Resource Description Small tools and supplies Tunnel shifter Tunnel miner General Labor (Grp 3) Portal Attendant Excavator Operator (OG3) Loader oper. <3.5cy (OG4) HD Mech/Welder (OG4) Concrete equip.oper. (OG5) Backhoe Cat 320, 44k/1.5cy Load-Haul-Dump 4ton/2.5cy Shotcrete plant, skid 12cy/hr Wheel Loader Cat 950/3.5cy	\$552,580 \$1,467.47	\$377,796 \$1,003.30 Work schedule 1 shift/day	5 (Factor 4 0.5 0.5 0.5	Material \$343,921 \$913.34 day/week Resource Ur \$3.00 \$72.23 \$68.45 \$63.14 \$66.60 \$81.13 \$79.39 \$77.79 \$59.88 \$45.23	control Cost /mhr /mhr /mhr /mhr /mhr /mhr /mhr /mhr	Subcontract \$201,088 \$534.02 her ST pay hr/shift  Resource Quanti 7775 mh 818.4 mh 3274 mh 818.4 mh 818.4 mh 409.2 mh 409.2 mh 409.2 mh 409.2 mh 818.4 hr 818.4 hr	02 work days  Item Cost \$1,475,385 \$3,918.14  Other OT pay 0 hr/shift  ty Resource Cost 7 \$23,324 7 \$59,114 7 \$224,090 7 \$51,671 7 \$54,507 7 \$66,394 7 \$32,486 7 \$32,486 7 \$31,831 \$49,004 \$37,019
M L L L L L E E	sts sh min lab att eo35-lo35-MW conc b320 lhd3 sp12	manhours 7,775 20.647 Status (Additive) Schedule factor (Normal) Resource Description Small tools and supplies Tunnel shifter Tunnel miner General Labor (Grp 3) Portal Attendant Excavator Operator (OG3) Loader oper. <3.5cy (OG4) HD Mech/Welder (OG4) Concrete equip.oper. (OG5) Backhoe Cat 320, 44k/1.5cy Load-Haul-Dump 4ton/2.5cy Shotcrete plant, skid 12cy/hr	\$552,580 \$1,467.47	\$377,796 \$1,003.30 Work schedule 1 shift/day	5 (Factor 4 0.5 0.5 0.5	Material \$343,921 \$913.34 day/week Resource Ur \$3.00 \$72.23 \$68.45 \$63.14 \$66.60 \$81.13 \$79.39 \$77.79 \$59.88 \$45.23 \$23.09	init Cost /mhr /mhr /mhr /mhr /mhr /mhr /mhr /mhr	Subcontract \$201,088 \$534.02 her ST pay 0 hr/shift Resource Quanti 7775 mh 818.4 mh 818.4 mh 818.4 mh 818.4 mh 409.2 mh 409.2 mh 409.2 mh 409.2 mh 818.4 hr 818.4 hr 818.4 hr 818.4 hr	02 work days  Item Cost \$1,475,385 \$3,918.14  Other OT pay 0 hr/shift  ty Resource Cost x \$23,324 x \$59,114 x \$224,090 x \$51,671 x \$54,507 x \$66,394 x \$32,486 x \$32,486 x \$31,831 \$49,004 \$37,019 \$18,896
M L L L L E E	sts sh min lab att eo35- lo35- MW conc b320 lhd3 sp12 l950	manhours 7,775 20.647 Status (Additive) Schedule factor (Normal) Resource Description Small tools and supplies Tunnel shifter Tunnel miner General Labor (Grp 3) Portal Attendant Excavator Operator (OG3) Loader oper. <3.5cy (OG4) HD Mech/Welder (OG4) Concrete equip.oper. (OG5) Backhoe Cat 320, 44k/1.5cy Load-Haul-Dump 4ton/2.5cy Shotcrete plant, skid 12cy/hr Wheel Loader Cat 950/3.5cy	\$552,580 \$1,467.47	\$377,796 \$1,003.30 Work schedule 1 shift/day	5 (Factor 4 0.5 0.5 0.5	Material \$343,921 \$913.34 day/week Resource Ur \$3.00 \$72.23 \$68.45 \$63.14 \$66.60 \$81.13 \$79.39 \$77.79 \$59.88 \$45.23 \$23.09 \$75.85	mit Cost /mhr /mhr /mhr /mhr /mhr /mhr /mhr /mhr	Subcontract \$201,088 \$534.02 her ST pay hr/shift  Resource Quanti 7775 mh 818.4 mh 3274 mh 818.4 mh 818.4 mh 409.2 mh 409.2 mh 409.2 mh 409.2 mh 418.4 hr 818.4 hr 818.4 hr 818.4 hr 818.4 hr 818.4 hr 818.4 hr	02 work days  Item Cost \$1,475,385 \$3,918.14  Other OT pay 0 hr/shift  ty Resource Cost x \$23,324 x \$59,114 x \$224,090 x \$51,671 x \$54,507 x \$66,394 x \$32,486 x \$32,486 x \$31,831 \$49,004 \$37,019 \$18,896 \$62,073
M	sts sh min lab att eo35-lo35-MW conc b320 lhd3 sp12 l950 bl3	manhours 7,775 20.647 Status (Additive) Schedule factor (Normal) Resource Description Small tools and supplies Tunnel shifter Tunnel miner General Labor (Grp 3) Portal Attendant Excavator Operator (OG3) Loader oper. <3.5cy (OG4) HD Mech/Welder (OG4) Concrete equip.oper. (OG5) Backhoe Cat 320, 44k/1.5cy Load-Haul-Dump 4ton/2.5cy Shotcrete plant, skid 12cy/hr Wheel Loader Cat 950/3.5cy Extension Boom, 3.0ton	Labor \$552,580 \$1,467.47 8 hr/shift Resource Qty/Unit	\$377,796 \$1,003.30 Work schedule 1 shift/day	5 (Factor 4 0.5 0.5 0.5	Material \$343,921 \$913.34  day/week  Resource Ur \$3.00 \$72.23 \$68.45 \$63.14 \$66.60 \$81.13 \$79.39 \$77.79 \$59.88 \$45.23 \$23.09 \$75.85 \$442.61	int Cost /mhr /mhr /mhr /mhr /mhr /mhr /mhr /mhr	Subcontract \$201,088 \$534.02 her ST pay hr/shift  Resource Quant 7775 mh 818.4 mh 3274 mh 818.4 mh 818.4 mh 409.2 mh 409.2 mh 409.2 mh 409.2 mh 418.4 hr 818.4 hr 818.4 hr 818.4 hr 818.4 hr 818.4 hr	02 work days  Item Cost \$1,475,385 \$3,918.14  Other OT pay 0 hr/shift  ty Resource Cost 7 \$23,324 7 \$59,114 7 \$224,090 7 \$51,671 7 \$54,507 7 \$66,394 7 \$32,486 7 \$31,831 \$49,004 \$37,019 \$18,896 \$62,073 \$34,876
M L L L L E E E E	sts sh min lab att eo35-lo35-MW conc b320 lhd3 sp12 l950 bl3 8set s5	manhours 7,775 20.647 Status (Additive) Schedule factor (Normal) Resource Description Small tools and supplies Tunnel shifter Tunnel miner General Labor (Grp 3) Portal Attendant Excavator Operator (OG3) Loader oper. <3.5cy (OG4) HD Mech/Welder (OG4) Concrete equip.oper. (OG5) Backhoe Cat 320, 44k/1.5cy Load-Haul-Dump 4ton/2.5cy Shotcrete plant, skid 12cy/hr Wheel Loader Cat 950/3.5cy Extension Boom, 3.0ton 8-in. Steel Set	Labor \$552,580 \$1,467.47 8 hr/shift Resource Qty/Unit	Equipment \$377,796 \$1,003.30 Work schedule 1 shift/day Production rate	5 (Factor 4 0.5 0.5 0.5	Material \$343,921 \$913.34  day/week  Resource Ur \$3.00 \$72.23 \$68.45 \$63.14 \$66.60 \$81.13 \$79.39 \$77.79 \$59.88 \$45.23 \$23.09 \$75.85 \$44.61 \$1,984	init Cost /mhr /mhr /mhr /mhr /mhr /mhr /mhr /mhr	Subcontract \$201,088 \$534.02 her ST pay hr/shift  Resource Quanti 7775 mh 818.4 mh 3274 mh 818.4 mh 818.4 mh 409.2 mh 409.2 mh 409.2 mh 409.2 mh 418.4 hr 818.4 hr 818.4 hr 818.4 hr 818.4 hr 818.4 hr 818.4 hr	02 work days  Item Cost \$1,475,385 \$3,918.14  Other OT pay 0 hr/shift  ty Resource Cost 7 \$23,324 7 \$59,114 7 \$224,090 7 \$51,671 7 \$54,507 7 \$66,394 7 \$32,486 7 \$31,831 \$49,004 \$37,019 \$18,896 \$62,073 \$34,876 \$251,950
M L L L L E E E E M	sts sh min lab att eo35-lo35-MW conc b320 lhd3 sp12 l950 bl3 8set s5 lumb	manhours 7,775 20.647 Status (Additive) Schedule factor (Normal) Resource Description Small tools and supplies Tunnel shifter Tunnel miner General Labor (Grp 3) Portal Attendant Excavator Operator (OG3) Loader oper. <3.5cy (OG4) HD Mech/Welder (OG4) Concrete equip.oper. (OG5) Backhoe Cat 320, 44k/1.5cy Load-Haul-Dump 4ton/2.5cy Shotcrete plant, skid 12cy/hr Wheel Loader Cat 950/3.5cy Extension Boom, 3.0ton 8-in. Steel Set Shotcrete, 5000psi mix	Labor \$552,580 \$1,467.47 8 hr/shift Resource Qty/Unit	Equipment \$377,796 \$1,003.30 Work schedule 1 shift/day Production rate	5 (Factor 4 0.5 0.5 0.5	Material \$343,921 \$913.34 day/week Resource Ur \$3.00 \$72.23 \$68.45 \$63.14 \$66.60 \$81.13 \$79.39 \$77.79 \$59.88 \$45.23 \$23.09 \$75.85 \$42.61 \$1,984 \$104	init Cost /mhr /mhr /mhr /mhr /mhr /mhr /mhr /mhr	Subcontract \$201,088 \$534.02 her ST pay hr/shift  Resource Quanti 7775 mh 818.4 mh 818.4 mh 818.4 mh 409.2 mh 409.2 mh 409.2 mh 409.2 mh 418.4 hr 818.4 hr 818.4 hr 818.4 hr 818.4 hr 818.4 hr 818.4 hr 818.5 cy	02 work days  Item Cost \$1,475,385 \$3,918.14  Other OT pay 0 hr/shift  ty Resource Cost 7 \$23,324 7 \$59,114 7 \$224,090 7 \$51,671 7 \$54,507 7 \$66,394 7 \$32,486 7 \$31,831 \$49,004 \$37,019 \$18,896 \$62,073 \$34,876 \$251,950 \$63,306
M L L L L L E E E E M M	sts sh min lab att eo35- lo35- MW conc b320 lhd3 sp12 l950 bl3 8set s5 lumb muck	manhours 7,775 20.647 Status (Additive) Schedule factor (Normal) Resource Description Small tools and supplies Tunnel shifter Tunnel miner General Labor (Grp 3) Portal Attendant Excavator Operator (OG3) Loader oper. <3.5cy (OG4) HD Mech/Welder (OG4) Concrete equip.oper. (OG5) Backhoe Cat 320, 44k/1.5cy Load-Haul-Dump 4ton/2.5cy Shotcrete plant, skid 12cy/hr Wheel Loader Cat 950/3.5cy Extension Boom, 3.0ton 8-in. Steel Set Shotcrete, 5000psi mix Lumber for lagging/blocking	Labor \$552,580 \$1,467.47 8 hr/shift Resource Qty/Unit	Equipment \$377,796 \$1,003.30 Work schedule 1 shift/day Production rate  1.616 cy/lf 10.00 bf/lf	5 (Factor 4 0.5 0.5 0.5	Material \$343,921 \$913.34 day/week Resource Ur \$3.00 \$72.23 \$68.45 \$63.14 \$66.60 \$81.13 \$79.39 \$77.79 \$59.88 \$45.23 \$23.09 \$75.85 \$42.61 \$1,984 \$104 \$1.42	init Cost /mhr /mhr /mhr /mhr /mhr /mhr /mhr /mhr	Subcontract \$201,088 \$534.02 her ST pay hr/shift  Resource Quanti 7775 mh 818.4 mh 3274 mh 818.4 mh 409.2 mh 409.2 mh 409.2 mh 409.2 mh 418.4 hr 818.4 hr 818.4 hr 818.4 hr 818.4 hr 818.4 hr 818.4 hr 818.5 cy 3766 bf	02 work days  Item Cost \$1,475,385 \$3,918.14  Other OT pay 0 hr/shift  ty Resource Cost 7 \$23,324 7 \$59,114 7 \$224,090 7 \$51,671 7 \$54,507 7 \$66,394 7 \$32,486 7 \$31,831 \$49,004 \$37,019 \$18,896 \$62,073 \$34,876 \$251,950 \$63,306 \$5,340
M L L L L L E E E E M M M S	sts sh min lab att eo35- lo35- MW conc b320 lhd3 sp12 l950 bl3 8set s5 lumb muck mucke	manhours 7,775 20.647 Status (Additive) Schedule factor (Normal) Resource Description Small tools and supplies Tunnel shifter Tunnel miner General Labor (Grp 3) Portal Attendant Excavator Operator (OG3) Loader oper. <3.5cy (OG4) HD Mech/Welder (OG4) Concrete equip.oper. (OG5) Backhoe Cat 320, 44k/1.5cy Load-Haul-Dump 4ton/2.5cy Shotcrete plant, skid 12cy/hr Wheel Loader Cat 950/3.5cy Extension Boom, 3.0ton 8-in. Steel Set Shotcrete, 5000psi mix Lumber for lagging/blocking Muck disposal	Labor \$552,580 \$1,467.47 8 hr/shift Resource Qty/Unit	Equipment \$377,796 \$1,003.30 Work schedule 1 shift/day Production rate  1.616 cy/lf 10.00 bf/lf 1.60 lcy/bcy	5 (Factor 4 0.5 0.5 0.5	Material \$343,921 \$913.34 day/week 800 \$72.23 \$68.45 \$63.14 \$66.60 \$81.13 \$79.39 \$77.79 \$59.88 \$45.23 \$23.09 \$75.85 \$42.61 \$1,984 \$104 \$1.42 \$35.83	init Cost /mhr /mhr /mhr /mhr /mhr /mhr /mhr /mhr	Subcontract \$201,088 \$534.02 her ST pay hr/shift  Resource Quanti 7775 mh 818.4 mh 3274 mh 818.4 mh 409.2 mh 409.2 mh 409.2 mh 409.2 mh 418.4 hr 818.4 hr 818.4 hr 818.4 hr 818.4 hr 818.4 hr 818.4 hr 818.5 cy 3766 bf 4699 lcy	02 work days  Item Cost \$1,475,385 \$3,918.14  Other OT pay 0 hr/shift  ty Resource Cost 7 \$23,324 7 \$59,114 7 \$224,090 7 \$51,671 7 \$54,507 7 \$66,394 7 \$32,486 7 \$31,831 \$49,004 \$37,019 \$18,896 \$62,073 \$34,876 \$251,950 \$63,306 \$5,340 \$168,370



	Tunne	el hab Study		lient <b>Marin County</b>			Job No. <b>5581.0</b>	Estimator <b>TLP</b>	Rev 0	Computed on 6/20/2017 4:19 PM
			D	IRECT COST DETA	IL					
Е	p140	Pump, subm. 140gpm/20ft he	ad			\$1.42	/hr	818.4	hr	\$1,161
E	wtp	Water Treatment Plant				\$3.58		818.4		\$2,931
E	wd4	Welder 400A Diesel, trailer				\$12.02		818.4		\$9,837
E		Compressor, trailer 1600cfm				\$127		818.4		\$103,706
E	vf100	Ventilation fan 100hp				\$13.90	/hr	818.4	nr	\$11,373
No.		escription	w Spilos	Item Quantity/Unit	Prod <b>2.375</b>	uction rate	Other	fixed time		Total time  work days
004	South	manhours	Labor	Equipment	2.373	Material		Subcontract	203	Item Cost
		15,610	\$1,109,481	\$774,845		\$749,468		\$260,500		\$2,894,295
		32.001	\$2,274.43	\$1,588.43		\$1,536.41		\$534.02		\$5,933.29
		Status (Additive)	* ,	Work schedule		* ,	Oth	er ST pay	Oth	er OT pay
	1.000	Schedule factor (Normal)	8 hr/shift	1 shift/day	5	day/week		hr/shift		hr/shift
R/T	Code	Resource Description	Resource Qty/Unit	Production rate	Factor	Resource Ur	nit Cost	Resource Qu	antity	Resource Cost
М	sts	Small tools and supplies				\$3.00	/mhr	15610 ı	mhr	\$46,831
L	sh	Tunnel shifter				\$72.23		1643 ו		\$118,691
L	min	Tunnel miner			4	\$68.45		6573 ו		\$449,932
L	lab	General Labor (Grp 3)				\$63.14		1643 ו		\$103,745
L	att	Portal Attendant				\$66.60		1643 1		\$109,441
L		Excavator Operator (OG3)				\$81.13		1643 ו		\$133,308
L		Loader oper. <3.5cy (OG4)			0.5	\$79.39		821.6 :		\$65,226
L	MW	HD Mech/Welder (OG4)			0.5	\$79.39		821.6		\$65,226
L		Concrete equip.oper. (OG5)			0.5	\$77.79		821.6		\$63,912
E	vh	Vibro Hammer				\$9.92		1643		\$16,298
E E		Backhoe Cat 320, 44k/1.5cy				\$59.88		1643		\$98,391
E	lhd3	Load-Haul-Dump 4ton/2.5cy				\$45.23 \$23.09		1643 l 1643 l		\$74,327 \$27,040
E	1950	Shotcrete plant, skid 12cy/hr Wheel Loader Cat 950/3.5cy				\$75.85		1643		\$37,940 \$124,632
E	bl3	Extension Boom, 3.0ton				\$42.61		1643		\$70,024
M	8set	8-in. Steel Set	164.0 ea			\$1,984		164.0		\$325,353
M	s5	Shotcrete, 5000psi mix	104.0 00	1.616 cy/lf		\$104		788.3		\$82,010
M		C6x13 Channel Spile	3903 ea	1.010 0		\$73.88	•	3903	•	\$288,356
M		Lumber for lagging/blocking	3333 34	10.00 bf/lf		\$1.42		4878 1		\$6,917
S		Muck disposal	3804 bcy	1.60 lcy/bcy		\$35.83		6087 1		\$218,115
S	mucko	Muck disp. Contam. Non Haz.		1.60 lcy/bcy		\$63.75	/lcy	664.9 I		\$42,385
E		Generator, skid 210kW	·	, ,		\$57.33	-	1643 I	-	\$94,209
E	p140	Pump, subm. 140gpm/20ft hea	ad			\$1.42	/hr	1643 l	hr	\$2,330
E	wtp	Water Treatment Plant				\$3.58	/hr	1643 l	hr	\$5,885
E	wd4	Welder 400A Diesel, trailer				\$12.02	/hr	1643 l	hr	\$19,752
Е	cp16	Compressor, trailer 1600cfm				\$127		1643 l	hr	\$208,222
E	vf100	Ventilation fan 100hp				\$13.90	/hr	1643	nr	\$22,834
No.	Itam Da	escription		Item Quantity/Unit	Prod	uction rate	Other	fixed time	-	Total time
		Site - Existing Gunite Lined	Section	140 If	5.699		Otrici	iixou tiirio		work days
		manhours	Labor	Equipment		Material		Subcontract		Item Cost
		1,870	\$132,878	\$95,970		\$126,700		\$12,164		\$367,713
		13.354	\$949.13	\$685.50		\$905.00		\$86.89		\$2,626.52
		Status (Additive)		Work schedule			Oth	er ST pay	Oth	er OT pay
	1.000	Schedule factor (Normal)	8 hr/shift	1 shift/day	5	day/week		hr/shift		hr/shift
R/T	Code	Resource Description	Resource Qty/Unit	Production rate	Factor	Resource Ur	nit Cost	Resource Qu	antity	Resource Cost
М	sts	Small tools and supplies				\$3.00		1870 ו		\$5,609
L	sh	Tunnel shifter				\$72.23		196.8 ו		\$14,215
L	min	Tunnel miner			4	\$68.45		787.2 ו		\$53,887
L	lab	General Labor (Grp 3)				\$63.14		196.8 ו		\$12,425
L	att	Portal Attendant				\$66.60		196.8 1		\$13,107
L		Excavator Operator (OG3)			<b>-</b> -	\$81.13		196.8 1		\$15,966
L		Loader oper. <3.5cy (OG4)			0.5	\$79.39		98.40 1		\$7,812
L	MW	HD Mech/Welder (OG4)			0.5 0.5	\$79.39		98.40		\$7,812
		L CUCROTO OCUIN ONOR IL IL-6)			U.S	\$77.79	/mnr	98.40 ı	mmr	\$7,654
L E	conc c76	Concrete equip.oper. (OG5) Conc. pump, trailer 76cy/hr			0.5	\$52.05		98.40		\$5,121



	Tunne	el hab Study		Client Marin Co	unty			Job No <b>5581.0</b>		Rev 0	Computed on 6/20/2017 4:19 PM
			D	IRECT C	OST DETA	IL					
E E E M M	lhd3	Backhoe Cat 320, 44k/1.5cy Load-Haul-Dump 4ton/2.5cy Shotcrete plant, skid 12cy/hr Wheel Loader Cat 950/3.5cy Extension Boom, 3.0ton 6-in. Steel Set Shotcrete, 5000psi mix	36.00 ea	1.616	cv/lf		\$59.88 \$45.23 \$23.09 \$75.85 \$42.61 \$1,426 \$104	/hr /hr /hr /hr /hr	196.8 h 196.8 h 196.8 h 196.8 h 196.8 h 36.00 e 226.3 c	nr nr nr nr ea	\$11,784 \$8,902 \$4,544 \$14,927 \$8,387 \$51,320 \$23,537
M M S M E	clsc sform mucke lumb g210	Controlled Low Strength Conc Stay-form Muck disp. Contam. Non Haz. Lumber for lagging/blocking Generator, skid 210kW Pump, subm. 140gpm/20ft hea	119.3 bcy	2.003 44.682	cy/lf sf/lf lcy/bcy		\$97.43 \$2.71 \$63.75 \$1.42 \$57.33 \$1.42	/cy /sf /lcy /bf /hr	280.4 c 6256 s 190.8 l 1400 k 196.8 l	ey of Cy of	\$27,321 \$16,929 \$12,164 \$1,985 \$11,283 \$279
E E E	wtp wd4 cp16	Water Treatment Plant Welder 400A Diesel, trailer Compressor, trailer 1600cfm Ventilation fan 100hp	ad				\$1.42 \$3.58 \$12.02 \$127 \$13.90	/hr /hr /hr	196.8 f 196.8 f 196.8 f 196.8 f	nr nr nr	\$279 \$705 \$2,366 \$24,938 \$2,735
No.		escription Site Lean Concrete Backfille	d Section	Item Qua	antity/Unit	Produ <b>2.807 l</b>	ction rate	Othe	r fixed time		Total time work days
000	NOILI	manhours	Labor	124	Equipment	2.007 1	Material		Subcontract	44.2	Item Cost
		<b>3,359</b> 27.090	<b>\$238,749</b> \$1,925.40		<b>\$184,223</b> \$1,485.67		<b>\$78,301</b> \$631.46		<b>\$66,219</b> \$534.02		<b>\$567,492</b> \$4,576.55
		Status (Additive)	φ1,925.40	Work	schedule		φ031.40	Oth	her ST pay	Oth	ner OT pay
		Schedule factor (Normal)	8 hr/shift		shift/day		day/week		hr/shift		hr/shift
R/T M L L L L L L E E E E E M M M S S E E E E E E	lo35-MW conc ch b320 lhd3 sp12 l950 bl3 6set s5 lumb muck g210 p140 wtp wd4 cp16	Resource Description  Small tools and supplies Tunnel shifter Tunnel miner General Labor (Grp 3) Portal Attendant Excavator Operator (OG3) Loader oper. <3.5cy (OG4) HD Mech/Welder (OG4) Concrete equip.oper. (OG5) AQ1500 Cutterhead Attach. Backhoe Cat 320, 44k/1.5cy Load-Haul-Dump 4ton/2.5cy Shotcrete plant, skid 12cy/hr Wheel Loader Cat 950/3.5cy Extension Boom, 3.0ton 6-in. Steel Set Shotcrete, 5000psi mix Lumber for lagging/blocking Muck disposal Muck disp. Contam. Non Haz. Generator, skid 210kW Pump, subm. 140gpm/20ft hea Water Treatment Plant Welder 400A Diesel, trailer Compressor, trailer 1600cfm Ventilation fan 100hp	32.00 ea 967.1 bcy 105.6 bcy	1.616 10.00 1.60	-	4 0.5 0.5 0.5	\$3.00 \$72.23 \$68.45 \$63.14 \$66.60 \$81.13 \$79.39 \$77.79 \$59.36 \$59.88 \$45.23 \$23.09 \$75.85 \$42.61 \$1,426 \$104 \$1.42 \$35.83 \$63.75 \$57.33 \$1.42 \$35.83 \$12.02 \$12.7	/mhr /mhr /mhr /mhr /mhr /mhr /mhr /mhr	Resource Qu 3359 r 353.6 r 1414 r 353.6 r 353.6 r 176.8 r 176.8 r 176.8 r 353.6 r	nhr	\$10,078 \$25,541 \$96,821 \$22,325 \$23,551 \$28,686 \$14,036 \$13,753 \$20,991 \$21,173 \$15,995 \$8,164 \$26,819 \$15,068 \$45,618 \$20,847 \$1,758 \$55,445 \$10,774 \$20,273 \$501 \$1,266 \$4,250 \$44,807 \$4,914
No. <b>007</b>		escription Site - Uncompacted Fill Secti	on Labor	Item Qua	antity/Unit  If  Equipment	Produ <b>3.68 l</b>	iction rate f/day Material	Othe	r fixed time Subcontract		Total time work days Item Cost
	4.00-	<b>3,511</b> 20.654 Status (Additive)	<b>\$249,552</b> \$1,467.95		\$170,618 \$1,003.63 schedule	-	<b>\$156,589</b> \$921.11		\$90,784 \$534.02 her ST pay		\$667,543 \$3,926.72 her OT pay
	1.000	Schedule factor (Normal)	8 hr/shift	1	shift/day	5 (	day/week	0	hr/shift	0	hr/shift



 Project
 Client
 Job No.
 Estimator
 Rev
 Computed on

 Alto Tunnel
 Marin County
 5581.0
 TLP
 0
 6/20/2017

 Tunnel Rehab Study
 4:19 PM

#### **DIRECT COST DETAIL**

R/T	Code	Resource Description	Resource Qty/Unit	Production rate	Factor	Resource Unit Cost	Resource Quantity	Resource Cost
М	sts	Small tools and supplies				\$3.00 /mhr	3511 mhr	\$10,534
L	sh	Tunnel shifter				\$72.23 /mhr	369.6 mhr	\$26,697
L	min	Tunnel miner			4	\$68.45 /mhr	1478 mhr	\$101,202
L	lab	General Labor (Grp 3)				\$63.14 /mhr	369.6 mhr	\$23,335
L	att	Portal Attendant				\$66.60 /mhr	369.6 mhr	\$24,616
L	eo35-	Excavator Operator (OG3)				\$81.13 /mhr	369.6 mhr	\$29,984
L	lo35-	Loader oper. <3.5cy (OG4)			0.5	\$79.39 /mhr	184.8 mhr	\$14,671
L	MW	HD Mech/Welder (OG4)			0.5	\$79.39 /mhr	184.8 mhr	\$14,671
L	conc	Concrete equip.oper. (OG5)			0.5	\$77.79 /mhr	184.8 mhr	\$14,376
Ε	b320	Backhoe Cat 320, 44k/1.5cy				\$59.88 /hr	369.6 hr	\$22,131
Е	lhd3	Load-Haul-Dump 4ton/2.5cy				\$45.23 /hr	369.6 hr	\$16,718
Ε	sp12	Shotcrete plant, skid 12cy/hr				\$23.09 /hr	369.6 hr	\$8,534
Ε	1950	Wheel Loader Cat 950/3.5cy				\$75.85 /hr	369.6 hr	\$28,033
Ε	bl3	Extension Boom, 3.0ton				\$42.61 /hr	369.6 hr	\$15,750
М	8set	8-in. Steel Set	58.00 ea			\$1,984 /ea	58.00 ea	\$115,064
М	s5	Shotcrete, 5000psi mix		1.616 cy/lf		\$104 /cv	274.7 cv	\$28,581
М	lumb	Lumber for lagging/blocking		10.00 bf/lf		\$1.42 /bf	1700 bf	\$2,411
S	muck	Muck disposal	1326 bcv	1.60 lcy/bcy		\$35.83 /lcv	2121 lcv	\$76,013
S		Muck disp. Contam. Non Haz.	,	1.60 lcy/bcy		\$63.75 /lcy	231.7 lcy	\$14,771
Е	g210	•	,	, ,		\$57.33 /hr	369.6 hr	\$21,190
Е	p140	Pump, subm. 140gpm/20ft hea	ad			\$1.42 /hr	369.6 hr	\$524
E	wtp	Water Treatment Plant				\$3.58 /hr	369.6 hr	\$1,324
E	wd4	Welder 400A Diesel, trailer				\$12.02 /hr	369.6 hr	\$4,443
Ē	cp16	,				\$127 /hr	369.6 hr	\$46,835
Ē		Ventilation fan 100hp				\$13.90 /hr	369.6 hr	\$5,136
_	*.100	Tomacon ian Toonp				ψ10.00 /111	333.0 111	ψ0,100

No.	Item De	escription		Item Quantity/Unit	Prod	uction rate C	Other fixed time	Total time
800	<b>North</b>	Site Intact Tunnel Section		598 If	5.699	lf/day	1	105 work days
		manhours	Labor	Equipment		Material	Subcontract	Item Cost
		7,972	\$566,624	\$409,237		\$621,506	\$51,960	\$1,649,326
		13.332	\$947.53	\$684.34		\$1,039.31	\$86.89	\$2,758.07
		Status (Additive)		Work schedule			Other ST pay	Other OT pay
	1.000	Schedule factor (Normal)	8 hr/shift	1 shift/day	5	day/week	0 hr/shift	0 hr/shift
R/T	Code	Resource Description	Resource Qty/Unit	Production rate	Factor	Resource Unit Co		·
М	sts	Small tools and supplies				\$3.00 /mh		+ -,-
L	sh	Tunnel shifter				\$72.23 /mh		
L	min	Tunnel miner			4	\$68.45 /mh		+ -,
L	lab	General Labor (Grp 3)				\$63.14 /mh		' '
L	att	Portal Attendant				\$66.60 /mh		' '
L	eo35-	Excavator Operator (OG3)				\$81.13 /mh	r 839.2 mh	ır \$68,082
L	lo35-	Loader oper. <3.5cy (OG4)			50%	\$79.39 /mh		+ , -
L	MW	HD Mech/Welder (OG4)			0.5	\$79.39 /mh		' '
L	conc	Concrete equip.oper. (OG5)			0.5	\$77.79 /mh	r 419.6 mh	ır \$32,640
Е	c76	Conc. pump, trailer 76cy/hr			0.5	\$52.05 /hr	419.6 hr	\$21,839
Ε	b320	Backhoe Cat 320, 44k/1.5cy				\$59.88 /hr	839.2 hr	\$50,249
Ε	lhd3	Load-Haul-Dump 4ton/2.5cy				\$45.23 /hr	839.2 hr	\$37,960
Ε	sp12	Shotcrete plant, skid 12cy/hr				\$23.09 /hr	839.2 hr	\$19,376
Ε	1950	Wheel Loader Cat 950/3.5cy				\$75.85 /hr	839.2 hr	\$63,651
Ε	bl3	Extension Boom, 3.0ton				\$42.61 /hr	839.2 hr	\$35,762
M	8set	8-in. Steel Set	151.0 ea			\$1,984 /ea	151.0 ea	\$299,563
M	s5	Shotcrete, 5000psi mix		1.616 cy/lf		\$104 /cy	966.4 cy	\$100,536
M	clsc	Controlled Low Strength Conc		2.003 cy/lf		\$97.43 /cy	1198 cy	\$116,698
M	sform	Stay-form		44.682 sf/lf		\$2.71 /sf	26720 sf	\$72,311
M	lumb	Lumber for lagging/blocking		10.00 bf/lf		\$1.42 /bf	5980 bf	\$8,480
S	muck	Muck disp. Contam. Non Haz.	509.4 bcy	1.60 lcy/bcy		\$63.75 /lcy	815.1 lcy	\$51,960
Ε	g210	Generator, skid 210kW				\$57.33 /hr	839.2 hr	\$48,114
Ε	p140	Pump, subm. 140gpm/20ft hea	ad			\$1.42 /hr	839.2 hr	\$1,190
Ε	wtp	Water Treatment Plant				\$3.58 /hr	839.2 hr	\$3,006
Е	wd4	Welder 400A Diesel, trailer				\$12.02 /hr	839.2 hr	\$10,088



Project Client Joh No Estimator Rev Computed on **Alto Tunnel** 6/20/2017 **Marin County** 5581.0 **TLP** 0 **Tunnel Rehab Study** 4:19 PM **DIRECT COST DETAIL** E \$127 /hr cp16 Compressor, trailer 1600cfm 839.2 hr \$106.341 Ε vf100 Ventilation fan 100hp \$13.90 /hr 839.2 hr \$11,662 Item Description Item Quantity/Unit Production rate Other fixed time Total time 009 North Site-Excav./Supp. Collapsed w/o Spiles 107 If 3.68 If/day 29.2 work days manhours Labor Equipment Material Subcontract Item Cost 2,219 \$157,726 \$107,836 \$99,648 \$57,380 \$422,590 20.654 \$1,467.93 \$1,003.61 \$927.41 \$534.02 \$3,932.97 Status (Additive) Work schedule Other ST pay Other OT pay 1.000 Schedule factor (Normal) 8 hr/shift 1 shift/day 5 day/week 0 hr/shift 0 hr/shift Resource Qty/Unit R/T Code Resource Description Production rate Factor Resource Unit Cost Resource Quantity Resource Cost 2219 mhr M sts Small tools and supplies \$3.00 /mhr \$6,658 L sh Tunnel shifter \$72.23 /mhr 233.6 mhr \$16,873 934.4 mhr L min Tunnel miner 4 \$68.45 /mhr \$63,963 233.6 mhr ı lab General Labor (Grp 3) \$63.14 /mhr \$14,749 L att Portal Attendant \$66.60 /mhr 233 6 mhr \$15,558 L eo35- Excavator Operator (OG3) \$81.13 /mhr 233.6 mhr \$18.951 L Loader oper. <3.5cv (OG4) 0.5 \$79.39 /mhr 116.8 mhr \$9,273 L MWHD Mech/Welder (OG4) 0.5 \$79.39 /mhr 116.8 mhr \$9,273 L 50% 116.8 mhr \$9,086 conc Concrete equip.oper. (OG5) \$77.79 /mhr \$59.88 /hr Е h320 Backhoe Cat 320, 44k/1.5cy 233.6 hr \$13,987 Ε lhd3 Load-Haul-Dump 4ton/2.5cy \$45.23 /hr 233.6 hr \$10.567 Ε Shotcrete plant, skid 12cy/hr sp12 \$23.09 /hr 233.6 hr \$5,394 Ε 1950 Wheel Loader Cat 950/3.5cy \$75.85 /hr 233.6 hr \$17,718 Ε bl3 Extension Boom, 3.0ton \$42.61 /hr 233.6 hr \$9,955 8-in, Steel Set 37.00 ea 37.00 ea \$73,403 M 8set \$1,984 /ea Shotcrete, 5000psi mix 1.616 cy/lf \$104 /cy 173.6 cy \$18,064 M **s**5 M lumb Lumber for lagging/blocking 10.00 bf/lf \$1.42 /bf 1074 bf \$1.524 S muck Muck disposal 838.0 bcv 1.60 lcy/bcy \$35.83 /lcy 1341 lcy \$48,044 S muckc Muck disp. Contam. Non Haz. 91.53 bcy 1.60 lcy/bcy \$63.75 /lcy 146.4 lcv \$9,336 Е g210 Generator, skid 210kW \$57.33 /hr 233.6 hr \$13,393 Е p140 Pump, subm. 140gpm/20ft head \$1.42 /hr 233.6 hr \$331 Е Water Treatment Plant \$3.58 /hr 233.6 hr \$837 wtn Ε wd4 Welder 400A Diesel, trailer \$12.02 /hr 233.6 hr \$2,808 Ε cp16 Compressor, trailer 1600cfm \$127 /hr 233.6 hr \$29.601 Ε vf100 Ventilation fan 100hp \$13.90 /hr 233.6 hr \$3,246 Nο Item Description Item Quantity/Unit Production rate Total time Other fixed time 010 North Site-Excav./Supp. Collapsed w Spiles 139 If 2.37 If/day 58.6 work days manhours Labor Equipment Material Subcontract Item Cost \$316,532 \$221,061 \$216,264 \$74,333 \$828,190 4,454 31.996 \$1,588.15 \$5,949.90 \$2,274.03 \$1,553.69 \$534.02 Other ST pay Other OT pay Status (Additive) Work schedule 1.000 Schedule factor (Normal) 8 hr/shift 1 shift/day 5 day/week 0 hr/shift 0 hr/shift R/T Resource Description Production rate Resource Unit Cost Resource Quantity Resource Cost Code Resource Qty/Unit Factor M \$3.00 /mhr 4454 mhr \$13.361 sts Small tools and supplies \$72.23 /mhr 468.8 mhr \$33,862 sh Tunnel shifter L L min Tunnel miner \$68.45 /mhr 1875 mhr \$128,364 L lab General Labor (Grp 3) \$63.14 /mhr 468.8 mhr \$29,598 L att Portal Attendant \$66.60 /mhr 468.8 mhr \$31,223 L eo35- Excavator Operator (OG3) \$81.13 /mhr 468.8 mhr \$38,032 Loader oper. <3.5cy (OG4) L lo35-0.5 \$79.39 /mhr 234.4 mhr \$18,609 L MWHD Mech/Welder (OG4) 0.5 \$79.39 /mhr 234.4 mhr \$18,609 L 50% 234.4 mhr conc Concrete equip.oper. (OG5) \$77.79 /mhr \$18,234 Е vh Vibro Hammer \$9.92 /hr 468.8 hr \$4,650 Е b320 Backhoe Cat 320, 44k/1.5cy \$59.88 /hr 468.8 hr \$28,071 Ε \$45.23 /hr 468.8 hr lhd3 Load-Haul-Dump 4ton/2.5cy \$21,205 Ε Shotcrete plant, skid 12cy/hr \$23.09 /hr 468.8 hr sp12 \$10,824 Ε 1950 Wheel Loader Cat 950/3.5cy \$75.85 /hr 468.8 hr \$35,557 Е bl3 Extension Boom, 3.0ton \$42.61 /hr 468.8 hr \$19,978



	Tunne	el hab Study		Dient Marin County			Job No <b>5581.0</b>		Rev 0	
			D	IRECT COST DETA	IL					
M	8set	8-in. Steel Set	48.00 ea	4.040//15		\$1,984		48.00 €		\$95,225
M M	s5 spile	Shotcrete, 5000psi mix C6x13 Channel Spile	1114 ea	1.616 cy/lf		\$104 \$73.88	•	225.0 c	•	\$23,401 \$82,303
M		Lumber for lagging/blocking	1114 Ga	10.00 bf/lf		\$1.42		1392 k		\$1,974
S		Muck disposal	1086 bcy	1.60 lcy/bcy		\$35.83		1737 l		\$62,239
S		Muck disp. Contam. Non Haz.	118.6 bcy	1.60 lcy/bcy		\$63.75	•	189.7 l	•	\$12,094
Ε		Generator, skid 210kW	•	, ,		\$57.33	/hr	468.8 h	nr	\$26,878
Ε	p140	Pump, subm. 140gpm/20ft hea	ıd			\$1.42	/hr	468.8 h	nr	\$665
Ε	wtp	Water Treatment Plant				\$3.58	/hr	468.8 h	ır	\$1,679
Ε	wd4	Welder 400A Diesel, trailer				\$12.02	/hr	468.8 h	ır	\$5,635
Е		Compressor, trailer 1600cfm				\$127		468.8 h		\$59,405
E	vf100	Ventilation fan 100hp				\$13.90	/hr	468.8 h	nr	\$6,514
No.	Item De	escription		Item Quantity/Unit	Produ	uction rate	Othe	r fixed time		Total time
011	Tunn	el Sub Base w/ Drainage		2173 LF	100 I	LF/day			21.7	work days
		manhours	Labor	Equipment		Material		Subcontract		Item Cost
		1,215	\$86,393	\$65,304		\$87,983		\$586,710		\$826,391
		0.559	\$39.76	\$30.05		\$40.49	0.11	\$270.00	0	\$380.30
	1 000	Status (Additive) Schedule factor (Normal)	8 hr/shift	Work schedule 1 shift/day	5.	day/week		her ST pay ) hr/shift		ner OT pay hr/shift
R/T	Code	Resource Description	Resource Qty/Unit	Production rate	Factor	Resource Un		Resource Qu		Resource Cost
M	sts	Small tools and supplies	Tiobodioc Gty/Olin	Troduction rate	1 40101	\$3.00		1215 r		\$3,646
М	aggf	Fine aggregate	2331 ton			\$36.19	/ton	2331 t	on	\$84,338
S	tds	Tunnel Drainage System				\$270	/lf	2173 L	_F	\$586,710
L	sh	Tunnel shifter				\$72.23	/mhr	173.6 r	nhr	\$12,539
L	min	Tunnel miner			2	\$68.45	/mhr	347.2 r	nhr	\$23,767
L	lab	General Labor (Grp 3)				\$63.14		173.6 r		\$10,960
L	att	Portal Attendant				\$66.60		173.6 r		\$11,562
L		Loader oper. <3.5cy (OG4)				\$79.39		173.6 r		\$13,782
L	MW	HD Mech/Welder (OG4)				\$79.39		173.6 r		\$13,782
E	lhd3	Load-Haul-Dump 4ton/2.5cy				\$45.23		173.6 h		\$7,853
E E	l950 c14	Wheel Loader Cat 950/3.5cy Compactor, BW11AS, 14t/54"				\$75.85 \$52.15		173.6 h 173.6 h		\$13,167 \$9,053
E		Generator, skid 210kW				\$57.33		173.6 h		\$9,053
Ē	-	Pump, subm. 140gpm/20ft hea	d			\$1.42		173.6 h		\$246
E	wtp	Water Treatment Plant	·u			\$3.58		173.6 h		\$622
E		Compressor, trailer 1600cfm				\$127		173.6 h		\$21,998
Ε	vf100	Ventilation fan 100hp				\$13.90	/hr	173.6 h	ır	\$2,412
No.	Item De	escription		Item Quantity/Unit	Produ	uction rate	Othe	r fixed time		Total time
		el Agg Base		2173 LF		LF/day				work days
		manhours	Labor	Equipment		Material		Subcontract		Item Cost
		1,215	\$86,393	\$65,304		\$31,244		\$0		\$182,941
		0.559	\$39.76	\$30.05		\$14.38		\$0.00		\$84.19
		Status (Additive)		Work schedule	_			her ST pay		ner OT pay
- T		Schedule factor (Normal)	8 hr/shift	1 shift/day		day/week		hr/shift		hr/shift
R/T M	Code sts	Resource Description Small tools and supplies	Resource Qty/Unit	Production rate	Factor	Resource Un		Resource Qu 1215 r		Resource Cost \$3,646
M	aggc	Coarse aggregate	882.8 ton			\$3.00		882.8 t		\$3,646 \$27,598
L	sh	Tunnel shifter	302.0 ton			\$72.23		173.6 r		\$12,539
Ĺ	min	Tunnel miner			2	\$68.45		347.2 r		\$23,767
Ĺ	lab	General Labor (Grp 3)			_	\$63.14		173.6 r		\$10,960
L	att	Portal Attendant				\$66.60	/mhr	173.6 r		\$11,562
L	lo35-	Loader oper. <3.5cy (OG4)				\$79.39	/mhr	173.6 r	nhr	\$13,782
L	MW	HD Mech/Welder (OG4)				\$79.39	/mhr	173.6 r	nhr	\$13,782
E	lhd3	Load-Haul-Dump 4ton/2.5cy				\$45.23		173.6 h		\$7,853
Е	1950	Wheel Loader Cat 950/3.5cy				\$75.85		173.6 h		\$13,167
E	c14	Compactor, BW11AS, 14t/54"				\$52.15		173.6 h		\$9,053
E	•	Generator, skid 210kW	ام.			\$57.33		173.6 h		\$9,953
E	p140	Pump, subm. 140gpm/20ft hea	lu			\$1.42	/111	173.6 h	II	\$246



	Tunne	el hab Study			Client <b>Marin County</b>		Job No. <b>5581.0</b>		Rev <b>0</b>	Computed on 6/20/2017 4:19 PM
					DIRECT COST DETA	IL				
E E E		Water Treatment Plant Compressor, trailer 1600 Ventilation fan 100hp	)cfm			\$3.58 \$127 \$13.90	/hr	173.6 173.6 173.6	hr	\$622 \$21,998 \$2,412
No. <b>013</b>		escription el Paving			Item Quantity/Unit	Production rate 100 LF/day	Other	fixed time		Total time  work days
		(	521 521 0.240	Labor <b>\$35,062</b> \$16.14	Equipment <b>\$13,233</b> \$6.09	Materia <b>\$1,562</b> \$0.72	2	\$408,041 \$187.78		Item Cost <b>\$457,899</b> \$210.72
	1.000	Status (Additive) Schedule factor (Normal)		8 hr/shift	Work schedule 1 shift/day	5 day/week		ner ST pay hr/shift		er OT pay hr/shift
R/T M S L L E E	wtp vf100	Pump, subm. 140gpm/20 Water Treatment Plant Ventilation fan 100hp		Resource Qty/Unit 3139 sy	Production rate	\$130 \$72.23 \$63.14 \$66.60 \$57.33 \$1.42 \$3.58 \$13.90	) /mhr ) /sy 3 /mhr 4 /mhr ) /mhr 3 /hr 2 /hr 3 /hr ) /hr	Resource Q 520.8 3139 173.6 173.6 173.6 173.6 173.6 173.6	mhr sy mhr mhr mhr hr hr hr	\$1,562 \$408,041 \$12,539 \$10,960 \$11,562 \$9,953 \$246 \$622 \$2,412
No. <b>014</b>		escription ti Protection			Item Quantity/Unit 43460 sf	Production rate		fixed time		Total time work days
		mai (	nhours <b>0</b> 0.000	Labor <b>\$0</b> \$0.00	Equipment <b>\$0</b> \$0.00	Materia <b>\$0</b> \$0.00	ıl <b>)</b> )	Subcontract <b>\$178,925</b> \$4.12		Item Cost <b>\$178,925</b> \$4.12
	1.000	Status (Additive) Schedule factor (Normal)		8 hr/shift	Work schedule 1 shift/day	5 day/week		ner ST pay hr/shift		er OT pay hr/shift
R/T S	Code graff	Resource Description Graffiti Protection		Resource Qty/Unit	Production rate	Factor Resource U \$4.12		Resource Q		Resource Cost \$178,925
No.	Item De	escription			Item Quantity/Unit	Production rate	Other	fixed time		Total time
		el Water / Fire Protection			2173.00 LF		30	days		work days
			nhours <b>0</b> 0.000	Labor <b>\$0</b> \$0.00	Equipment <b>\$0</b> \$0.00	Materia <b>\$(</b> \$0.00	)	\$825,740 \$380.00		Item Cost <b>\$825,740</b> \$380.00
	1.000	Status (Additive) Schedule factor (Normal)		8 hr/shift	Work schedule 1 shift/day	5 day/week		ner ST pay hr/shift		ner OT pay hr/shift
R/T S	Code tfp	Resource Description Tunnel Fire Protection		Resource Qty/Unit	Production rate	Factor Resource U		Resource Q		Resource Cost \$825,740
No. <b>016</b>		escription el Power / Lighting / CC1			Item Quantity/Unit 2173 LF	Production rate	60	fixed time		Total time work days
		1	1, <b>440</b> 0.663	\$ <b>96,946</b> \$44.61	Equipment <b>\$36,590</b> \$16.84	Materia <b>\$4,320</b> \$1.99	) }	Subcontract \$2,498,950 \$1,150.00	Oth	\$2,636,805 \$1,213.44
	1.000	Status (Additive) Schedule factor (Normal)		8 hr/shift	Work schedule 1 shift/day	5 day/week		ner ST pay hr/shift		er OT pay hr/shift
R/T M S L L E E E	sts tlp sh lab att g210 p140 wtp	Resource Description Small tools and supplies Power / Lighting / CCTV Tunnel shifter General Labor (Grp 3) Portal Attendant Generator, skid 210kW Pump, subm. 140gpm/20 Water Treatment Plant Ventilation fan 100hp		Resource Qty/Unit	Production rate	Factor Resource U \$3.00 \$1,150 \$72.23 \$63.14 \$66.60 \$57.33 \$1.42 \$3.58 \$13.90	) /mhr ) /lf 3 /mhr 1 /mhr ) /mhr 3 /hr 2 /hr	Resource Qr 1440 2173 480.0 480.0 480.0 480.0 480.0 480.0 480.0	uantity mhr LF mhr mhr mhr hr hr	Resource Cost \$4,320 \$2,498,950 \$34,671 \$30,305 \$31,969 \$27,520 \$681 \$1,719 \$6,670



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				D	DIRECT COST DETA	IL					
No.		escription			Item Quantity/Unit	Produ	uction rate		er fixed time		Total time
017	Tunne	el Ventilation			2173 LF			60	0 days	60	work days
			manhours	Labor	Equipment		Material		Subcontract		Item Cost
			0	\$0	\$0		\$0		\$304,220		\$304,220
			0.000	\$0.00	\$0.00		\$0.00	_	\$140.00		\$140.00
		Status (Additive)		- 1 / 116	Work schedule	_	. , .		ther ST pay		ner OT pay
		Schedule factor (Normal)		8 hr/shift	1 shift/day		day/week		0 hr/shift		hr/shift
R/T	Code	Resource Description		Resource Qty/Unit	Production rate	Factor	Resource Un		Resource Qu		Resource Cost
S	tv	Tunnel Ventilation					\$140	/11	2173 I	_F	\$304,220
No.		escription			Item Quantity/Unit	Produ	uction rate		er fixed time		Total time
018	Geote	echnical Instrumenta			1 LS			320	0 days	320	work days
			manhours	Labor	Equipment		Material		Subcontract		Item Cost
			0	\$0	\$0		\$200,000	_	\$0		\$200,000
	4 000	Status (Additive)		0 1 / 1 %	Work schedule	_	. , .		ther ST pay		ner OT pay
		Schedule factor (Normal)		8 hr/shift	1 shift/day		day/week		0 hr/shift		hr/shift
R/T	Code	Resource Description	2.1	Resource Qty/Unit	Production rate	Factor	Resource Un		Resource Qu		Resource Cost
М	xmisc	Miscellaneous mater	riai	200.0 lot			\$1,000	/IOT	200.0 l	Oτ	\$200,000
No.		escription			Item Quantity/Unit	Produ	uction rate		er fixed time		Total time
019	FIII EX	disting boreholes			190 cf			,	5 days	5	work days
			manhours	Labor	Equipment		Material		Subcontract		Item Cost
			240	\$15,964	\$5,116		\$4,943		\$0		\$26,023
			1.263	\$84.02	\$26.92		\$26.02		\$0.00		\$136.96
		Status (Additive)			Work schedule	_			ther ST pay		ner OT pay
		Schedule factor (Normal)		8 hr/shift	1 shift/day		day/week		0 hr/shift		hr/shift
R/T	Code	Resource Description		Resource Qty/Unit	Production rate	Factor	Resource Un		Resource Qu		Resource Cost
М	sts	Small tools and supp					\$3.00		240.0 ו		\$720
M	cs	Cement, Portland 94	lb sack	190.0 sack			\$11.70		190.0 s		\$2,223
L	lfm	Labor FM					\$67.17		40.00 ı		\$2,687
L	lab	General Labor (Grp	,			4	\$63.14		160.0 ı		\$10,102
L		Loader oper. <3.5cy					\$79.39		40.00 ı		\$3,176
Е	1950	Wheel Loader Cat 9	•				\$75.85		40.00 l		\$3,034
Е	c76	Conc. pump, trailer 7		Substitute for grou	' '	1	\$52.05		40.00 l		\$2,082
M	xmisc	Miscellaneous mater	rial	2.00 lot	Hoses, etc.		\$1,000	/lot	2.00 l	ot	\$2,000
No.		escription			Item Quantity/Unit	Produ	uction rate		er fixed time		Total time
020	South	Portal Site Restora			1 LS			20	0 days	20	work days
			manhours	Labor	Equipment		Material		Subcontract		Item Cost
			320	\$20,849	\$0		\$960		\$20,000		\$41,809
		Status (Additive)			Work schedule				ther ST pay		ner OT pay
		Schedule factor (Normal)		8 hr/shift	1 shift/day		day/week		0 hr/shift		hr/shift
R/T	Code	Resource Description		Resource Qty/Unit	Production rate	Factor	Resource Un		Resource Qu		Resource Cost
M	sts	Small tools and supp	olies				\$3.00		320.0 ו		\$960
S	sr	Site restoration	_,	2.00 acre			\$10,000		2.00 8		\$20,000
L	lab	General Labor (Grp	3)				\$63.14		160.0 ı		\$10,102
L	lfm	Labor FM					\$67.17	/mhr	160.0 ı	nhr	\$10,747
No.		escription	_		Item Quantity/Unit	Produ	uction rate		er fixed time		Total time
021	North	Portal Site Restorat	ion		1.00 LS			20	0 days	20	work days
			manhours	Labor	Equipment		Material		Subcontract		Item Cost
			320	\$20,849	\$0		\$960		\$20,000		\$41,809
		Status (Additive)			Work schedule				ther ST pay		ner OT pay
		Schedule factor (Normal)		8 hr/shift	1 shift/day		day/week		0 hr/shift		hr/shift
R/T	Code	Resource Description		Resource Qty/Unit	Production rate	Factor	Resource Un		Resource Qu		Resource Cost
M	sts	Small tools and supp	olies				\$3.00		320.0 ı		\$960
S	sr	Site restoration		2.00 acre			\$10,000		2.00 a		\$20,000
L	lab	General Labor (Grp	3)				\$63.14		160.0 ı		\$10,102
L	lfm	Labor FM					\$67.17	/mhr	160.0 ı	nhr	\$10,747



 Project
 Client
 Job No.
 Estimator
 Rev
 Computed on

 Alto Tunnel
 Marin County
 5581.0
 TLP
 0
 6/20/2017

 Tunnel Rehab Study
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#### **DIRECT COST DETAIL**

No.	Item De	escription			Item Quantity/Unit	Produ	uction rate Ot	her fixed time	Total time
022	Haza	rdous Material Allov	wance		1 LS			0 days	0 work days
			manhours	Labor	Equipment		Material	Subcontract	Item Cost
			0	\$0	\$0		\$200,000	\$0	\$200,000
R/T	Code	Resource Description		Resource Qty/Unit	Production rate	Factor	Resource Unit Cost	Resource Quantity	Resource Cost
М	ai	Allowance Item		\$200,000 a	llowance		\$1.00	200000	\$200,000
No.	Item De	escription			Item Quantity/Unit	Produ	uction rate Ot	her fixed time	Total time
023	Porta	I Modifications			1 LS			0 days	0 work days
			manhours	Labor	Equipment		Material	Subcontract	Item Cost
			0	\$0	\$0		\$200,000	\$0	\$200,000
R/T	Code	Resource Description		Resource Qty/Unit	Production rate	Factor	Resource Unit Cost	Resource Quantity	Resource Cost
М	ai	Allowance Item		\$200,000 a	llowance		\$1.00	200000	\$200,000



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#### INDIRECT COST DETAIL

No.	Item Description		101	Item Quantity/Unit				#N/A		
024	Equipment Ownership not in D			LS		Matarial		0.4		lt
	Equipment spread to Di \$626.		Labor <b>\$0</b>	Equipment <b>\$149,700</b>		Material <b>\$213,297</b>		Subcontract \$0		Item Cost \$362,997
Notes	·	,000	Ψ	ψ143,700	Pavr	ment via Equipme	ent Mobiliz			\$0
	rce Code: Fleet, Purchase, Mob Purchase	e, or F	Rental/lease.	Fleet Equi		Purchased Ed		Fleet + Pur	chase	Rental
	nership cost/hr is based on actual equipme			Value	W/O	Value	 W/O	Value	W/O	Amount
on-s	site at a single-shift utilization rate of 173 h	ours/n	nonth.	\$2,666K	23%	\$609K	60%	\$3,275K	30%	\$5K
		ee 6		Unit Purchase cost, Unit		Unit Freight &				Project Cost
R/T	Resource Description	Source Code	Number of Units or Rental Period	Book value, or Rental Rate per period	Project Write off	(carried in Mob Freight in/out	,	Ownership Cost/hr	Equip. mos	excluding freight/erection
M	Sales Tax	<i>3</i> , O	or rientair enou	\$609,030		(no sales tax		COSUIII	11105	\$0
	urly Equipment used in Direct Cos	t Iten	ns: \$626.600	φοσο,σσσ	0.070	(no caree tax	•)			Ψ
Е	Cat 305 Mini-Exc 11k/.17cy	R	1 mo	\$5,000		\$500		\$31.25	0.9	in directs
Е	Backhoe Cat 320, 44k/1.5cy	F	2 ea	\$225,000	25%	\$1,000		\$22.85	28.4	in directs
Ε	Load-Haul-Dump 4ton/2.5cy	F	2 ea	\$190,000	25%	\$1,000		\$18.03	30.4	in directs
Ε	Shotcrete plant, skid 12cy/hr	F	2 ea	\$75,000	25%	\$500		\$7.62	28.4	in directs
Е	Wheel Loader Cat 950/3.5cy	F	2 ea	\$217,000	25%	\$1,000		\$20.43	30.7	in directs
Е	Extension Boom, 3.0ton	F	2 ea	\$158,000	25%	\$500		\$16.05		in directs
Е	Vibro Hammer	F	2 ea	\$25,000	25%	\$500		\$5.92		in directs
Е	Generator, skid 210kW	F	2 ea	\$50,000	25%	\$400		\$4.22		in directs
E	Pump, subm. 140gpm/20ft head		2 ea	\$5,000	50%	\$50.00		\$0.84		in directs
E	Water Treatment Plant	F	2 ea	\$40,000	10%	\$500		\$1.35	34.2	in directs
E	Welder 400A Diesel, trailer	F	2 ea	\$18,000	10%	\$200		\$0.73	28.4	in directs
E	Compressor, trailer 1600cfm	F	2 ea	\$180,000	25%	\$400		\$17.08	30.4	in directs
E	AQ1500 Cutterhead Attach.	F F	1 ea	\$60,000	25%	\$500		\$42.42	2.0	in directs
E E	Ventilation fan 100hp	F	2 ea	\$20,000	25% 10%	\$400 \$500		\$1.69 \$17.92	34.2 3.2	in directs in directs
E	Conc. pump, trailer 76cy/hr Compactor, BW11AS, 14t/54"	F	1 ea 1 ea	\$100,000 \$100,000	10%	\$500 \$500		\$28.80	2.0	in directs
	neral Plant: \$149,700	Г	ı ea	φ100,000	10%	\$300		φ20.00	2.0	munecis
E	Pickups	Р	8 ea	\$30,000	50%	\$400		\$3.65	190	\$120,000
Ē	Mechanics Truck	Р	1 ea	\$50,000	33%	\$400		\$4.02		\$16,500
Ē	Street Sweep	Р	1 ea	\$40,000	33%	\$400		\$3.21	23.8	\$13,200
	eal Plant: \$173,297	•	. 50	ψ.0,000	0070	ψ.00		Ψσ.= .	_0.0	Ψ.σ,=σσ
М	Fanline, 24-in Metal Ducting	Р	2,390 LF	\$25.00	100%	\$1.00				\$59,758
M	Temp Tunnel Lighting	Р	2,390 LF	\$40.00	75%	\$1.00				\$71,709
M	4-In Air & Water Line	Ρ	4,781 LF	\$10.00	50%	\$1.00				\$23,903
M	8-in Discharge Line	Р	2,390 If	\$15.00	50%	\$1.00				\$17,927
Oth	er Plant: \$40,000									
М	Fan Silencer	Р	2 ea	\$20,000	100%	\$2,000				\$40,000
No. <b>025</b>	Item Description General Mobilization			Item Quantity/Unit <b>0.5 mo</b>		Mob/demob	paid as sc	heduled. Bond	d paid at I	NTP.
	manhours		Labor	Equipment		Material		Subcontract		Item Cost
	522		\$33,238	\$10,051		\$422,392		\$0		\$465,681
	1,044.000	)	\$66,475.22	\$20,102.82		\$844,783.50		\$0.00		\$931,361.53
				Work schedule				ner ST pay		er OT pay
			8 hr/shift	1 shift/day	5	day/week		hr/shift		hr/shift
R/T	Resource Description		Resource Qty/Unit	Production rate	Factor	Resource Ur		Resource Q		Resource Cost
М	sts Small tools and supplies		500/ /			\$3.00			mhr	\$1,566
M	Freight-see equipment ownershi			balance in Demobiliz	,	\$34,852	•	f equip. cos	St)	\$17,426
M	Transfer from cost item 030 Bon	ds, Ir	•		ob	¢00.00	LS	000	-4	\$199,600
M	Dryhouse		2 ea	400 sf/ea		\$20.00		800		\$16,000
M M	Fire protection system		2 loc			\$2,000 \$40.00			loc ef	\$4,000 \$16,000
M	First Aid trailer/furnishings		400 sf			\$40.00		400		
M M	Fuel+Lube facilities  Job light and power system		2 loc 2 loc			\$5,000 \$10,000			loc loc	\$10,000 \$20,000
M	Job light and power system  Job sanitary system		2 loc			\$10,000			loc	\$20,000
M	Job samary system  Job water distribution		2 loc			\$10,000			loc	\$20,000
M	Office copier/computers/fax		1 sets			\$5,000			sets	\$5,000
M	Office furnishings		1 sets			\$2,000			sets	\$2,000
	go		. 5515			Ψ=,000	, 55.6		23.0	Ψ=,000



	ct Tunnel nel Rehab Study		lient Iarin County			No. Estimator TLP	Rev Computed of 6/20/2017 4:19 PN
		INI	DIRECT COST DETA	AIL			
М	Office trailers	1 ea	400 sf/ea		\$40.00 /sf	400 sf	\$16,000
M	Engineers Office Complex	1 ea	200 sf/ea		\$40.00 /sf	200 sf	\$8,00
M	Shop	2 loc	800 sf/loc		\$10.00 /sf	1600 sf	\$16,00
M	Signs	2 loc			\$5,000 /loc		
M	Superintendent/survey trailer	2 loc	200 sf/loc		\$30.00 /sf	400 sf	\$12,00
M	Warehouse	2 loc	800 sf/loc		\$10.00 /sf	1600 sf	\$16,00
L	Labor crew - 1 operator x 2 loc			2	\$75.41 /mh		* -1
L	Labor crew - 2 laborers x 2 loc			4	\$57.81 /mh		
E	Wheel Loader Cat 966/4.8cy 2 loc			2	\$57.77 /hr	174 hr	\$10,05
M	Crushed Rock for Yard	400 ton			\$32.00 /ton	400 ton	\$12,80
√o. <b>026</b>	Item Description  Demobilization/Punchlist		Item Quantity/Unit  0.5 mo		Mob/demob paid a	as scheduled. Bond paid	d at NTP.
	manhours	Labor	Equipment		Material	Subcontract	Item Co.
	522	\$32,873	\$9,416		\$114,492	\$0	\$156,78
	1,044.000	\$65,746.48	\$18,832.89	\$	228,983.50	\$0.00	\$313,562.8
	,	, ,	Work schedule	,	-,	Other ST pay	Other OT pay
		8 hr/shift	1 shift/day	5 (	day/week	0 hr/shift	0 hr/shift
R/T	Resource Description	Resource Qty/Unit	Production rate	Factor	Resource Unit Co	st Resource Quant	ity Resource Co
M	sts Small tools and supplies	·			\$3.00 /mh	r 522 mh	r \$1,56
M	Freight-see equipment ownership	50% of total (b	alance in Mobilizatio	n)	\$34,852 tota	I	\$17,42
M	50% of Gen'l Mob matl less freight	1 LS		0.5	\$191,000 /LS	0.5 LS	\$95,50
L	Laborer			4	\$57.81 /mh	r 348 mh	r \$20,11
L	Equipment Operator			2	\$73.31 /mh	r 174 mh	r \$12,75
E	Wheel Loader Cat 966/4.8cy 2 loc			2	\$54.12 /hr	174 hr	\$9,41
No.	Item Description General Plant Operation/Maintenar	псе	Item Quantity/Unit 23.8 mo	Т	he duration is from t	he end of mob to the sta	art of demob.
No.	General Plant Operation/Maintenar manhours 2,055	Labor <b>\$125,889</b>	23.8 mo Equipment \$0	Т	Material <b>\$348,164</b>	Subcontract \$142,500	Item Co <b>\$616,55</b>
No.	General Plant Operation/Maintenar manhours	Labor	23.8 mo Equipment \$0 \$0.00	T	Material	Subcontract <b>\$142,500</b> \$6,000.00	Item Co. <b>\$616,55</b> \$25,960.1
No.	General Plant Operation/Maintenar manhours 2,055	Labor <b>\$125,889</b> \$5,300.61	23.8 mo  Equipment \$0 \$0.00  Work schedule		Material <b>\$348,164</b> \$14,659.52	Subcontract <b>\$142,500</b> \$6,000.00 Other ST pay	Item Co <b>\$616,55</b> \$25,960.1 Other OT pay
No. <b>027</b>	General Plant Operation/Maintenar manhours 2,055 86.505	\$125,889 \$5,300.61 8 hr/shift	23.8 mo  Equipment \$0 \$0.00  Work schedule 1 shift/day	5 (	Material <b>\$348,164</b> \$14,659.52 day/week	Subcontract \$142,500 \$6,000.00 Other ST pay 0 hr/shift	Item Co <b>\$616,55</b> \$25,960.1 Other OT pay 0 hr/shift
No. <b>027</b> R/T	General Plant Operation/Maintenar manhours 2,055 86.505	Labor <b>\$125,889</b> \$5,300.61	23.8 mo  Equipment \$0 \$0.00  Work schedule		Material \$348,164 \$14,659.52 day/week Resource Unit Co	Subcontract \$142,500 \$6,000.00 Other ST pay 0 hr/shift st Resource Quant	ltem Co <b>\$616,55</b> \$25,960.1 Other OT pay 0 hr/shift ity Resource Co
No. <b>027</b> R/T M	General Plant Operation/Maintenar manhours 2,055 86.505  Resource Description sts Small tools and supplies	\$125,889 \$5,300.61 8 hr/shift	23.8 mo  Equipment \$0 \$0.00  Work schedule 1 shift/day	5 (	Material \$348,164 \$14,659.52 day/week Resource Unit Co \$3.00 /mh	Subcontract \$142,500 \$6,000.00 Other ST pay 0 hr/shift st Resource Quant r 2054.5 mh	ltem Co \$616,55 \$25,960.1 Other OT pay 0 hr/shift ity Resource Co r \$6,16
No. <b>027</b> R/T M M	General Plant Operation/Maintenar manhours 2,055 86.505  Resource Description sts Small tools and supplies Access road maintenance	\$125,889 \$5,300.61 8 hr/shift	23.8 mo  Equipment \$0 \$0.00  Work schedule 1 shift/day  Production rate	5 (	Material \$348,164 \$14,659.52 day/week Resource Unit Co \$3.00 /mh \$2,500 /mo	Subcontract \$142,500 \$6,000.00 Other ST pay 0 hr/shift st Resource Quant r 2054.5 mh 23.75 mo	ltem Co \$616,55 \$25,960.1 Other OT pay 0 hr/shift ity Resource Co r \$6,16 \$59,37
No. 027  R/T M M M	Resource Description sts Small tools and supplies Access road maintenance Cell phone/radio fees	\$125,889 \$5,300.61 8 hr/shift	23.8 mo  Equipment \$0 \$0.00  Work schedule 1 shift/day	5 (	Material \$348,164 \$14,659.52 day/week Resource Unit Co \$3.00 /mh \$2,500 /mo \$120 /um	Subcontract \$142,500 \$6,000.00 Other ST pay 0 hr/shift st Resource Quant r 2054.5 mh 23.75 mo 0 237.5 um	Item Co: \$616,55 \$25,960.1 Other OT pay 0 hr/shift ity Resource Co: r \$6,16 \$59,37 0 \$28,50
No. <b>027</b> M M M	Resource Description sts Small tools and supplies Access road maintenance Cell phone/radio fees Craft shop maintenance	\$125,889 \$5,300.61 8 hr/shift	23.8 mo  Equipment \$0 \$0.00  Work schedule 1 shift/day  Production rate	5 (	Material \$348,164 \$14,659.52 day/week Resource Unit Co \$3.00 /mh \$2,500 /mo \$120 /um \$600 /mo	Subcontract \$142,500 \$6,000.00 Other ST pay 0 hr/shift st Resource Quant r 2054.5 mh 23.75 mo 0 237.5 um 23.75 mo	ltem Co \$616,55 \$25,960.1 Other OT pay 0 hr/shift ity Resource Co r \$6,16 \$59,37 0 \$28,50 \$14,25
No. 027 M M M M M	Resource Description sts Small tools and supplies Access road maintenance Cell phone/radio fees Craft shop maintenance Drinking water supplies	\$125,889 \$5,300.61 8 hr/shift	23.8 mo  Equipment \$0 \$0.00  Work schedule 1 shift/day  Production rate	5 ( Factor	Material \$348,164 \$14,659.52 day/week Resource Unit Co \$3.00 /mh \$2,500 /mo \$120 /um \$600 /mo \$600 /mo	Subcontract \$142,500 \$6,000.00 Other ST pay 0 hr/shift st Resource Quant r 2054.5 mh 23.75 mo 0 237.5 um 23.75 mo 23.75 mo	ltem Co \$616,55 \$25,960.1 Other OT pay 0 hr/shift ity Resource Co r \$6,16 \$59,37 o \$28,50 \$14,25 \$14,25
No. <b>027</b> M M M M M	Resource Description sts Small tools and supplies Access road maintenance Cell phone/radio fees Craft shop maintenance Drinking water supplies Dryhouse supplies	\$125,889 \$5,300.61 8 hr/shift	23.8 mo  Equipment \$0 \$0.00  Work schedule 1 shift/day  Production rate	5 (Factor	Material \$348,164 \$14,659.52 day/week Resource Unit Co \$3.00 /mh \$2,500 /mo \$120 /um \$600 /mo \$600 /mo \$1,000 /mo	Subcontract \$142,500 \$6,000.00 Other ST pay 0 hr/shift st Resource Quant r 2054.5 mh 23.75 mo 23.75 mo 23.75 mo 47.5 mo	ltem Co \$616,55 \$25,960.1 Other OT pay 0 hr/shift ity Resource Co r \$6,16 \$59,37 0 \$28,50 \$14,25 \$14,25 \$47,50
No. <b>027</b> M M M M M M M	Resource Description sts Small tools and supplies Access road maintenance Cell phone/radio fees Craft shop maintenance Drinking water supplies	\$125,889 \$5,300.61 8 hr/shift	23.8 mo  Equipment \$0 \$0.00  Work schedule 1 shift/day  Production rate	5 ( Factor	Material \$348,164 \$14,659.52 day/week Resource Unit Co \$3.00 /mh \$2,500 /mo \$120 /um \$600 /mo \$600 /mo	Subcontract \$142,500 \$6,000.00 Other ST pay 0 hr/shift st Resource Quant r 2054.5 mh 23.75 mo 23.75 mo 23.75 mo 47.5 mo 47.5 mo	ltem Co \$616,55 \$25,960.1 Other OT pay 0 hr/shift ity Resource Co r \$6,16 \$59,37 o \$28,50 \$14,25 \$14,25 \$47,50 \$28,50
No. 027 M M M M M M M M	Resource Description sts Small tools and supplies Access road maintenance Cell phone/radio fees Craft shop maintenance Drinking water supplies Dryhouse supplies Fire Protection supplies	\$125,889 \$5,300.61 8 hr/shift	23.8 mo  Equipment \$0 \$0.00  Work schedule 1 shift/day  Production rate	5 of Factor	Material \$348,164 \$14,659.52 day/week Resource Unit Co \$3.00 /mh \$2,500 /mo \$120 /um \$600 /mo \$1,000 /mo \$600 /mo	Subcontract \$142,500 \$6,000.00 Other ST pay 0 hr/shift st Resource Quant r 2054.5 mh 23.75 mo 23.75 mo 23.75 mo 47.5 mo 47.5 mo	ltem Co \$616,55 \$25,960.1 Other OT pay 0 hr/shift ity Resource Co r \$6,16 \$59,37 o \$28,50 \$14,25 \$47,50 \$28,50 \$47,50
No. 027  M M M M M M M M M M M M M M M M M M	Resource Description sts Small tools and supplies Access road maintenance Cell phone/radio fees Craft shop maintenance Drinking water supplies Dryhouse supplies Fire Protection supplies First Aid supplies	\$125,889 \$5,300.61 8 hr/shift	23.8 mo  Equipment \$0 \$0.00  Work schedule 1 shift/day  Production rate	5 (Factor 2 2 2 2 2 2	Material \$348,164 \$14,659.52 day/week Resource Unit Co \$3.00 /mh \$2,500 /mo \$120 /um \$600 /mo \$1,000 /mo \$1,000 /mo \$1,000 /mo	Subcontract \$142,500 \$6,000.00 Other ST pay 0 hr/shift st Resource Quant r 2054.5 mh 23.75 mo 23.75 mo 23.75 mo 47.5 mo 47.5 mo 47.5 mo	Item Co \$616,55 \$25,960.1 Other OT pay 0 hr/shift ity Resource Co r \$6,16 \$59,37 o \$28,50 \$14,25 \$47,50 \$28,50 \$47,50 \$23,75
No. 027  M M M M M M M M M M M M M M M M M M	Resource Description sts Small tools and supplies Access road maintenance Cell phone/radio fees Craft shop maintenance Drinking water supplies Dryhouse supplies Fire Protection supplies First Aid supplies Job light and power supplies	\$125,889 \$5,300.61 8 hr/shift	23.8 mo  Equipment \$0 \$0.00  Work schedule 1 shift/day  Production rate	5 c Factor	Material \$348,164 \$14,659.52 day/week Resource Unit Co \$3.00 /mh \$2,500 /mo \$120 /um \$600 /mo \$1,000 /mo \$600 /mo \$1,000 /mo \$1,000 /mo \$500 /mo	Subcontract \$142,500 \$6,000.00 Other ST pay 0 hr/shift st Resource Quant r 2054.5 mh 23.75 mo 23.75 mo 23.75 mo 47.5 mo 47.5 mo 47.5 mo 47.5 mo 47.5 mo 47.5 mo	Item Co \$616,55 \$25,960.1 Other OT pay O hr/shift ity Resource Co r \$6,16 \$59,37 o \$28,50 \$14,25 \$47,50 \$28,50 \$47,50 \$23,75 \$95,00
No. 027 M M M M M M M M M M M M M M M M M M M	Resource Description sts Small tools and supplies Access road maintenance Cell phone/radio fees Craft shop maintenance Drinking water supplies Dryhouse supplies Fire Protection supplies First Aid supplies Job light and power supplies Job sanitary system maintenance	\$125,889 \$5,300.61 8 hr/shift	23.8 mo  Equipment \$0 \$0.00  Work schedule 1 shift/day  Production rate	5 (Factor	Material \$348,164 \$14,659.52  day/week  Resource Unit Co \$3.00 /mh \$2,500 /mo \$120 /um \$600 /mo \$1,000 /mo \$1,000 /mo \$1,000 /mo \$500 /mo \$500 /mo \$2,000 /mo	Subcontract \$142,500 \$6,000.00 Other ST pay 0 hr/shift r 2054.5 mh 23.75 mo 23.75 mo 47.5 mo 47.5 mo 47.5 mo 47.5 mo 47.5 mo 23.75 mo	Item Co \$616,55 \$25,960.1 Other OT pay O hr/shift ity Resource Co r \$6,16 \$59,37 o \$28,50 \$14,25 \$47,50 \$23,75 \$95,00 \$47,50
No. 027 027 M M M M M M M M M M M M M M M M M M M	Resource Description sts Small tools and supplies Access road maintenance Cell phone/radio fees Craft shop maintenance Drinking water supplies Dryhouse supplies Fire Protection supplies First Aid supplies Job light and power supplies Job sanitary system maintenance Office cleaning	\$125,889 \$5,300.61 8 hr/shift	23.8 mo  Equipment \$0 \$0.00  Work schedule 1 shift/day  Production rate	5 c Factor	Material \$348,164 \$14,659.52  day/week  Resource Unit Co \$3.00 /mh \$2,500 /mo \$120 /um \$600 /mo \$1,000 /mo \$1,000 /mo \$1,000 /mo \$500 /mo \$2,000 /mo \$2,000 /mo	Subcontract \$142,500 \$6,000.00 Other ST pay 0 hr/shift st Resource Quant r 2054.5 mh 23.75 mo 23.75 mo 47.5 mo 47.5 mo 47.5 mo 47.5 mo 47.5 mo 23.75 mo	Item Co \$616,55 \$25,960.1 Other OT pay 0 hr/shift ity Resource Co r \$6,16 \$59,37 o \$28,50 \$14,25 \$47,50 \$28,50 \$47,50 \$23,75 \$95,00 \$47,50 \$11,87
No. 027  R3/T  M  M  M  M  M  M  M  M  M  M  M  M  M	Resource Description sts Small tools and supplies Access road maintenance Cell phone/radio fees Craft shop maintenance Drinking water supplies Dryhouse supplies Fire Protection supplies First Aid supplies Job light and power supplies Job sanitary system maintenance Office cleaning Office copier/computers/fax supplies	\$125,889 \$5,300.61 8 hr/shift	23.8 mo  Equipment \$0 \$0.00  Work schedule 1 shift/day  Production rate	5 c Factor	Material \$348,164 \$14,659.52  day/week  Resource Unit Co \$3.00 /mh \$2,500 /mo \$100 /mo \$600 /mo \$1,000 /mo \$1,000 /mo \$500 /mo \$2,000 /mo \$2,000 /mo \$2,000 /mo \$500 /mo	Subcontract \$142,500 \$6,000.00 Other ST pay 0 hr/shift st Resource Quant r 2054.5 mh 23.75 mo 23.75 mo 47.5 mo 47.5 mo 47.5 mo 47.5 mo 23.75 mo	Item Co \$616,55 \$25,960.1 Other OT pay 0 hr/shift ity Resource Co r \$6,16 \$59,37 o \$28,50 \$14,25 \$47,50 \$28,50 \$47,50 \$23,75 \$95,00 \$47,50 \$11,87 \$4,75
No. 027  BYT M M M M M M M M M M M M M M M M M M M	Resource Description sts Small tools and supplies Access road maintenance Cell phone/radio fees Craft shop maintenance Drinking water supplies Dryhouse supplies Fire Protection supplies First Aid supplies Job light and power supplies Job sanitary system maintenance Office cleaning Office copier/computers/fax supplies Office phone/fax/data line fees	\$125,889 \$5,300.61 8 hr/shift	23.8 mo  Equipment \$0 \$0.00  Work schedule 1 shift/day  Production rate	5 c Factor	Material \$348,164 \$14,659.52  day/week  Resource Unit Co \$3.00 /mh \$2,500 /mo \$120 /um \$600 /mo \$1,000 /mo \$1,000 /mo \$500 /mo \$2,000 /mo	Subcontract \$142,500 \$6,000.00 Other ST pay 0 hr/shift st Resource Quant r 2054.5 mh 23.75 mo 23.75 mo 47.5 mo 47.5 mo 47.5 mo 47.5 mo 23.75 mo	Item Co \$616,55 \$25,960.1 Other OT pay 0 hr/shift ity Resource Co r \$6,16 \$59,37 o \$28,50 \$14,25 \$14,25 \$47,50 \$23,75 \$95,00 \$47,50 \$11,87 \$4,75
No. 027  R/T M M M M M M M M M M M M M M M M M M M	Resource Description sts Small tools and supplies Access road maintenance Cell phone/radio fees Craft shop maintenance Drinking water supplies Dryhouse supplies Fire Protection supplies First Aid supplies Job light and power supplies Job sanitary system maintenance Office cleaning Office copier/computers/fax supplies Office phone/fax/data line fees Office supplies	\$125,889 \$5,300.61 8 hr/shift	23.8 mo  Equipment \$0 \$0.00  Work schedule 1 shift/day  Production rate	5 c Factor	Material \$348,164 \$14,659.52  day/week  Resource Unit Co \$3.00 /mh \$2,500 /mo \$120 /um \$600 /mo \$1,000 /mo \$1,000 /mo \$500 /mo \$2,000 /mo \$600 /mo	Subcontract \$142,500 \$6,000.00 Other ST pay 0 hr/shift st Resource Quant r 2054.5 mh 23.75 mc 23.75 mc 23.75 mc 47.5 mc 47.5 mc 47.5 mc 47.5 mc 23.75 mc 47.5 mc	Item Co \$616,55 \$25,960.1 Other OT pay 0 hr/shift ity Resource Co r \$6,16 \$59,37 o \$28,50 \$14,25 \$14,25 \$47,50 \$23,75 \$95,00 \$47,50 \$11,87 \$4,75 \$11,87 \$4,75 \$11,87
No. <b>027</b> R/T M M	Resource Description sts Small tools and supplies Access road maintenance Cell phone/radio fees Craft shop maintenance Drinking water supplies Dryhouse supplies Fire Protection supplies First Aid supplies Job light and power supplies Job sanitary system maintenance Office cleaning Office copier/computers/fax supplies Office phone/fax/data line fees Office supplies Water treatment plant supplies	\$125,889 \$5,300.61 8 hr/shift	23.8 mo  Equipment \$0 \$0.00  Work schedule 1 shift/day  Production rate	5 c Factor	Material \$348,164 \$14,659.52  day/week  Resource Unit Co \$3.00 /mh \$2,500 /mo \$120 /um \$600 /mo \$1,000 /mo \$600 /mo \$1,000 /mo \$500 /mo \$2,000 /mo \$2,000 /mo \$2,000 /mo \$2,000 /mo \$2,000 /mo \$2,000 /mo \$500 /mo \$500 /mo	Subcontract \$142,500 \$6,000.00 Other ST pay 0 hr/shift st Resource Quant r 2054.5 mh 23.75 mc 23.75 mc 47.5 mc 47.5 mc 47.5 mc 47.5 mc 47.5 mc 23.75 mc 47.5 mc 23.75 mc	Item Co \$616,55 \$25,960.1 Other OT pay 0 hr/shift ity Resource Co r \$6,16 \$59,37 o \$28,50 \$14,25 \$14,25 \$47,50 \$23,75 \$95,00 \$47,50 \$11,87 \$4,75 \$11,87 \$4,75 \$11,87 \$4,75 \$11,87
No.  027  R/T M M M M M M M M M M M M M M M M M M M	Resource Description sts Small tools and supplies Access road maintenance Cell phone/radio fees Craft shop maintenance Drinking water supplies Dryhouse supplies Fire Protection supplies Fires Aid supplies Job light and power supplies Job sanitary system maintenance Office cleaning Office copier/computers/fax supplies Office phone/fax/data line fees Office supplies Water treatment plant supplies Water truck/Sweeper driver Cap Lamps & Chargers	\$125,889 \$5,300.61 8 hr/shift	23.8 mo  Equipment \$0 \$0.00 Work schedule 1 shift/day Production rate  10 umo/mo	5 c Factor	Material \$348,164 \$14,659.52  day/week  Resource Unit Co \$3.00 /mh \$2,500 /mo \$600 /mo \$600 /mo \$1,000 /mo \$500 /mo \$2,000 /mo \$2,000 /mo \$2,000 /mo \$500 /mo	Subcontract \$142,500 \$6,000.00 Other ST pay 0 hr/shift st Resource Quant r 2054.5 mh 23.75 mc 23.75 mc 47.5 mc 47.5 mc 47.5 mc 47.5 mc 47.5 mc 23.75 mc 47.5 mc 23.75 mc	Item Co: \$616,55 \$25,960.1 Other OT pay 0 hr/shift ity Resource Co: r \$6,16 \$59,37 o \$28,50 \$14,25 \$47,50 \$23,75 \$95,00 \$47,50 \$11,87 \$4,75 \$14,25 \$23,75 \$14,25 \$23,75 \$23,75
No. 027  R/T M M M M M M M M M M M M M M M M M M M	Resource Description sts Small tools and supplies Access road maintenance Cell phone/radio fees Craft shop maintenance Drinking water supplies Dryhouse supplies Fire Protection supplies Fires Aid supplies Job light and power supplies Job sanitary system maintenance Office cleaning Office copier/computers/fax supplies Office phone/fax/data line fees Office supplies Water treatment plant supplies Water treatment plant supplies Water truck/Sweeper driver Cap Lamps & Chargers	Labor \$125,889 \$5,300.61 8 hr/shift Resource Qty/Unit	23.8 mo  Equipment \$0 \$0.00 Work schedule 1 shift/day Production rate  10 umo/mo	5 c Factor	Material \$348,164 \$14,659.52  day/week  Resource Unit Co \$3.00 /mh \$2,500 /mo \$120 /um \$600 /mo \$1,000 /mo \$500 /mo \$500 /mo \$2,000 /mo \$2,000 /mo \$2,000 /mo \$2,000 /mo \$500 /mo \$500 /mo \$500 /mo \$500 /mo \$500 /mo \$500 /mo	Subcontract \$142,500 \$6,000.00 Other ST pay 0 hr/shift st Resource Quant r 2054.5 mh 23.75 mo 23.75 mo 47.5 mo 47.5 mo 47.5 mo 47.5 mo 23.75 mo 23.75 mo 47.5 mo 70 mo 47.5 mo	Item Co: \$616,55 \$25,960.1 Other OT pay 0 hr/shift ity Resource Co: r \$6,16 \$59,37 0 \$28,50 \$14,25 \$47,50 \$28,50 \$47,50 \$23,75 \$95,00 \$47,50 \$11,87 \$4,75 \$11,87 \$4,75 \$11,87 \$4,75 \$11,87
No. 027  R/T M M M M M M M M M M M M M M M M M M M	Resource Description sts Small tools and supplies Access road maintenance Cell phone/radio fees Craft shop maintenance Drinking water supplies Dryhouse supplies Fire Protection supplies Fires Aid supplies Job light and power supplies Job sanitary system maintenance Office cleaning Office copier/computers/fax supplies Office supplies Water treatment plant supplies Water truck/Sweeper driver Cap Lamps & Chargers  Item Description Field Supervision	Labor \$125,889 \$5,300.61 8 hr/shift Resource Qty/Unit	23.8 mo  Equipment \$0 \$0.00 Work schedule 1 shift/day Production rate  10 umo/mo	5 c Factor	Material  \$348,164 \$14,659.52  day/week  Resource Unit Co \$3.00 /mh \$2,500 /mo \$120 /um \$600 /mo \$1,000 /mo \$1,000 /mo \$500 /mo \$2,000 /mo \$2,000 /mo \$2,000 /mo \$2,000 /mo \$500 /mo \$500 /mo \$500 /mo \$500 /mo \$500 /mo \$1,000 /mo \$1,000 /mo \$1,000 /mo \$500 /mo \$2,000 /mo \$2,000 /mo \$1,000 /mo \$2,000 /mo	Subcontract \$142,500 \$6,000.00 Other ST pay 0 hr/shift st Resource Quant r 2054.5 mh 23.75 mc 23.75 mc 47.5 mc 47.5 mc 47.5 mc 47.5 mc 23.75 mc 47.5 mc 47.5 mc 47.5 mc 47.5 mc 47.5 mc 47.5 mc 23.75 mc 47.5 mc 47.5 mc 47.5 mc Subcontract	Item Cos \$616,55: \$25,960.1: Other OT pay 0 hr/shift iity Resource Cos r \$6,16: \$59,37: 0 \$28,50: \$14,25: \$47,50: \$23,75: \$47,50: \$47,50: \$47,50: \$47,50: \$11,87: \$47,50: \$11,87: \$47,50: \$11,87: \$47,50: \$11,87: \$47,50: \$11,87: \$47,50: \$11,87: \$47,50: \$11,87: \$23,75: \$125,88: \$23,75:
No. 027  R/T M M M M M M M M M M M M M M M M M M M	Resource Description sts Small tools and supplies Access road maintenance Cell phone/radio fees Craft shop maintenance Drinking water supplies Dryhouse supplies Fire Protection supplies Fires Aid supplies Job light and power supplies Job sanitary system maintenance Office cleaning Office copier/computers/fax supplies Office phone/fax/data line fees Office supplies Water treatment plant supplies Water treatment plant supplies Water truck/Sweeper driver Cap Lamps & Chargers	Labor \$125,889 \$5,300.61 8 hr/shift Resource Qty/Unit	23.8 mo  Equipment \$0 \$0.00 Work schedule 1 shift/day Production rate  10 umo/mo	5 c Factor	Material \$348,164 \$14,659.52  day/week  Resource Unit Co \$3.00 /mh \$2,500 /mo \$120 /um \$600 /mo \$1,000 /mo \$500 /mo \$500 /mo \$2,000 /mo \$2,000 /mo \$2,000 /mo \$2,000 /mo \$500 /mo \$500 /mo \$500 /mo \$500 /mo \$500 /mo \$500 /mo	Subcontract \$142,500 \$6,000.00 Other ST pay 0 hr/shift st Resource Quant r 2054.5 mh 23.75 mo 23.75 mo 47.5 mo 47.5 mo 47.5 mo 47.5 mo 23.75 mo 23.75 mo 47.5 mo 70 mo 47.5 mo	Item Cos \$616,55: \$25,960.1: Other OT pay 0 hr/shift iity Resource Cos r \$6,16: \$59,37: 0 \$28,50: \$14,25: \$47,50: \$23,75: \$47,50: \$47,50: \$47,50: \$47,50: \$11,87: \$4,75: \$11,87: \$4,75: \$11,87: \$4,75: \$11,87: \$4,75: \$11,87: \$4,75: \$11,87: \$23,75: \$125,88: \$23,75:

See the 'Resources' sheet for an explanation of field supervisory class codes, and associated labor burdens.

<sup>&#</sup>x27;R?' and 'V?' codes denote if relocation expenses (both ways) are paid or a vehicle assigned, respectively - see cost item 029. 15.25 mo. Tunneler's work



Project Client Job No. Computed on Estimator Rev **Alto Tunnel Marin County** 5581.0 TLP 0 6/20/2017 **Tunnel Rehab Study** 4:19 PM

#### **INDIRECT COST DETAIL**

R/T	Class	Resource Description	R? V?	Personnel	Duration	Factor	Resource Unit Cost	Resource Quantity	Resource Cost
L	-	Labor burden for perso	nnel belo	w - see the 'Re	sources' sheet		31.4% weighte	ed average	\$723,428
L	KP	Project Manager	у	1 ea		0.5	\$15,000 /mmo	13.375 mmo	\$200,625
L	EP	Project Engineer	у	1 ea			\$10,000 /mmo	26.75 mmo	\$267,500
L	EP	Field Engineer		1 ea	15.3 mmo/ea		\$6,000 /mmo	15.25 mmo	\$91,500
L	EP	Office Engineer		1 ea			\$5,000 /mmo	26.75 mmo	\$133,750
L	EP	Business Manager		1 ea		0.5	\$8,000 /mmo	13.375 mmo	\$107,000
L	EP	Safety Manager	у	1 ea		0.5	\$10,000 /mmo	13.375 mmo	\$133,750
L	NL	Warehouseman		1 ea	15.3 mmo/ea		\$5,000 /mmo	15.25 mmo	\$76,250
L	NL	Secretary/Clerk		1 ea			\$3,000 /mmo	26.75 mmo	\$80,250
L	KP	General Superintenden	ıt y	1 ea			\$13,000 /mmo	26.75 mmo	\$347,750
L	EP	Walkers - Dayshift		2 ea	15.3 mmo/ea		\$9,000 /mmo	30.5 mmo	\$274,500
L	EP	Party Chief		1 ea		0.5	\$10,000 /mmo	13.375 mmo	\$133,750
L	NL	Instrumentman		1 ea	15.3 mmo/ea	0.5	\$9,000 /mmo	7.625 mmo	\$68,625
L	NL	1st Aid EMT - Dayshift	у	1 ea	15.3 mmo/ea		\$4,500 /mmo	15.25 mmo	\$68,625
L	NL	Town Runner	у	1 ea	15.3 mmo/ea		\$8,000 /mmo	15.25 mmo	\$122,000
L	KP	Equipment Supt	у	1 ea	15.3 mmo/ea	0.5	\$11,000 /mmo	7.625 mmo	\$83,875
L	EP	Subcontract Mgr		1 ea		0.1	\$10,000 /mmo	2.675 mmo	\$26,750
L	KP	Electrical Supt.	у	1 ea	15.3 mmo/ea	0.5	\$11,000 /mmo	7.625 mmo	\$83,875

Item Quantity/Unit

rce Description  Ill processing, wage labor  Ill processing, salary labor  tests	Labor \$0 \$0.00 Resource Qty/Unit 322 mmo 278 mmo		Factor	Material <b>\$273,033</b> \$10,187.79	Subcontract <b>\$912,588</b> \$34,051.77	\$1,185,620
oll processing, wage labor oll processing, salary labor	\$0.00 Resource Qty/Unit 322 mmo	\$0.00 Production rate	Factor	\$10,187.79	. ,	
oll processing, wage labor oll processing, salary labor	Resource Qty/Unit 322 mmo	Production rate	Factor	· · · · · · · · · · · · · · · · · · ·	\$34,051.77	#44 OOO E7
oll processing, wage labor oll processing, salary labor	322 mmo		Factor			\$44,239.57
oll processing, salary labor	-	4.00 -  - -/		Resource Unit Cost	Resource Quantity	Resource Cos
	278 mmo	4.33 chk/mmo		\$5.50 /chk	1393 chk	\$7,662
tests	270 111110	2 chk/mmo		\$5.50 /chk	556 chk	\$3,058
	22 test			\$200 /test	22 test	\$4,400
dit fees	2.2 yr			\$5,000 /yr	2.2 yr	\$11,000
al fees	2.2 yr			\$5,000 /yr	2.2 yr	\$11,000
sonnel recruiting	2.2 yr			\$1,000 /yr	2.2 yr	\$2,200
sign department charge	2.2 yr	Home Office Overhead	ı	\$10,000 /yr	2.2 yr	\$22,000
EDP department charge	2.2 yr	items: 0.4% of bid.	ı	\$2,000 /yr	2.2 yr	\$4,400
ipment department charge	2.2 yr	items. 0.4% of bid.		\$10,000 /yr	2.2 yr	\$22,000
counting department charge	2.2 yr			\$5,000 /yr	2.2 yr	\$11,000
department charge	2.2 yr			\$2,000 /yr	2.2 yr	\$4,400
porate department charge	2.2 yr			\$5,000 /yr	2.2 yr	\$11,000
scheduling charge	26.8 mo			\$500 /mo	26.8 mo	\$13,400
ct website maintenance				\$2,000 /mo	26.8 mo	\$53,600
mbursed DRB expenses		3 mo/mtg		\$4,800 /mtg	8.933333 mtg	\$42,880
mbursed partnering expenses		6 mo/mtg		\$3,500 /mtg	4.466667 mtg	\$15,633
hotographs/video				\$500 /mo	26.8 mo	\$13,400
onstruction survey	1 LS			\$10,000 /LS	1 LS	\$10,000
construction survey	1 LS			\$10,000 /LS	1 LS	\$10,000
ting Consultant	1 LS			\$10,000 /LS	1 LS	\$10,000
onmental Consultant	26.80 mo	32 hr/mo		\$250 /hr	857.6 hr	\$214,400
Monitoring Consultant	26.80 mo	32 hr/mo		\$250 /hr	857.6 hr	\$214,400
rity Service Day/Night/Weekend	26.80 mo			\$17,679 /mo	26.8 mo	\$473,788
escription		Item Quantity/Unit				
ti	notographs/video construction survey construction survey ng Consultant conmental Consultant Monitoring Consultant ity Service Day/Night/Weekend	notographs/video construction survey 1 LS construction survey 1 LS ng Consultant 1 LS commental Consultant 26.80 mo Monitoring Consultant 26.80 mo ity Service Day/Night/Weekend 26.80 mo	notographs/video construction survey 1 LS construction survey 1 LS ng Consultant 1 LS commental Consultant 26.80 mo Monitoring Consultant 26.80 mo 32 hr/mo 32 hr/mo 32 hr/mo 32 hr/mo 33 hr/mo 34 service Day/Night/Weekend 35 service Day/Night/Weekend	notographs/video construction survey 1 LS construction survey 1 LS ng Consultant 1 LS commental Consultant 26.80 mo 32 hr/mo Monitoring Consultant 26.80 mo 32 hr/mo 32 hr/mo 32 hr/mo 33 hr/mo 34 hr/mo 35 hr/mo 36 hr/mo 37 hr/mo 38 hr/mo 39 hr/mo 39 hr/mo 30 hr/mo 30 hr/mo	Solution   Solution	Solution   Solution

Unclassified Material Labor Equipment Subcontract \$0 \$0 \$517,144 \$0 \$517,144 Items which are specified to be paid under General Mobilization are calculated here and flagged 'Y' in the 'Xfer to Mob?' field.

Basis of contractor's equipment insurance is \$2,666K fleet book value + \$609K new purchases. Xfer to R/T Resource Description Mob? Resource Qty/Unit Production rate Factor Resource Unit Cost Resource Quantity Resource Cost М Credit for items specified to be transferred to cost item 025, General Mobilization LS -\$199,600 Μ Performance bond Υ \$25.0 M unescalated bid \$8.00 /K Bid \$24,950 K bid \$199,600 M Builder's risk \$25.0 M cost 2.3 yr \$3.00 /K-yr \$57,385 K-yr \$172,155



Item Cost

Item Description

	ot Tunnel onel Rehab Study		Client <b>Marin Co</b>	unty			Job No. <b>5581.0</b>	Estimator <b>TLP</b>	Rev 0	Computed on 6/20/2017 4:19 PM
		IN	DIRECT (	COST DET	AIL					
M M M	Automobile/pickup insurance Contractor equip. insurance Excess liability umbrella	126.0 vmo 2.3 yr 1 LS	\$3,275	K/yr		\$70.00 \$10.00 \$100,000	/K /LS	126 v \$7,533 k 1 L	S	\$8,820 \$75,325 \$100,000
M M M	Incident deductibles State/Local business tax Permits and licenses	1 LS 1 LS 1 LS				\$50,000 \$10,000 \$50,000	/LS	1 L 1 L 1 L	S S	\$50,000 \$10,000 \$50,000
М	Personal property tax	2.3 yr	\$3,275	K/yr	0.45	\$15.00	/K	3389.625 k		\$50,844
No. <b>031</b>	Item Description Contractor Markup		Item Qua	antity/Unit <b>LS</b>						
		Labor <b>\$0</b>		Equipment <b>\$0</b>	Uncl	assified Material \$2,820,597		Subcontract <b>\$0</b>		Item Cost \$2,820,597
R/T	Resource Description	Resource Quantity	Markup				1	12.7% of cost		Resource Cost
М	Direct Labor	\$3,912,706	30%					5.3%		\$1,173,812
M	Field Supervision	\$3,023,803	30%					4.1%		\$907,141
M M	Equipment Material (excluding allowance items)	\$2,703,658 \$5,312,128	5% 5%					0.6% 1.2%		\$135,183 \$265,606
М	Subcontract	\$6,777,101	5%					1.5%		\$338,855
No.	Item Description		Item Qua	antity/Unit						
032	Prinancing Charges			LS						
	Status (Additive)	Labor <b>\$0</b>		Equipment <b>\$0</b>	Uncl	assified Material \$88,047		Subcontract <b>\$0</b>		Item Cost <b>\$88,047</b>
	Invoices Securities		oital	Progress p		100/		etained earnings		
Ne	<b>,</b>		ituroo to n		days			5% at 75% o		
	culate finance charges on the time ela ipment purchases financing \$6	09,030 + \$0 tax.	itures to p	enom me	work to	revenue rece	ivea iroi	iii progress p	ayıne	1115.
_90		D payments x \$10,	943/mo - :	\$609.030 x	100% a	allocation) x 6	0% aver	age job write	off.	
	(0.	σ μαγσσ χ ψ . σ,		rage	Project	2	0 70 0.00	ago job mino		
R/T	Description	Resource Quantity		ng Period	Allocation		Notes			Resource Cost
M	Direct labor payroll/add-ons	\$3,546,030		days		based on 4 p				\$12,729
M	Field supervision payroll/add-ons	\$3,023,803 \$609,030		days		based on 2 p of purchase f				\$9,590 \$28,358
M M	Equipment purchases financing Material purchases/tax	\$4,502,599		years days		of cost items				\$28,338 \$11,270
M	First retention release	\$935,625		mo		cash; 100% s			ato	\$15,574
M	Last retention release	\$311,875		mo		cash; 100% s		-		\$10,525
	<u> </u>	φστι,στο			0 70		500011110		<u> </u>	Ψ10,020
No.	Item Description		Item Qua	antity/Unit						
033	Contractor Contingency			LS						
	Status (Additive)	Labor <b>\$0</b>		Equipment <b>\$0</b>	Uncl	assified Material <b>\$604,337</b>		Subcontract <b>\$0</b>		Item Cost <b>\$604,337</b>
R/T	Resource Description	Resource Qty/Unit	Produc	tion rate	Factor	Resource Un		Resource Qua		Resource Cost
M	General Conditions	1 LS				\$15,108,432		0.02 L		\$302,169
М	Mitigation Measures	1 LS			0.02	\$15,108,432	/LS	0.02 L	S	\$302,169
No.	Item Description		Item Qua	antity/Unit						
034	Escalation from NTP			LS						
	Status (Additive)	Labor		Equipment		Material		Subcontract		Item Cost
	Escalation up to NTP (not applicable)	\$0		\$0		\$0		\$0		\$0
	Escalation after NTP	\$138,964		\$42,204		\$101,179		\$179,085		\$461,432
Cin	Total Escalation ce a fixed schedule date for NTP is no		tion is self	\$42,204	n NITD +	\$101,179	t of oach	\$179,085	ativita :	\$461,432
	ct costs and on a yearly basis over the								•	
R/T	Resource Description	Unescalated Cost		Rate/Year		unding Periods	annual (	not applicat		Escalated Cost
L	Direct Labor	\$3,912,706		0%	2	(semi-annual	ly)	6/20/201	-	\$79,339
			_							

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4

(annually)

(annually)

(quarterly)

(annually)

3.0%

3.0%

3.0%

3.0%

\$3,023,803

\$2,703,658

\$8,132,725

\$6,777,101



\$59,625

\$42,204

\$101,179

\$179,085

6/20/2017

6/20/2017

6/20/2017

6/20/2017

Material (including unclassified)

L

Ε

М

S

Field Supervision

Equipment

Subcontracts

 Project
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#### INDIRECT COST DETAIL

No. Item Description Item Quantity/Unit						
035	Owner Contingency		LS			
		Labor	Equipment	Unclassified Material	Subcontract	Item Cost
	Status (Additive)	\$0	\$0	\$5,002,300	\$0	\$5,002,300
C/T	Type of Contingency		Amount	Contingend	cy Level	Resource Cost
T Design Definition		\$25,011,425	20.0% of to	otal (less allowances)	\$5,002,300	



ProjectClientJob No.EstimatorRevComputed onAlto TunnelMarin County5581.0TLP06/20/2017Tunnel Rehab Study4:19 PM

#### **RESOURCE RATE AND USAGE DETAIL**

DIRECT LABOR Basis: Prevailing wage rates									
Employer Insurance Add-ons	Ind. Rate	Exp Mod	Fff Rate	Memo: Est	timate Total	Employer Payroll	Tax Add-ons	Tax Rate	Annual Inc. Cap
Workers' Compensation	6.0%	_xpou	6.0%		29,415	Fed. Social Se		6.200%	\$118,500
Commercial General Liability	10.0%		10.0%		15,691	Fed. Medicaio	,	0.145%	<b>*</b> · · · · · · · · · · · · · · · · · · ·
CIGA/Terrorism/Other Add-ons	1.0%		1.0%		21,569	Fed. Unemplo	yment Tax	0.600%	\$7,000
				·	,	CA Unemploy	•	3.400%	\$7,000
Overtime	Rate					CA SDI		1.100%	\$100,800
General/Saturday overtime	1.5x								<b>.</b> ,
Sunday/Holiday overtime	2.0x					Weighted ave	erage: \$35.99 /	mhr Base+Va	c c
Misc. General overtime	2.0% built in ra	tes		\$	54,287	rroiginoù are		mhr Fringes/Ir	
moor donoral overtime	Hourly	Hourly		Daily	Ins &	Misc.	Adjusted	goo,	10/ 1 4/100
Code Resource/Group Description	Base+Vac	Fringes		ance/Travel	Taxes	Gen'l OT	Rate/mhr	Total mhrs	Total Cost
Laborers									_
Ifm Labor FM	\$35.24	\$22.20			\$8.76	\$0.97	\$67.17	520	\$34,929
lab General Labor (Grp 3)	\$32.04	\$22.20			\$7.97	\$0.92	\$63.14	6,564	\$414,425
Operating Engineers									
eo35+ Excavator >.5cy (OG2)	\$41.14	\$30.43			\$10.20	\$1.22	\$82.99	160	\$13,278
eo35- Excavator Operator (OG	i3) \$39.66	\$30.43			\$9.83	\$1.20	\$81.13	4,923	\$399,403
lo35- Loader oper. <3.5cy (O	G4) \$38.28	\$30.43			\$9.50	\$1.18	\$79.39	2,849	\$226,163
mw HD Mech/Welder (OG4	) \$38.28	\$30.43			\$9.50	\$1.18	\$79.39	2,809	\$222,988
conc Concrete equip.oper. (C	G5) \$37.01	\$30.43			\$9.19	\$1.16	\$77.79	2,462	\$191,487
Tunnel Laborers									
sh Tunnel shifter	\$38.89	\$22.66			\$9.65	\$1.04	\$72.23	5,924	\$427,901
min Tunnel miner	\$35.89	\$22.66			\$8.91	\$0.99	\$68.45	20,387	\$1,395,579
att Portal Attendant	\$34.42	\$22.66			\$8.55	\$0.97	\$66.60	5,924	\$394,553
Mobilization Labor	\$32.34	\$22.45		\$0.00	\$7.95	\$0.93	\$63.67	522	\$33,238
Demobilization Labor	\$31.98	\$22.20		\$0.00	\$7.87	\$0.92	\$62.98	522	\$32,873
GP Operation/Maintenance La	bor \$31.12	\$21.60		\$0.00	\$7.65	\$0.90	\$61.27	2,055	\$125,889
Craft Labor Escalation									\$79,339
Total Craft I	_abor	\$2,0	41,429	escalated	payroll	55	,620 mhrs		\$3,992,044

#### FIELD SUPERVISORY LABOR (see cost item 028)

Employer Insurance Add-ons	Ind. Rate Exp. Mod	Eff. Rate	Memo: Estimate Total	Permanent Employee Benefits	Rate	Applied to classifications
Workers' Compensation	1.8%	1.8%	\$41,407	Key empl. bonus plan	8.0%	KP
Commercial Gen'l Liability	5.0%	5.0%	\$115,019	Employee medical plan	10.0%	KP, EP, EL, NP, NL
				Retirement/Pension plan	5.0%	KP, EP, NP
				Non-exempt salaried OT	2.0%	NP, NL

Employer Payroll Tax Add-ons

7.7% payroll tax rate based on \$8,288/mmo weighted base salary.

		Total
Field Supervisory Labor Classification	Class	Burden
Key permanent employee	KP	37.5%
Exempt permanent employee	EP	29.5%
Exempt local hire employee	EL	24.5%
Non-exempt permanent employee	NP	31.5%
Non-exempt local hire employee	NL	26.5%

p p - <b>y</b>				
			Total mmos	Total Cost
Supervisory Salaries			278	\$3,023,803
Supervisory Labor Escalation				\$59,625

Total Supervisory Labor \$2,345,735 escalated payroll 278 mmos \$3,083,429



Project Client Job No. Estimator Rev Computed on Alto Tunnel Marin County 5581.0 TLP 0 6/20/2017 Tunnel Rehab Study 4:19 PM

RESOURCE RATE AND USAGE DETAIL

	PMENT (see Cost Item 024 fo asis: COE Rates, Year 2011	r develo <sub>l</sub>	oment of	hourly Unit Cos	•	•	ma. Tat-1:	naludina C-	neral Plant Mob/	0011	
Do	Region 8		Electricity		: /kWh		<b>no:</b> rotarii 730.832			0&M 37.700	
	Fuel/Power Factor High	L	Diesel				305,431			38,127	
	Tuel/Fower ractor riigh		Gas	\$3.20	0	,	-	gal gal	φ1,10	\$0	
		Air Diesel	Gas	φ3.20	Equipment	Parts		<i>G</i> wnership		φυ	
Code	Resource/Group Description	Elec Gas	HP/CFM	HPF	Value	Cost/hr	Cost/hr		Total Cost/hr	Total hrs	Total Cost
b305	Cat 305 Mini-Exc 11k/.17cy	D	47	65	\$72,813	\$7.77	\$6.96	\$31.25	\$45.98	160	\$7,357
b320	Backhoe Cat 320, 44k/1.5cy	D	128	65	\$217,913	\$18.07	\$18.96	\$22.85	\$59.88	4,923	\$294,789
	Loaders										
L950	Wheel Loader Cat 950/3.5cy	D	197	65	\$217,586	\$26.24	\$29.18	\$20.43	\$75.85	5,310	\$402,777
	Haul Units										
lhd3	Load-Haul-Dump 4ton/2.5cy	D	82	70	\$186,000	\$14.13	\$13.08	\$18.03	\$45.23	5,270	\$238,398
	Concrete Equipment										
c76	Conc. pump, trailer 76cy/hr	D	127	70	\$93,635	\$13.87	\$20.26	\$17.92	\$52.05	558	\$29,042
sp12	Shotcrete plant, skid 12cy/hr	Е	80	75	\$52,467	\$10.00	\$5.47	\$7.62	\$23.09	4,923	\$113,672
	Compactors										
c14	Compactor, BW11AS, 14t/54"	D	70	80	\$107,377	\$10.59	\$12.76	\$28.80	\$52.15	347	\$18,107
	Plant Equipment										
cp16	Compressor, trailer 1600cfm	D	500	75	\$180,565	\$24.20	\$85.44	\$17.08	\$126.72	5,270	\$667,852
g210	Generator, skid 210kW	D	314	65	\$37,885	\$6.61	\$46.50	\$4.22	\$57.33	5,924	\$339,640
p140	Pump, subm. 140gpm/20ft he		2	90	\$4,135	\$0.41	\$0.16	\$0.84	\$1.42	5,924	\$8,401
vf100	Ventilation fan 100hp	Е	100	90	\$5,500	\$4.00	\$8.21	\$1.69	\$13.90	5,924	\$82,320
wd4	Welder 400A Diesel, trailer	D	48	80	\$17,797	\$2.54	\$8.75	\$0.73	\$12.02	4,923	\$59,179
wtp	Water Treatment Plant	Е	15	90	\$350,000	\$1.00	\$1.23	\$1.35	\$3.58	5,924	\$21,218
	Utility Equipment										
bl3	Extension Boom, 3.0ton	D	84	85	\$158,400	\$10.30	\$16.27	\$16.05	\$42.61	4,923	\$209,799
	Attachments										
ch	AQ1500 Cutterhead Attach.	Е	160	75	\$55,000	\$6.00	\$10.94	\$42.42	\$59.36	354	\$20,991
vh	Vibro Hammer	Α	200	75	\$25,000	\$4.00		\$5.92	\$9.92	2,112	\$20,948
	ment Ownership (excludes \$62	6,600 co	mponant	spread	I to Direct Cost	ts)					\$149,700
	zation Equipment									174	\$10,051
	bilization Equipment									174	\$9,416
Equip	ment Escalation										\$42,204

**Total Equipment** 

67,353 hrs

\$2,745,862

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**Tunnel Rehab Study** 

#### **RESOURCE RATE AND USAGE DETAIL**

MATE	RIALS						
				Add Tax	Unit Cost		
Code	Resource/Group Description	Unit Cost/Measure	Notes	(-/N)?	F.O.B Job T	otal Quantity	Total Cost
	Add-ons						
tax	Sales Tax	8.250%	Memo: Tax on Material \$186	0,750			
			and Equipment Purchases	<i>\$0</i>			
sts	Small tools and supplies	\$3.00 mhr	(4.6% of raw direct labor rate)		\$3.00	55,620	\$166,860
	Concrete/Cement						
CS	Cement, Portland 94lb sack	\$10.81 sack	RSMeans		\$11.70	190	\$2,223
aggf	Fine aggregate	\$33.43 ton	Means 310516100400 / 2012 C		\$36.19	2,331	\$84,338
aggc	Coarse aggregate	\$28.88 ton	Means 310516100300 / 2012 C	•	\$31.26	883	\$27,598
s5	Shotcrete, 5000psi mix	\$96.10 cy			\$104.03	3,463	\$360,283
clsc	Controlled Low Strength Conc	\$90.00 cy			\$97.43	1,478	\$144,019
	Formwork						
lumb	Lumber for lagging/blocking	\$1.31 bf			\$1.42	21,430	\$30,389
sform	Stay-form	\$2.50 sf			\$2.71	32,975	\$89,240
	Permanent Materials						
swppp	Silt Fence / Straw Waddles	\$5.00 If	plug		\$5.41	1,000	\$5,413
8set	8-in. Steel Set	\$1,833 ea	plug		\$1,984	585	\$1,160,559
6set	6-in. Steel Set	\$1,317 ea	plug		\$1,426	68	\$96,937
spile	C6x13 Channel Spile	\$68.25 ea	plug		\$73.88	5,017	\$370,659
xmisc	Miscellaneous material	\$1,000 lot		Ν	\$1,000	202	\$202,000
ai	Allowance Item	\$1.00 LS		n	\$1.00	400,000	\$400,000
Equip	ment Ownership not in Direct Cost Ma	terials and Taxes					\$213,297
Mobili	zation Freight and Materials						\$420,826
Demo	bilization Freight and Materials						\$112,926
Gene	ral Plant Operation/Maintenance Mater	rials					\$342,000
Overh	ead Maintenance/Service Materials						\$273,033
Bonds	s, Insurance, and Taxes not in General	N (unclassified)					\$517,144
Contra	actor Markup	(unclassified)					\$2,820,597
Finan	cing Charges	(unclassified)					\$88,047
Contra	actor Contingency	(unclassified)					\$604,337
Mater	ial Escalation	,					\$101,179
				Tot	al Material		\$8,633,903

#### **SUBCONTRACTS**

Code	Resource/Group Description	Unit Cost/Measure	Notes	Т	otal Quantity	Total Cost
,	Sitework					
cg	Clearing and grubbing	\$10,000.00 acre		\$10,000	4	\$40,000
muck	Muck disposal	\$35.83 lcy		\$35.83	17,532	\$628,225
muck	c Muck disp. Contam. Non Haz.	\$63.75 lcy		\$63.75	2,921	\$186,203
sr	Site restoration	\$10,000.00 acre	Plug Price	\$10,000	4	\$40,000
tfnc	Temporary Construction Fenc	\$25.00 If	•	\$25.00	1,000	\$25,000
	Specialty Subcontracts					
graff	Graffiti Protection	\$4.12 sf		\$4.12	43,460	\$178,925
tds	Tunnel Drainage System	\$270.00 If		\$270.00	2,173	\$586,710
tfp	Tunnel Fire Protection	\$380.00 If		\$380.00	2,173	\$825,740
tlp	Power / Lighting / CCTV	\$1,150.00 If		\$1,150	2,173	\$2,498,950
tp	Tunnel Paving	\$130.00 sy		\$130.00	3,139	\$408,041
tv	Tunnel Ventilation	\$140.00 If		\$140.00	2,173	\$304,220
Gene	ral Plant Operation/Maintenance	Subcontracts				\$142,500
Overh	nead Maintenance/Service Subco	ntracts				\$912,588
Subc	ontract Escalation					\$179,085
				Total Subcontract		\$6,956,186

**Escalated Construction Bid** \$25,411,425



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#### RESOURCE RATE AND USAGE DETAIL

#### **SUMMARY BY RESOURCE TYPE**

Cost Type	Labor	Equipment	Material	Subcontract	Total
Direct* Cost	\$3,720,705	\$2,534,491	\$2,731,223	\$5,722,014	\$14,708,432
Indirect* Cost	\$3,215,803	\$169,168	\$1,371,377	\$1,055,088	\$9,841,561
Indirect Cost (unclassified)	-	-	\$4,030,125	-	φ9,641,361
Owner Allowances	\$0	\$0	\$400,000	\$0	\$400,000
Escalation from NTP	\$138,964	\$42,204	\$101,179	\$179,085	\$461,432
Escalated Construction Bid	\$7,075,473	\$2,745,862	\$8,633,903	\$6,956,186	\$25,411,425
Relative Direct* + Indirect* Costs	34%	13%	20%	33%	100% on \$20.519.868

#### **SUMMARY BY COST TYPE**

			% Direct, Equipment	
Cost Type	Total	% Total Estimate	and Plant Cost	Applicable Cost Items
Mobilization/Demobilization	\$622,462	2.5%	4.0%	025 - 026
Directs, Equipment, and Plant	\$15,687,982	62.9%	100.0%	From 001 - 024, 027 -
Overhead/Profit	\$8,239,549	33.0%	52.5%	028 - 033
Owner Allowances	\$400,000	1.6%	2.5%	Between 022 - 023
Unescalated Construction Bid	\$24,949,993		159.0%	

#### **UNESCALATED TIME-RELATED INDIRECT COST BREAKDOWN**

Cost Type	Average Cost/month Exclude?	Monthly costs include adjustments totalling 2.4% for:
Lineal/Other Plant Equipment CFC	\$546 /mo	- bonds, insurance, and taxes
GP operation/maintenance	\$26,534 /mo	- financing charges
Weekend maintenance		but exclude contractor contingency
Field supervision	\$115,565 /mo	
OH maintenance/service	\$45,313 /mo	
Total	\$187,958 /mo (excluding ma	rkup) \$227,268 /mo (including markup)

#### **DISTRIBUTION OF PROJECT NON-WORKDAYS**

														Calendar	rotai
Type of non-workday	Jan	Feb	Mar	r	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year	Project
Holiday		1	1	0	0	1	0	1	0	1	0	2	2	9	19
Inclement Weather Day		2	2	1	0	0	0	0	0	0	0	2	2	9	21
Total		3	3	1	0	1	0	1	0	1	0	4	4	18	40



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#### **Tunnel Rehab Study - BEST CASE Ground Support**

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#### OPINION OF PROBABLE ESCALATED CONSTRUCTION BID INCLUDING OWNER CONTINGENCY

No. Item or Group Item Description	Group Item Cost	Item Quantity/Unit	Item Unit Cost	Status Item Cost
001 South Site Preparation	Group item coot	LS	tem out ood	\$56,669
002 North Site Preparation		LS		\$56,669
Site Preparation	\$113,337			***,***
003 South Site-Excav./Supp. Collapsed w/o Spiles	. ,	211 lf	\$3,922 /lf	\$829,151
004 South Site-Excav./Supp. Collapsed w Spiles		275 If	\$5,947 /lf	\$1,632,914
005 South Type 3 - Site Intact Tunnel Section		450 If	\$2,754 /lf	\$1,239,483
006 North Site - Existing Gunite Lined Section		140 lf	\$2,620 /lf	\$366,787
007 North Site Lean Concrete Backfilled Section		124 lf	\$4,553 /lf	\$564,605
008 North Site Intact Tunnel Section		843 If	\$2,750 /lf	\$2,317,984
009 North Site-Excav./Supp. Collapsed w/o Spiles		44 lf	\$3,974 /lf	\$172,859
010 North Site-Excav./Supp. Collapsed w Spiles		57 lf	\$5,979 /lf	\$337,833
Tunnel - Re-excavation and Support	\$7,461,616	2,143 LF	\$3,482 /LF	
011 Tunnel Sub Base w/ Drainage		2,143 LF	\$380 /LF	\$814,925
012 Tunnel Agg Base		2,143 LF	\$84.16 /LF	\$180,359
013 Tunnel Paving		2,143 LF	\$211 /LF	\$451,578
Tunnel Invert	\$1,446,862	2,143 LF	\$675 /LF	
014 Graffiti Protection		42,860 sf	\$4.12 /sf	\$176,455
015 Tunnel Water / Fire Protection		2,143 LF	\$380 /LF	\$814,340
016 Tunnel Power / Lighting / CCTV		2,143 LF	\$1,214 /LF	\$2,602,311
017 Tunnel Ventilation		2,143 LF	\$140 /LF	\$300,020
Tunnel Fire Life Safety	\$3,893,126	LS		
018 Geotechnical Instrumentation		LS		\$200,000
Instrumentation and Monitoring	\$200,000	LS		
019 Fill Existing boreholes		190 cf	\$135 /cf	\$25,677
020 South Portal Site Restoration		LS		\$41,809
021 North Portal Site Restoration		LS		\$41,809
Site Restoration	\$109,296	LS		
022 Hazardous Material Allowance	Allowance	LS		\$200,000
023 Portal Modifications	Allowance	LS		\$200,000
			Subtotal Direct Cost	\$13,624,236
024 Equipment Ownership not in Direct Cost			2.0% directs	\$272,321
025 General Mobilization		0.5 mo	2.0% unesc.bid	\$440,300
026 Demobilization/Punchlist		0.5 mo	0.7% unesc.bid	\$153,655
027 General Plant Operation/Maintenance		20.5 mo	\$25,961 /mo	\$532,192
028 Field Supervision		23.5 mo	\$110,213 /mo	\$2,590,001
029 Overhead Maintenance/Service		23.5 mo	\$44,541 /mo	\$1,046,720
030 Bonds, Insurance, and Taxes not in General Mob	ilization		2.1% unesc.bid	\$456,094
031 Contractor Markup			12.4% of cost	\$2,437,169
032 Financing Charges			0.3% unesc.bid	\$70,381
033 Contractor Contingency			2.5% unesc.bid	\$544,969
			Subtotal Indirect Cost	\$8,543,802
034 Escalation from NTP			1.6% unesc.bid	\$358,392
23.5 mo project duration after NTP			<b>Escalated Construction Bid</b>	\$22,526,430
035 Owner Contingency			19.6% esc.bid	\$4,425,300

Opinion of Probable Escalated Construction Bid including Owner Contingency \$26,951,730

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**Estimate Notes:** 

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#### CONSTRUCTION SCHEDULE AND MONTHLY PROGRESS PAYMENTS

A sticitus No. and Donasintina	Did A Du	r. Star	t End		Y	EAR ·	1				YEA	R 2					YEAR 3					YE	AR 4	ı				YE	R 5		
Activity No. and Description	Bid Amount (mo	s) mo	mo	J F M	A M	JJ	A S	ONE	J	F M	AMJ.	JA	SON	I D	J F	M	A M J J A	S	I N C	D J I	F M	ΑМ	JJ	A S	O N	DJ	F M	ΑМЈ	JA	S O	ND
NTP		1.0		▼ N1																											
Preliminary Submittals	2.	00 1.0	0 3.00																												
024 Equipment Mobilization	\$0 1.	3.0	0 4.00																												
025 General Mobilization	\$440,300 0.	50 3.0	0 3.50																												
026 Demobilization/Punchlist	\$153,655 0.	50 24.0	0 24.50																												
001 South Site Preparation	\$108,305 0.	50 4.0	0 4.50																												
002 North Site Preparation	\$108,305 0.	50 4.0	0 4.50																												
·																															
003 South Site-Excav./Supp. Collapsed w/o Spiles	\$1,584,671 2.	75 4.5	0 7.25																												
004 South Site-Excav./Supp. Collapsed w Spiles	\$3,120,821 6.	00 7.2	5 13.25																												
005 South Type 3 - Site Intact Tunnel Section	\$2,368,897 3.	75 13.2	5 17.00																												
•																															
006 North Site - Existing Gunite Lined Section	\$701,002 1.	25 4.5	0 5.75																												
007 North Site Lean Concrete Backfilled Section	\$1,079,072 2.	00 5.7	5 7.75																												1
008 North Site Intact Tunnel Section			5 15.25																												1
009 North Site-Excav./Supp. Collapsed w/o Spiles			5 15.75																												
010 North Site-Excav./Supp. Collapsed w Spiles	\$645,665 1	25 15.7	5 17.00																												
011 Tunnel Sub Base w/ Drainage			0 18.00																												1
012 Tunnel Agg Base	\$344,701 1.	00 18.0	0 19.00																												٦
013 Tunnel Paving (Note 4b)	\$474,157 1.	00 19.0	0 20.00																												1
014 Graffiti Protection (Note 4b)	\$185,277 0.	50 20.0	0 20.50																												1
015 Tunnel Water / Fire Protection (Note 4b)	\$855,057 1.	50 20.0	0 21.50																												
016 Tunnel Power / Lighting / CCTV (Note 4b)	\$2,732,427 3.	00 20.0	0 23.00																												
017 Tunnel Ventilation (Note 4b)	\$315,021 3.	00 20.0	0 23.00																												
018 Geotechnical Instrumentation	\$382,239 15.	75 3.5	0 19.25																												1
																														$\top$	1
019 Fill Existing boreholes	\$49,074 0.	25 17.0	0 17.25																											$\top$	1
020 South Portal Site Restoration			0 24.00																												1
021 North Portal Site Restoration	\$79,905 1.	00 23.0	0 24.00																											$\Box$	1
022 Hazardous Material Allowance (Note 4a)	\$200,000																													$\top$	1
023 Portal Modifications (Note 4a)	\$200,000																													$\Box$	1
Opinion of Probable Escalated Construction Bid, Duration, and Monthly Progress Payments	\$22,526,430 23	.5 mon	ths		\$407.2K	\$728.5K \$1,040.4K	\$1,026.0K \$999.7K	\$1,021.6K	\$1,021.6K	\$1,021.6K \$1,096.9K	\$1,122.0K \$1,136.8K \$1,055.3K	\$350.5K	\$456.2K \$1,682.6K	\$965.0K	\$151.8K \$1,252.3K																
					\$7	266.5	 5K		╁		\$13.45	5.8K		1			\$1.404.1K					\$(	0.0K					\$0	0K		

<sup>1.</sup> Project calendar is based on 9 observed holidays and 9 critical inclement weather days per year distributed monthly as shown on 'Resources' sheet.



<sup>2.</sup> Payments are made 30 days after pay applications including 10% retention which is reduced to 5% after 75% is earned, 17 months after NTP. Payments releasing retention bolded. 50% of the contract is earned 15 months after NTP.

<sup>3.</sup> Spread \$8.5M indirects + \$0.4M escalation - \$0.6M mob. Mob/demob paid as scheduled. Bond paid at NTP.

<sup>4. (</sup>a) Allowances cannot be scheduled so progress payments do not reflect their payment and sum to the total bid amount less the \$400K in Allowances. (b) Indirect costs spread limited to a 5% subcontract markup.

ProjectClientJob No.EstimatorRevComputed onAlto TunnelMarin County5581.0TLP09/22/2017

#### **Tunnel Rehab Study - Worst Case Ground Support**

7:30 AM

#### OPINION OF PROBABLE ESCALATED CONSTRUCTION BID INCLUDING OWNER CONTINGENCY

No.   Item or Group Item Description   Group Item Cost   Item OuntBufford   Salue   Item Cost   Sept.   Sept					
Site Preparation   South Site-Excav/Supp. Collapsed w/s Spiles   556 lf   \$3,919 /lf   \$3,299,373		Group Item Cost	Item Quantity/Unit	Item Unit Cost	Status Item Cost
Site Preparation   \$113,337     OSS Outh Site-Excav/Supp. Collapsed wo Spiles   556			_		\$56,669
003 South Site-Excav/Supp. Collapsed w Spiles   428 If   \$3,919 /ff   \$3,299,373   \$3,290,373   \$3,10,541   \$3,150,180   \$3,893,17f   \$3,150,180   \$3,980,7f   \$	002 North Site Preparation		LS		\$56,669
004 South Site-Excav/Supp. Collapsed w Spiles 05 North Site - Existing Gunite Lined Section 140 If \$2,639 / 1f \$3,69,497 006 North Site Lean Concrete Backfilled Section 124 If \$4,596 / 1f \$369,497 006 North Site Intact Tunnel Section 120 If \$2,775 / 1f \$3610,541 007 North Site Intact Tunnel Section 120 North Site Excav/Supp. Collapsed w Spiles 120 If \$2,775 / 1f \$3,105,180 008 North Site-Excav/Supp. Collapsed w Spiles 120 If \$2,775 / 1f \$3,105,180 009 North Site-Excav/Supp. Collapsed w Spiles 130 If \$3,920 / 1f \$3,920 / 1f \$3,150,180 009 North Site-Excav/Supp. Collapsed w Spiles 130 If \$3,921 / 1f \$3,920 / 1f		\$113,337			
005 North Site - Existing Gunite Lined Section   140 lf   \$2,639 lf   \$3,98,497   \$569,928   \$007 North Site Lean Concrete Backfilled Section   124 lf   \$4,596 lf   \$569,928   \$007 North Site Intact Tunnel Section   220 lf   \$4,596 lf   \$569,928   \$007 North Site Intact Tunnel Section   220 lf   \$4,596 lf   \$5,937 lf   \$5,900 lf   \$1,150,150   \$1008 North Site-Excav/Supp. Collapsed w/o Spiles   381 lf   \$5,937 lf   \$5,937 lf   \$2,262,575   \$1008 North Site-Excav/Supp. Collapsed w/o Spiles   381 lf   \$4,639 LF   \$101 Tunnel Pre-excavation and Support   \$9,940,588   \$2,143 LF   \$4,639 LF   \$101 Tunnel Agg Base   \$2,143 LF   \$4,639 LF   \$101 Tunnel Agg Base   \$2,143 LF   \$4,639 LF   \$100,621   \$101 Tunnel Paving   \$2,143 LF   \$4,863 LF   \$10,621   \$101 Tunnel Paving   \$2,143 LF   \$84,28 LF   \$10,621   \$101 Tunnel Paving   \$2,143 LF   \$84,28 LF   \$10,621	003 South Site-Excav./Supp. Collapsed w/o Spiles		428 If	\$3,919 /lf	\$1,678,495
006 North Site Lean Concrete Backfilled Section   124 lf   \$4,596 /if   \$5,69,928   007 North Site Intact Tunnel Section   220 lf   \$2,775 /if   \$610,541   008 North Site-Excav/Supp. Collapsed w/o Spiles   293 lf   \$3,920 /if   \$3,150,180   009 North Site-Excav/Supp. Collapsed w/Spiles   293 lf   \$5,937 /if   \$2,262,575   100 North Site-Excav/Supp. Collapsed w/Spiles   2,143 LF   \$4,639 /LF   \$4,639 /LF   \$10,625   100 North Site-Excav/Supp. Collapsed w/Spiles   2,143 LF   \$4,639 /LF   \$4,649 /LF   \$4,64	004 South Site-Excav./Supp. Collapsed w Spiles		556 If	\$5,931 /lf	\$3,299,373
North Site Intact Tunnel Section   220   f   \$2.775 / f   \$610,541	005 North Site - Existing Gunite Lined Section		140 lf	\$2,639 /lf	\$369,497
North Site Excav /Supp. Collapsed w Spiles         293 lf         \$3,920 /ff         \$1,150,180           009 North Site Excav /Supp. Collapsed w Spiles         381 lf         \$3,920 /ff         \$2,262,575           Tunnel Re-excaval on and Support         \$9,940,588         2,143 LF         \$4,639 /LF         \$815,187           101 Tunnel Sub Base w Drainage         2,143 LF         \$84 &28 /LF         \$1510,621           101 Tunnel Agg Base         2,143 LF         \$84 &28 /LF         \$180,621           101 Tunnel Paving         \$1,447,392         2,143 LF         \$211 /LF         \$451,584           Tunnel Paving         \$1,447,392         2,143 LF         \$300 /LF         \$16,455           013 Graffill Protection         \$2,602,372         \$176,455         \$41,21 /lF         \$25,002,327           014 Tunnel Water / Fire Protection         \$2,143 LF         \$300 /LF         \$814,340           015 Tunnel Power / Lighting / CCTV         \$2,143 LF         \$12,014 /LF         \$300,002           10 Tunnel Fire Life Safety         \$18         LS         \$2,000,000           10 Geotechnical Instrumentation         LS         \$2,000,000           118 Fill Existing boreholes         LS         \$4,000           20 Hazardous Material Allowance         Allowance         LS	006 North Site Lean Concrete Backfilled Section		124 lf	\$4,596 /lf	\$569,928
North Site-Excav:/Supp. Collapsed w Spiles   \$9,940,588   \$2,143 LF   \$4,639 /LF   \$10 Tunnel - Re-excavation and Support   \$9,940,588   \$2,143 LF   \$380 /LF   \$110 Tunnel Agg Base w Drainage   \$2,143 LF   \$380 /LF   \$110 /LF   \$150 /LF   \$110 /LF   \$150 /LF   \$	007 North Site Intact Tunnel Section		220 If	\$2,775 /lf	\$610,541
Tunnel - Re-excavation and Support   \$9,940,588   2,143 LF   \$4,639 /LF   \$10 miner   \$1	008 North Site-Excav./Supp. Collapsed w/o Spiles		293 If	\$3,920 /lf	\$1,150,180
101   101	009 North Site-Excav./Supp. Collapsed w Spiles		381 lf	\$5,937 /lf	\$2,262,575
11 Tunnel Agg Base	Tunnel - Re-excavation and Support	\$9,940,588	2,143 LF	\$4,639 /LF	
1	010 Tunnel Sub Base w/ Drainage		2,143 LF	\$380 /LF	\$815,187
Tunnel Invert         \$1,447,392         2,143 LF         \$675 LF           013 Graffiti Protection         42,860 sf         \$4.12 /sf         \$176,455           104 Tunnel Water / Fire Protection         2,143 LF         \$3800 /LF         \$214,45 LF           015 Tunnel Power / Lighting / CCTV         2,143 LF         \$1,214 /LF         \$2,602,327           016 Tunnel Ventilation         2,143 LF         \$140 /LF         \$200,002           Tunnel Fire Life Safety         \$3,893,141         LS         \$140 /LF         \$200,000           107 Geotechnical Instrumentation Instrumentation and Monitoring Instrumentation and Monitoring         \$200,000         LS         \$200,000           108 Fill Existing boreholes         190 cf         \$140 /cf         \$26,684           019 South Portal Site Restoration         LS         \$41,809           201 Hazardous Material Allowance         Allowance         LS         \$200,000           21 Hazardous Material Allowance         Allowance         LS         \$200,000           22 Portal Modifications         \$110,302         LS         \$22% directs         \$200,000           23 Equipment Ownership not in Direct Cost         0.5 mo         1.8% unesc.bid         \$47,729           25 General Mobilization         0.5 mo         0.6% unesc.bid	011 Tunnel Agg Base		2,143 LF	\$84.28 /LF	\$180,621
13 Graffiti Protection	012 Tunnel Paving		2,143 LF	\$211 /LF	\$451,584
14 Tunnel Water / Fire Protection	Tunnel Invert	\$1,447,392	2,143 LF	\$675 /LF	
014 Tunnel Water / Fire Protection         2,143 LF         \$380 /LF         \$814,340           015 Tunnel Power / Lighting / CCTV         2,143 LF         \$1,214 /LF         \$2,602,327           106 Tunnel Ventilation         2,143 LF         \$140 /LF         \$2,602,327           107 Geotechnical Instrumentation         LS         S         \$200,000           Instrumentation and Monitoring         \$200,000         LS         \$200,000           18 Fill Existing boreholes         190 cf         \$140 /cf         \$26,684           019 South Portal Site Restoration         LS         \$41,809           20 North Portal Site Restoration         LS         \$41,809           3te Restoration         \$110,302         LS         \$200,000           21 Hazardous Material Allowance         Allowance         LS         \$200,000           22 Portal Modifications         Allowance         LS         \$360,604           22 General Mobilization         0.5 mo         1.8% unesc.bid         \$478,729           225 Demobilization/Punchlist         0.5 mo         0.6% unesc.bid         \$156,699           226 General Plant Operation/Maintenance         25.3 mo         \$25,908 /mo         \$655,477           227 Field Supervision         28.3 mo         \$114,527 /mo         \$3,2	013 Graffiti Protection		42,860 sf	\$4.12 /sf	\$176,455
15 Tunnel Power / Lighting / CCTV	014 Tunnel Water / Fire Protection		2,143 LF	\$380 /LF	\$814,340
Tunnel Fire Life Safety         \$3,893,141         LS           017 Geotechnical Instrumentation         LS         \$200,000           Instrumentation and Monitoring         \$200,000         LS           018 Fill Existing boreholes         190 cf         \$140 /cf         \$26,684           019 South Portal Site Restoration         LS         \$41,809           Site Restoration         LS         \$41,809           Site Restoration         \$110,302         LS           221 Hazardous Material Allowance         LS         \$200,000           022 Portal Modifications         Allowance         LS         \$200,000           022 Portal Modifications         Allowance         LS         \$200,000           022 Equipment Ownership not in Direct Cost         Subtotal Direct Cost         \$200,000           023 Equipment Ownership not in Direct Cost         2.2% directs         \$360,604           024 General Mobilization         0.5 mo         1.8% unesc.bid         \$478,729           025 Demobilization/Punchlist         0.5 mo         0.6% unesc.bid         \$156,699           026 General Plant Operation/Maintenance         25.3 mo         \$25,908 /mo         \$655,477           027 Field Supervision         28.3 mo         \$114,527 /mo         \$3,241,104	015 Tunnel Power / Lighting / CCTV		2,143 LF	\$1,214 /LF	
Tunnel Fire Life Safety         \$3,893,141         LS           017 Geotechnical Instrumentation         LS         \$200,000           Instrumentation and Monitoring         \$200,000         LS           018 Fill Existing boreholes         190 cf         \$140 /cf         \$26,684           019 South Portal Site Restoration         LS         \$41,809           Site Restoration         LS         \$41,809           Site Restoration         \$110,302         LS           221 Hazardous Material Allowance         LS         \$200,000           022 Portal Modifications         Allowance         LS         \$200,000           022 Portal Modifications         Allowance         LS         \$200,000           022 Equipment Ownership not in Direct Cost         Subtotal Direct Cost         \$200,000           023 Equipment Ownership not in Direct Cost         2.2% directs         \$360,604           024 General Mobilization         0.5 mo         1.8% unesc.bid         \$478,729           025 Demobilization/Punchlist         0.5 mo         0.6% unesc.bid         \$156,699           026 General Plant Operation/Maintenance         25.3 mo         \$25,908 /mo         \$655,477           027 Field Supervision         28.3 mo         \$114,527 /mo         \$3,241,104	5 5		2,143 LF		\$300,020
Second   S	Tunnel Fire Life Safety	\$3,893,141	LS		
Instrumentation and Monitoring   \$200,000   LS		. , ,	LS		\$200,000
019 South Portal Site Restoration         LS         \$41,809           020 North Portal Site Restoration         \$110,302         LS           Site Restoration         \$110,302         LS           021 Hazardous Material Allowance         Allowance         LS         \$200,000           022 Portal Modifications         Allowance         LS         \$200,000           023 Equipment Ownership not in Direct Cost         Subtotal Direct Cost         \$16,104,761           023 Equipment Ownership not in Direct Cost         2.2% directs         \$360,604           024 General Mobilization         0.5 mo         1.8% unesc.bid         \$478,729           025 Demobilization/Punchlist         0.5 mo         0.6% unesc.bid         \$156,699           026 General Plant Operation/Maintenance         25.3 mo         \$25,908 /mo         \$655,477           027 Field Supervision         28.3 mo         \$114,527 /mo         \$3,241,104           028 Overhead Maintenance/Service         28.3 mo         \$44,318 /mo         \$1,254,208           029 Bonds, Insurance, and Taxes not in General Mobilization         2.0% unesc.bid         \$542,442           030 Contractor Markup         13.0% of cost         \$3,058,189           031 Financing Charges         0.4% unesc.bid         \$94,956           032 Contract		\$200,000	LS		, ,
019 South Portal Site Restoration         LS         \$41,809           020 North Portal Site Restoration         \$110,302         LS           Site Restoration         \$110,302         LS           021 Hazardous Material Allowance         Allowance         LS         \$200,000           022 Portal Modifications         Allowance         LS         \$200,000           023 Equipment Ownership not in Direct Cost         Subtotal Direct Cost         \$16,104,761           023 Equipment Ownership not in Direct Cost         2.2% directs         \$360,604           024 General Mobilization         0.5 mo         1.8% unesc.bid         \$478,729           025 Demobilization/Punchlist         0.5 mo         0.6% unesc.bid         \$156,699           026 General Plant Operation/Maintenance         25.3 mo         \$25,908 /mo         \$655,477           027 Field Supervision         28.3 mo         \$114,527 /mo         \$3,241,104           028 Overhead Maintenance/Service         28.3 mo         \$44,318 /mo         \$1,254,208           029 Bonds, Insurance, and Taxes not in General Mobilization         2.0% unesc.bid         \$542,442           030 Contractor Markup         13.0% of cost         \$3,058,189           031 Financing Charges         0.4% unesc.bid         \$94,956           032 Contract	018 Fill Existing boreholes	. ,	190 cf	\$140 /cf	\$26.684
O20 North Portal Site Restoration         \$110,302 District         LS         \$41,809           021 Hazardous Material Allowance         Allowance         LS         \$200,000           022 Portal Modifications         Allowance         LS         \$200,000           023 Equipment Ownership not in Direct Cost         Subtotal Direct Cost         \$16,104,761           023 Equipment Ownership not in Direct Cost         2.2% directs         \$360,604           024 General Mobilization         0.5 mo         1.8% unesc.bid         \$478,729           025 Demobilization/Punchlist         0.5 mo         0.6% unesc.bid         \$156,699           026 General Plant Operation/Maintenance         25.3 mo         \$25,908 /mo         \$655,477           027 Field Supervision         28.3 mo         \$114,527 /mo         \$3,241,104           028 Overhead Maintenance/Service         28.3 mo         \$14,318 /mo         \$1,254,208           029 Bonds, Insurance, and Taxes not in General Mobilization         2.0% unesc.bid         \$542,442           030 Contractor Markup         13.0% of cost         \$3,058,189           031 Financing Charges         0.4% unesc.bid         \$644,190           032 Contractor Contingency         2.4% unesc.bid         \$644,190           033 Escalation from NTP         Escalated Construction Bid <td></td> <td></td> <td>LS</td> <td>•</td> <td></td>			LS	•	
Site Restoration         \$110,302 Do Iterated State			_		
021 Hazardous Material Allowance         Allowance         LS         \$200,000           022 Portal Modifications         Allowance         LS         \$200,000           Subtotal Direct Cost         \$16,104,761           023 Equipment Ownership not in Direct Cost         2.2% directs         \$360,604           024 General Mobilization         0.5 mo         1.8% unesc.bid         \$478,729           025 Demobilization/Punchlist         0.5 mo         0.6% unesc.bid         \$156,699           026 General Plant Operation/Maintenance         25.3 mo         \$25,908 /mo         \$655,477           027 Field Supervision         28.3 mo         \$114,527 /mo         \$3,241,104           028 Overhead Maintenance/Service         28.3 mo         \$144,318 /mo         \$1,254,208           029 Bonds, Insurance, and Taxes not in General Mobilization         2.0% unesc.bid         \$542,442           030 Contractor Markup         13.0% of cost         \$3,058,189           031 Financing Charges         0.4% unesc.bid         \$94,956           032 Contractor Contingency         2.4% unesc.bid         \$644,190           Subtotal Indirect Cost         \$10,486,598           033 Escalation from NTP         Escalated Construction Bid         \$27,236,336		\$110.302	_		¥,eee
O22 Portal Modifications         Allowance         LS         \$200,000           023 Equipment Ownership not in Direct Cost         2.2% directs         \$360,604           024 General Mobilization         0.5 mo         1.8% unesc.bid         \$478,729           025 Demobilization/Punchlist         0.5 mo         0.6% unesc.bid         \$156,699           026 General Plant Operation/Maintenance         25.3 mo         \$25,908 /mo         \$655,477           027 Field Supervision         28.3 mo         \$114,527 /mo         \$3,241,104           028 Overhead Maintenance/Service         28.3 mo         \$44,318 /mo         \$1,254,208           029 Bonds, Insurance, and Taxes not in General Mobilization         2.0% unesc.bid         \$542,442           030 Contractor Markup         13.0% of cost         \$3,058,189           031 Financing Charges         0.4% unesc.bid         \$94,956           032 Contractor Contingency         2.4% unesc.bid         \$644,190           033 Escalation from NTP         2.4% unesc.bid         \$644,977           28.25 mo project duration after NTP         Escalated Construction Bid         \$27,236,336		. ,	_		\$200,000
D23 Equipment Ownership not in Direct Cost         Subtotal Direct Cost         \$16,104,761           024 General Mobilization         0.5 mo         1.8% unesc.bid         \$478,729           025 Demobilization/Punchlist         0.5 mo         0.6% unesc.bid         \$156,699           026 General Plant Operation/Maintenance         25.3 mo         \$25,908 /mo         \$655,477           027 Field Supervision         28.3 mo         \$114,527 /mo         \$3,241,104           028 Overhead Maintenance/Service         28.3 mo         \$144,318 /mo         \$1,254,208           029 Bonds, Insurance, and Taxes not in General Mobilization         2.0% unesc.bid         \$542,442           030 Contractor Markup         13.0% of cost         \$3,058,189           031 Financing Charges         0.4% unesc.bid         \$94,956           032 Contractor Contingency         2.4% unesc.bid         \$644,190           Subtotal Indirect Cost         \$10,486,598           033 Escalation from NTP         2.4% unesc.bid         \$644,977           28.25 mo project duration after NTP         Escalated Construction Bid         \$27,236,336					' '
023 Equipment Ownership not in Direct Cost         2.2% directs         \$360,604           024 General Mobilization         0.5 mo         1.8% unesc.bid         \$478,729           025 Demobilization/Punchlist         0.5 mo         0.6% unesc.bid         \$156,699           026 General Plant Operation/Maintenance         25.3 mo         \$25,908 /mo         \$655,477           027 Field Supervision         28.3 mo         \$114,527 /mo         \$3,241,104           028 Overhead Maintenance/Service         28.3 mo         \$44,318 /mo         \$1,254,208           029 Bonds, Insurance, and Taxes not in General Mobilization         2.0% unesc.bid         \$542,442           030 Contractor Markup         13.0% of cost         \$3,058,189           031 Financing Charges         0.4% unesc.bid         \$94,956           032 Contractor Contingency         2.4% unesc.bid         \$644,190           Subtotal Indirect Cost         \$10,486,598           033 Escalation from NTP         2.4% unesc.bid         \$644,977           28.25 mo project duration after NTP         Escalated Construction Bid         \$27,236,336	OLL I OTAL MOUNICATIONS	71101141100		Subtatal Direct Cost	
024 General Mobilization         0.5 mo         1.8% unesc.bid         \$478,729           025 Demobilization/Punchlist         0.5 mo         0.6% unesc.bid         \$156,699           026 General Plant Operation/Maintenance         25.3 mo         \$25,908 /mo         \$655,477           027 Field Supervision         28.3 mo         \$114,527 /mo         \$3,241,104           028 Overhead Maintenance/Service         28.3 mo         \$44,318 /mo         \$1,254,208           029 Bonds, Insurance, and Taxes not in General Mobilization         2.0% unesc.bid         \$542,442           030 Contractor Markup         13.0% of cost         \$3,058,189           031 Financing Charges         0.4% unesc.bid         \$94,956           032 Contractor Contingency         2.4% unesc.bid         \$644,190           Subtotal Indirect Cost         \$10,486,598           033 Escalation from NTP         2.4% unesc.bid         \$644,977           28.25 mo project duration after NTP         Escalated Construction Bid         \$27,236,336					
025 Demobilization/Punchlist       0.5 mo       0.6% unesc.bid       \$156,699         026 General Plant Operation/Maintenance       25.3 mo       \$25,908 /mo       \$655,477         027 Field Supervision       28.3 mo       \$114,527 /mo       \$3,241,104         028 Overhead Maintenance/Service       28.3 mo       \$44,318 /mo       \$1,254,208         029 Bonds, Insurance, and Taxes not in General Mobilization       2.0% unesc.bid       \$542,442         030 Contractor Markup       13.0% of cost       \$3,058,189         031 Financing Charges       0.4% unesc.bid       \$94,956         032 Contractor Contingency       2.4% unesc.bid       \$644,190         Subtotal Indirect Cost       \$10,486,598         033 Escalation from NTP       2.4% unesc.bid       \$644,977         28.25 mo project duration after NTP       Escalated Construction Bid       \$27,236,336	• • •				
026 General Plant Operation/Maintenance         25.3 mo         \$25,908 /mo         \$655,477           027 Field Supervision         28.3 mo         \$114,527 /mo         \$3,241,104           028 Overhead Maintenance/Service         28.3 mo         \$44,318 /mo         \$1,254,208           029 Bonds, Insurance, and Taxes not in General Mobilization         2.0% unesc.bid         \$542,442           030 Contractor Markup         13.0% of cost         \$3,058,189           031 Financing Charges         0.4% unesc.bid         \$94,956           032 Contractor Contingency         2.4% unesc.bid         \$644,190           Subtotal Indirect Cost         \$10,486,598           033 Escalation from NTP         2.4% unesc.bid         \$644,977           28.25 mo project duration after NTP         Escalated Construction Bid         \$27,236,336					' '
027 Field Supervision       28.3 mo       \$114,527 /mo       \$3,241,104         028 Overhead Maintenance/Service       28.3 mo       \$44,318 /mo       \$1,254,208         029 Bonds, Insurance, and Taxes not in General Mobilization       2.0% unesc.bid       \$542,442         030 Contractor Markup       13.0% of cost       \$3,058,189         031 Financing Charges       0.4% unesc.bid       \$94,956         032 Contractor Contingency       2.4% unesc.bid       \$644,190         Subtotal Indirect Cost       \$10,486,598         033 Escalation from NTP       2.4% unesc.bid       \$644,977         28.25 mo project duration after NTP       Escalated Construction Bid       \$27,236,336					
028 Overhead Maintenance/Service         28.3 mo         \$44,318 /mo         \$1,254,208           029 Bonds, Insurance, and Taxes not in General Mobilization         2.0% unesc.bid         \$542,442           030 Contractor Markup         13.0% of cost         \$3,058,189           031 Financing Charges         0.4% unesc.bid         \$94,956           032 Contractor Contingency         2.4% unesc.bid         \$644,190           Subtotal Indirect Cost         \$10,486,598           033 Escalation from NTP         2.4% unesc.bid         \$644,977           28.25 mo project duration after NTP         Escalated Construction Bid         \$27,236,336			25.3 mo	• •	\$655,477
029 Bonds, Insurance, and Taxes not in General Mobilization       2.0% unesc.bid       \$542,442         030 Contractor Markup       13.0% of cost       \$3,058,189         031 Financing Charges       0.4% unesc.bid       \$94,956         032 Contractor Contingency       2.4% unesc.bid       \$644,190         Subtotal Indirect Cost       \$10,486,598         033 Escalation from NTP       2.4% unesc.bid       \$644,977         28.25 mo project duration after NTP       Escalated Construction Bid       \$27,236,336	027 Field Supervision		28.3 mo	\$114,527 /mo	\$3,241,104
030 Contractor Markup         13.0% of cost         \$3,058,189           031 Financing Charges         0.4% unesc.bid         \$94,956           032 Contractor Contingency         2.4% unesc.bid         \$644,190           Subtotal Indirect Cost         \$10,486,598           033 Escalation from NTP         2.4% unesc.bid         \$644,977           28.25 mo project duration after NTP         Escalated Construction Bid         \$27,236,336	028 Overhead Maintenance/Service		28.3 mo	\$44,318 /mo	\$1,254,208
031 Financing Charges         0.4% unesc.bid         \$94,956           032 Contractor Contingency         2.4% unesc.bid         \$644,190           Subtotal Indirect Cost         \$10,486,598           033 Escalation from NTP         2.4% unesc.bid         \$644,977           28.25 mo project duration after NTP         Escalated Construction Bid         \$27,236,336	029 Bonds, Insurance, and Taxes not in General Mobil	lization		2.0% unesc.bid	\$542,442
032 Contractor Contingency         2.4% unesc.bid         \$644,190           Subtotal Indirect Cost         \$10,486,598           033 Escalation from NTP         2.4% unesc.bid         \$644,977           28.25 mo project duration after NTP         Escalated Construction Bid         \$27,236,336	030 Contractor Markup			13.0% of cost	\$3,058,189
Subtotal Indirect Cost \$10,486,598 033 Escalation from NTP 2.4% unesc.bid \$644,977 28.25 mo project duration after NTP Escalated Construction Bid \$27,236,336	031 Financing Charges			0.4% unesc.bid	\$94,956
033 Escalation from NTP2.4% unesc.bid\$644,97728.25 mo project duration after NTPEscalated Construction Bid\$27,236,336	032 Contractor Contingency			2.4% unesc.bid	\$644,190
28.25 mo project duration after NTP Escalated Construction Bid \$27,236,336				Subtotal Indirect Cost	\$10,486,598
· · · · · · · · · · · · · · · · · · ·	033 Escalation from NTP			2.4% unesc.bid	\$644,977
034 Owner Contingency         19.7% esc.bid         \$5,367,300	28.25 mo project duration after NTP			Escalated Construction Bid	\$27,236,336
	034 Owner Contingency			19.7% esc.bid	\$5,367,300

Opinion of Probable Escalated Construction Bid including Owner Contingency

\$32,603,636

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Summary p1; Schedule p2

**Estimate Notes:** 

0.651149



Project Client Job No. Estimator Rev Computed on Alto Tunnel
Alto Tunnel Rehab Study - Worst Case Ground Support

Client Job No. Estimator Rev Computed on Marin County

Marin County

7:30 AM

#### CONSTRUCTION SCHEDULE AND MONTHLY PROGRESS PAYMENTS

Activity No. and Description	Bid Amount Du	r. Sta	rt End	ı	YEAR	R 1					YEAI	₹2					YEAR 3					YEA	R 4					YEAR	5	
Activity No. and Description	mo (mo	s) mo	mo	J	FMAMJ.	JA	SO	N D	JF	F M	AMJ.	JA	S O	N D	JF	F M	A M J J A	SC	N D	J F	M A	ΜJ	JA	S O	N D	J F N	ΙΑΙ	ΛJJ	A S	ON
NTP		1.0	00	▼	NTP: Month 1	1.0																								П
Preliminary Submittals	2.0	00 1.0	00 3.0																											П
023 Equipment Mobilization	\$0 1.	00 3.0	00 4.0	0																										П
024 General Mobilization	\$478,729 0.	50 3.0	00 3.5	0																										П
025 Demobilization/Punchlist	\$156,699 0.	50 28.7	75 29.2	:5																										ī
001 South Site Preparation	\$107,944 0.	50 4.0	00 4.5	0																										
002 North Site Preparation	\$107,944 0.		00 4.5																											П
•																														П
003 South Site-Excav./Supp. Collapsed w/o Spiles	\$3,197,249 5.	50 4.5	50 10.0	0																										П
004 South Site-Excav./Supp. Collapsed w Spiles	\$6,284,747 11.	50 10.0	00 21.5	0																										П
																														П
				T																										П
																														П
005 North Site - Existing Gunite Lined Section	\$703,830 1.3	25 4.5	50 5.7	5																										П
006 North Site Lean Concrete Backfilled Section	\$1,085,616 2.0	00 5.7	75 7.7	'5																										П
007 North Site Intact Tunnel Section			75 9.5																											П
008 North Site-Excav./Supp. Collapsed w/o Spiles	\$2,190,899 4.5		50 13.7																											ı
009 North Site-Excav./Supp. Collapsed w Spiles			75 21.2																											П
010 Tunnel Sub Base w/ Drainage			25 22.2																											П
011 Tunnel Agg Base			25 23.5																											П
012 Tunnel Paving (Note 4b)			50 24.7																											П
013 Graffiti Protection (Note 4b)			75 25.2																											П
014 Tunnel Water / Fire Protection (Note 4b)			75 26.2																											П
015 Tunnel Power / Lighting / CCTV (Note 4b)			75 27.7																											i
016 Tunnel Ventilation (Note 4b)			75 27.7																											i
017 Geotechnical Instrumentation			50 19.2																											i
	· · · · · · · · · · · · · · · · · · ·																													i
												+										$\top$							$\Box$	$\sqcap$
018 Fill Existing boreholes	\$50,829 0.5	25 21.2	25 21.5	0																									$\Box$	П
019 South Portal Site Restoration			75 28.7																											П
020 North Portal Site Restoration			75 28.7																										$\Box$	П
021 Hazardous Material Allowance (Note 4a)	\$200,000					$^{\dagger}$																							$\Box$	П
022 Portal Modifications (Note 4a)	\$200,000			T																									$\Box$	П
Opinion of Probable Escalated Construction Bid, Duration, and Monthly Progress Payments		.3 moi	nths		\$441.7K \$731.0K	\$1,047.2K	\$1,060.9K	\$1,076.0K \$977.6K	\$977.6K	X9.7.76\$ X6.066\$	\$1,030.8K \$1,030.8K \$1,030.8K	\$1,030.8K	\$1,014.5K <b>\$1,988.7K</b>	\$1,550.7K \$564.9K	\$310.9K	\$1,594.6K	\$1,100.4K \$761.6K \$187.9K \$1,416.2K													
					\$7,510	n ak					\$13,21	8 8K			$\vdash$		\$6.106.6K	,				\$0.	nk		ш			\$0.0K		

<sup>1.</sup> Project calendar is based on 9 observed holidays and 9 critical inclement weather days per year distributed monthly as shown on 'Resources' sheet.



<sup>2.</sup> Payments are made 30 days after pay applications including 10% retention which is reduced to 5% after 75% is earned, 20 months after NTP. Payments releasing retention bolded. 50% of the contract is earned 18 months after NTP.

<sup>3.</sup> Spread \$10.5M indirects + \$0.6M escalation - \$0.6M mob. Mob/demob paid as scheduled. Bond paid at NTP.

<sup>4. (</sup>a) Allowances cannot be scheduled so progress payments do not reflect their payment and sum to the total bid amount less the \$400K in Allowances. (b) Indirect costs spread limited to a 5% subcontract markup.

Project Client Job No. Estimator Rev Computed on Alto Tunnel Marin County 5581.0 TLP 0 6/20/2017 Tunnel Abandonment Study

#### OPINION OF PROBABLE ESCALATED CONSTRUCTION BID INCLUDING OWNER CONTINGENCY

No. Item or Group Item Description	Group Item Cost	Item Quantity/Unit	Item Unit Cost	Status	Item Cost
001 South Portal Site Preparation		LS			\$33,646
002 North Portal Site Preparation		LS			\$33,646
003 Underhill Site Preparation		LS			\$28,646
004 Camino Alto Site Preparation		LS			\$28,646
005 Stetson Ave. Site Preparation		LS			\$28,646
Site Preparation	\$153,231				
006 Fill Intact Tunnel w/ CLSM 267+00 to 272+98		6,205 cy	\$116 /cy		\$719,034
007 Fill Intact Tunnel w/ CLSM 276+00 to 277+62		1,764 cy	\$120 /cy		\$212,160
008 Fill Collapse Tunnel w/ Grout 258+75 to 267+00		5,736 cy	\$57.83 /cy		\$331,691
Phase 1 Backfill	\$1,262,885	LS	•		
009 Drill New Boreholes		2,160 lf	\$98.00 /lf		\$211,680
010 Contact Grout Remaining Voids		7,016 cy	\$80.36 /cy		\$563,816
011 Drill New Tertiary Boreholes		432 If	\$98.00 /lf		\$42,336
012 Tertiary Grouting		213 cy	\$768 /cy		\$163,340
Phase 2 / 3 Tunnel Backfill	\$981,172	ĹŚ	•		
013 South Portal Site Restoration		LS			\$15,452
014 North Portal Site Restoration		LS			\$15,452
015 Underhill Site Restoration		LS			\$10,452
016 Camino Alto Site Restoration		LS			\$10,452
017 Stetson Ave. Site Restoration		LS			\$10,452
Site Restoration	\$62,261	LS			
			Subtotal Direct Cost		\$2,459,549
018 Equipment Ownership not in Direct Cost			3.4% directs		\$82,500
019 General Mobilization		0.5 mo	3.9% unesc.bid		\$173,274
020 Demobilization/Punchlist		0.5 mo	1.8% unesc.bid		\$81,853
021 General Plant Operation/Maintenance		5.5 mo	\$18,863 /mo		\$103,745
022 Field Supervision		8.5 mo	\$44,734 /mo		\$380,238
023 Overhead Maintenance/Service		8.5 mo	\$43.176 /mo		\$366,992
024 Bonds, Insurance, and Taxes not in General Mobiliz	zation		5.3% unesc.bid		\$238,389
025 Contractor Markup			12.3% of cost		\$490,309
026 Financing Charges			0.3% unesc.bid		\$14,593
027 Contractor Contingency			2.2% unesc.bid		\$98,382
ozi cominacio: cominigono)			Subtotal Indirect Cost		\$2,030,274
028 Escalation from NTP			0.4% unesc.bid		\$18,939
8.5 mo project duration after NTP			Escalated Construction Bid		\$4,508,761
029 Owner Contingency			20.0% esc.bid		\$901,800
Oninion of Probable	e Escalated Co	onstruction Bid i	including Owner Contingency		\$5,410,561

Opinion of Probable Escalated Construction Bid including Owner Contingency \$5,410,561

#### **Table of Contents:**

Summary p1; Schedule p2; Direct Detail p3; Indirect Detail p9; Escalation Detail p12; Contingency Detail p12; Resource Rate and Usage Detail p13; Estimate Metrics p16

#### **Estimate Notes:**

0.825466



Project
Alto Tunnel

**Tunnel Abandonment Study** 

 Client
 Job No.
 Estimator
 Rev
 Computed on

 Marin County
 5581.0
 TLP
 0
 6/20/2017

 4:05 PM

#### CONSTRUCTION SCHEDULE AND MONTHLY PROGRESS PAYMENTS

Activity No. and Decernation	Bid Amount	Dur.	Start	End		YE	AR 1	I				YEAR 2					YE	EAR	3			Υ	EAR	4					YEA	R 5	
Activity No. and Description	Bid Amount	(mos)	mo	mo	J F M A	МЈ	J	ASON	D J	FN	ЛΑ	M J J A	SO	NE	DJ	F M	ΑМ	JJ	ASOND	J	F M	A M	JJ	A 5	3 O I	N D	J F	МА	M J	JA	SOND
NTP			1.00		▼ NTP:	Month	1.0																								
Preliminary Submittals		2.00	1.00	3.00																											
018 Equipment Mobilization	\$0			4.00																											
019 General Mobilization	\$173,274			3.50																											
020 Demobilization/Punchlist	\$81,853			9.50																											
001 South Portal Site Preparation	\$58,189			4.25																											
002 North Portal Site Preparation	\$58,189			4.25																											
003 Underhill Site Preparation	\$49,542																														
004 Camino Alto Site Preparation	\$49,542			4.25																											
005 Stetson Ave. Site Preparation	\$49,542	0.25	4.00	4.25																											
																														+	+
	4. 6.48 500	-																													
006 Fill Intact Tunnel w/ CLSM 267+00 to 272+98	\$1,243,523			5.00		4																								+	
007 Fill Intact Tunnel w/ CLSM 276+00 to 277+62	\$366,918			5.25			Н							+++																$\dashv$	
008 Fill Collapse Tunnel w/ Grout 258+75 to 267+00	\$573,638			5.75																										+	
009 Drill New Boreholes	\$366,087	1.00		6.75 8.25			H							+++																$\dashv$	
010 Contact Grout Remaining Voids	\$975,085	1.50 0.25		8.50																										$\dashv$	
011 Drill New Tertiary Boreholes	\$73,217 \$282,486			8.75										+	-	_									-	-				$\rightarrow$	
012 Tertiary Grouting 013 South Portal Site Restoration	\$282,486			9.00										+	-	_									-	-				$\rightarrow$	
014 North Portal Site Restoration	\$26,724			9.00			H			+	+-1			+	+			-		1	_					+				++	
015 Underhill Site Restoration	\$18,077	0.25		9.00						+	-																			+	
016 Camino Alto Site Restoration	\$18,077	0.25		9.00						+	-																			+	
017 Stetson Ave. Site Restoration	\$18,077									+	-																			+	
017 Stetsoff Ave. Site nestoration	φ10,077	0.25	6.75	9.00					<del>   </del>	++				+	+		+			+	_				+					$+\!\!+\!\!\!+$	<del></del>
Opinion of Probable Escalated Construction Bid, Duration, and Monthly Progress Payments	\$4,508,761	8.5	month	ıs		0,		\$550.9K \$617.6K \$594.6K \$303.2K																							
						\$4,50	8.80	K				\$0.0K					\$	30.0k	<			,	\$0.0K	(					\$0.0	JΚ	

<sup>1.</sup> Project calendar is based on 9 observed holidays and 9 critical inclement weather days per year distributed monthly as shown in the Estimate Metrics summary on page 16.



<sup>2.</sup> Payments are made 30 days after pay applications including 10% retention which is reduced to 5% after 75% is earned, 6 months after NTP. Payments releasing retention bolded. 50% of the contract is earned 6 months after NTP.

<sup>3.</sup> Spread \$2.0M indirects + \$0.0M escalation - \$0.3M mob. Mob/demob paid as scheduled. Bond paid at NTP.

ProjectClientJob No.EstimatorRevComputed onAlto TunnelMarin County5581.0TLP06/20/2017Tunnel Abandonment Study

#### DIRECT COST DETAIL

				IIILOT COST DETA	-				
No.		escription		Item Quantity/Unit	Prod	uction rate	Oth	ner fixed time	Total time
001	South	Portal Site Preparation		1 LS				5 days	5 work days
		manhours	Labor	Equipment		Material		Subcontract	Item Cost
		120	\$8,532	\$2,589		\$2,525	,	\$20,000	\$33,646
	1 000	Status (Additive)	8 hr/shift	Work schedule	<b>5</b> .	day/week	(	Other ST pay 0 hr/shift	Other OT pay  0 hr/shift
D/T	Code	Schedule factor (Normal)  Resource Description		1 shift/day Production rate		Resource Un	it Cost	Resource Quan	
R/T M	sts	Small tools and supplies	Resource Qty/Unit	Production rate	Factor	\$3.00		120.0 mł	•
S	cg	Clearing and grubbing	1.00 acre			\$10,000		1.00 ac	
S	tfnc	Temporary Construction Fenc	400.0 lf			\$25.00		400.0 lf	\$10,000
L	lab	General Labor (Grp 3)	400.0 II			\$63.14		40.00 mh	
Ĺ	lfm	Labor FM				\$67.17		40.00 mh	
L		Excavator >.5cy (OG2)				\$82.99		40.00 mh	
Ε		Cat 305 Mini-Exc 11k/.17cy				\$64.73		40.00 hr	\$2,589
M		Silt Fence / Straw Waddles	400.0 If			\$5.41	/lf	400.0 If	\$2,165
No.	Itam Da	escription		Item Quantity/Unit	Drad	untion rate	O+1	ner fixed time	Total time
		Portal Site Preparation		1 LS	Piou	uction rate	Oti	5 days	5 work days
002	1401111	manhours	Labor	Equipment		Material		Subcontract	Item Cost
		120	\$8,532	\$2,589		\$2,525		\$20,000	\$33,646
		Status (Additive)		Work schedule			(	Other ST pay	Other OT pay
	1.000	Schedule factor (Normal)	8 hr/shift	1 shift/day	5 (	day/week		0 hr/shift	0 hr/shift
R/T	Code	Resource Description	Resource Qty/Unit	Production rate	Factor	Resource Un		Resource Quan	
М	sts	Small tools and supplies				\$3.00		120.0 mh	
S	cg	Clearing and grubbing	1.00 acre			\$10,000		1.00 ac	' '
S	tfnc	Temporary Construction Fenc	400.0 If			\$25.00		400.0 lf	\$10,000
L	lab	General Labor (Grp 3)				\$63.14		40.00 mh	+ ,
L	lfm	Labor FM				\$67.17		40.00 mh	' '
Ĺ		Excavator >.5cy (OG2)				\$82.99		40.00 mh	' '
E M		Cat 305 Mini-Exc 11k/.17cy Silt Fence / Straw Waddles	400.0 If			\$64.73 \$5.41		40.00 hr 400.0 lf	\$2,589 \$2,165
IVI	swhhi	Joil Ferice / Straw Waddles	400.0 11			φ5.41	/11	400.0 11	φ2,105
No.	Item De	escription		Item Quantity/Unit	Prod	uction rate	Oth	ner fixed time	Total time
003	Unde	rhill Site Preparation		1 LS				5 days	5 work days
		manhours	Labor	Equipment		Material		Subcontract	Item Cost
		120	\$8,532	\$2,589		\$2,525		\$15,000	\$28,646
		Status (Additive)		Work schedule			(	Other ST pay	Other OT pay
	1.000	Schedule factor (Normal)	8 hr/shift	1 shift/day	5 (	day/week		0 hr/shift	0 hr/shift
R/T	Code	Resource Description	Resource Qty/Unit	Production rate	Factor	Resource Un		Resource Quan	
M	sts	Small tools and supplies				\$3.00		120.0 mh	
S	cg	Clearing and grubbing	0.50 acre			\$10,000		0.50 ac	
S	tfnc	Temporary Construction Fenc	400.0 If			\$25.00		400.0 lf	\$10,000
L	lab	General Labor (Grp 3)				\$63.14		40.00 mh	
L	lfm	Labor FM				\$67.17		40.00 mh	
L		Excavator >.5cy (OG2)				\$82.99		40.00 mh 40.00 hr	
E M		Cat 305 Mini-Exc 11k/.17cy Silt Fence / Straw Waddles	400.0 lf			\$64.73 \$5.41		400.0 If	\$2,589 \$2,165
IVI	swhhi	Joil Ferice / Straw Waddles	400.0 11			φ5.41	/11	400.0 11	φ2,105
No.	Item De	escription		Item Quantity/Unit	Prod	uction rate	Oth	ner fixed time	Total time
004	Cami	no Alto Site Preparation		1 LS				5 days	5 work days
		manhours	Labor	Equipment		Material		Subcontract	Item Cost
		120	\$8,532	\$2,589		\$2,525		\$15,000	\$28,646
		Status (Additive)		Work schedule		. , .	(	Other ST pay	Other OT pay
		Schedule factor (Normal)	8 hr/shift	1 shift/day		day/week		0 hr/shift	0 hr/shift
R/T	Code	Resource Description	Resource Qty/Unit	Production rate	Factor	Resource Un		Resource Quan	
M	sts	Small tools and supplies	0.50			\$3.00		120.0 mh	
S	cg	Clearing and grubbing	0.50 acre			\$10,000		0.50 ac	
S	tfnc	Temporary Construction Fenc	400.0 lf			\$25.00		400.0 lf	\$10,000
L L	lab Ifm	General Labor (Grp 3) Labor FM				\$63.14 \$67.17		40.00 mh 40.00 mh	
_	11111	Labor i W				φυ/.1/	/ 11 11 11	40.00 1111	φ∠,00/



	Tunne	el andonment Study		ient Iarin County			Job No. <b>5581.0</b>	Estimator <b>TLP</b>	Rev 0	Computed on 6/20/2017 4:05 PM
			DI	RECT COST DETAI	IL					
L E M	b305	Excavator >.5cy (OG2) Cat 305 Mini-Exc 11k/.17cy Silt Fence / Straw Waddles	400.0 If			\$82.99 / \$64.73 / \$5.41 /	hr	40.00 40.00 400.0	hr	\$3,320 \$2,589 \$2,165
No.		escription on Ave. Site Preparation		Item Quantity/Unit 1 LS	Produ	action rate		fixed time days		Total time work days
		manhours	Labor	Equipment		Material		Subcontract		Item Cost
		120 Status (Additive)	\$8,532	\$2,589 Work schedule		\$2,525	Oth	<b>\$15,000</b> er ST pay	Oth	<b>\$28,646</b> ner OT pay
	1.000	Schedule factor (Normal)	8 hr/shift	1 shift/day	5 c	day/week		hr/shift		hr/shift
R/T	Code	Resource Description	Resource Qty/Unit	Production rate	Factor	Resource Unit		Resource Q		Resource Cost
M	sts	Small tools and supplies	0 E0 para			\$3.00 /		120.0		\$360 \$5,000
S S	cg tfnc	Clearing and grubbing Temporary Construction Fenc	0.50 acre 400.0 If			\$10,000 / \$25.00 /		0.50 400.0		\$5,000 \$10,000
L	lab	General Labor (Grp 3)	400.0 11			\$63.14 /		40.00		\$2,525
Ĺ	lfm	Labor FM				\$67.17 /		40.00		\$2,687
L		Excavator >.5cy (OG2)				\$82.99 /		40.00		\$3,320
Е	b305	Cat 305 Mini-Exc 11k/.17cy				\$64.73 /	hr	40.00	hr	\$2,589
M	swppp	Silt Fence / Straw Waddles	400.0 If			\$5.41 /	lf	400.0	lf	\$2,165
No.	Item De	escription		Item Quantity/Unit	Produ	ıction rate	Other	fixed time		Total time
006	Fill Int	tact Tunnel w/ CLSM 267+00 t		6,205 cy	400 c	cy/day	2	days	17.5	work days
		manhours	Labor	Equipment		Material		Subcontract		Item Cost
		<b>980</b> 0.158	<b>\$71,092</b> \$11.46	<b>\$35,475</b> \$5.72		<b>\$612,467</b> \$98.70		<b>\$0</b> \$0.00		<b>\$719,034</b> \$115.88
		Status (Additive)	φ11.40	Ψ3.72 Work schedule		φ90.70	Oth	ф0.00 er ST pay	Oth	ner OT pay
	1.000	Schedule factor (Normal)	8 hr/shift	1 shift/day	5 c	day/week		hr/shift		hr/shift
		days setup/takedown		•		,				
R/T	Code	Resource Description	Resource Qty/Unit	Production rate	Factor	Resource Unit	Cost	Resource Q	uantitv	Resource Cost
М	sts	Small tools and supplies				\$3.00 /		980.0		\$2,940
L	lfm	Labor FM				\$67.17 /	mhr	140.0	mhr	\$9,404
L	lab	General Labor (Grp 3)			2	\$63.14 /		280.0		\$17,678
L		Loader oper. <3.5cy (OG4)				\$79.39 /		140.0		\$11,114
L	MW	HD Mech/Welder (OG4)			•	\$79.39 /		140.0		\$11,114
L	conc	Concrete equip.oper. (OG5)	i al		2	\$77.79 /		280.0		\$21,781
M E	clsm 1950	Controlled Low Strength Mater Wheel Loader Cat 950/3.5cy	ıaı			\$97.43 / \$99.13 /	•	6205 140.0	,	\$604,527 \$13,878
Ē	c76	Conc. pump, trailer 76cy/hr			2	\$51.78 /		280.0		\$14,499
Ē		Generator, skid 210kW			_	\$40.29 /		140.0		\$5,641
Е	-	Pump, subm. 140gpm/20ft hea	ad			\$1.42 /		140.0		\$199
Е	wtp	Water Treatment Plant				\$8.99 /	hr	140.0	hr	\$1,258
М	xmisc	Miscellaneous material	Hoses, pipes, etc 5.00 lot			\$1,000 /	lot	5.00	lot	\$5,000
No.		escription	. 077 60	Item Quantity/Unit		iction rate		fixed time		Total time
007	FIII IN	tact Tunnel w/ CLSM 276+00 t		1,764 cy	400 C	y/day	2	days	6.4	work days
		manhours 307	Labor <b>\$22,017</b>	Equipment \$10,322		Material <b>\$179,821</b>		Subcontract <b>\$0</b>		Item Cost <b>\$212,160</b>
		0.174	\$12.48	\$5.85		\$179,021		\$0.00		\$120.27
		Status (Additive)	Ψ12.10	Work schedule		φ.σσ.	Oth	er ST pay	Oth	ner OT pay
	2	Schedule factor (Normal) days build portal bulkhead	8 hr/shift	1 shift/day	5 c	day/week		hr/shift		hr/shift
D/ <del>T</del>	170		D	Des desables and	Factor	Danes 12.22	. 0	D		Danas Cont
R/T M	Code sts	Resource Description Small tools and supplies	Resource Qty/Unit	Production rate	Factor	Resource Unit		Resource Qi 307.2		Resource Cost \$922
L	Ifm	Labor FM				\$67.17 /		51.20		\$3,439
Ĺ	lab	General Labor (Grp 3)			2	\$63.14 /		102.4		\$6,465
Ĺ	lo35-	Loader oper. <3.5cy (OG4)			_	\$79.39 /		51.20		\$4,065
L	MW	HD Mech/Welder (OG4)				\$79.39 /		51.20		\$4,065



	Tunne	el andonment Study		ent arin County			o No. Estimate		Computed on 6/20/2017 4:05 PM
			DI	RECT COST DETA	IL				
L	conc	Concrete equip.oper. (OG5)				\$77.79 /mh	r 51.2	0 mhr	\$3,983
M	clsm	Controlled Low Strength Mate				\$97.43 /cy		4 cy	\$171,856
М	lumb	Lumber for lagging/blocking	1121 bf			\$1.42 /bf		1 bf	\$1,589
М	ply1	Plywood MDO 1"	280.2 sf			\$1.62 /sf	280.		\$455
Е	1950	Wheel Loader Cat 950/3.5cy				\$99.13 /hr	51.2	0 hr	\$5,075
Е	c76	Conc. pump, trailer 76cy/hr				\$51.78 /hr	51.2	0 hr	\$2,651
Е	g210	Generator, skid 210kW				\$40.29 /hr	51.2	0 hr	\$2,063
Е	p140	Pump, subm. 140gpm/20ft he	ad			\$1.42 /hr	51.2	0 hr	\$73
Е	wtp	Water Treatment Plant				\$8.99 /hr	51.2	0 hr	\$460
			Hoses, pipes, etc.						
M	xmisc	Miscellaneous material	5.00 lot			\$1,000 /lot	5.0	0 lot	\$5,000
No.		escription		Item Quantity/Unit	Prod	uction rate (	Other fixed time		Total time
008	Fill Co	ollapse Tunnel w/ Grout 258+	75 to 267+00	5,736 cy	450	cy/day	2 days	14.7	work days
		manhours		Equipment		Material	Subcontra		Item Cost
		1,529		\$51,072		\$173,967		0	\$331,691
		0.267	\$18.59	\$8.90		\$30.33	\$0.0	0	\$57.83
		Status (Additive)		Work schedule			Other ST pay		ner OT pay
		Schedule factor (Normal)	8 hr/shift	1 shift/day	5	day/week	0 hr/shift	0	hr/shift
		days setup/takedown							
	825								
	67%	Void Percentage							
R/T	Code	Resource Description	Resource Qty/Unit	Production rate	Factor	Resource Unit Co			Resource Cost
М	sts	Small tools and supplies				\$3.00 /mh		9 mhr	\$4,586
L	lfm	Labor FM			2	\$67.17 /mh		2 mhr	\$15,799
L	lab	General Labor (Grp 3)			6	\$63.14 /mh		6 mhr	\$44,549
L	lo35-	Loader oper. <3.5cy (OG4)			2	\$79.39 /mh		2 mhr	\$18,672
L	MW	HD Mech/Welder (OG4)				\$79.39 /mh		6 mhr	\$9,336
L	conc	Concrete equip.oper. (OG5)			2	\$77.79 /mh	r 235.	2 mhr	\$18,296
М	cb	Cement, bulk	713.6 ton			\$119 /ton	713.	6 ton	\$84,968
M	h20	Water	113.9 kgal			\$108 /kga		9 kgal	\$12,326
М	xg	Grout Admixtures				\$10.83 /cy	573	6 су	\$62,087
Ε	1950	Wheel Loader Cat 950/3.5cy			2	\$99.13 /hr	235.	2 hr	\$23,315
Е	gsm	Grout Slurry Mixer, 4cy			2	\$20.74 /hr	235.	2 hr	\$4,877
Е	c76	Conc. pump, trailer 76cy/hr			2	\$51.78 /hr	235.	2 hr	\$12,179
Е	g210	Generator, skid 210kW			2	\$40.29 /hr	235.	2 hr	\$9,477
Ε	p140	Pump, subm. 140gpm/20ft he	ad			\$1.42 /hr	117.	6 hr	\$167
Ε	wtp	Water Treatment Plant				\$8.99 /hr	117.	6 hr	\$1,057
			Hoses, pipes, etc.						
М	xmisc	Miscellaneous material	10.00 lot			\$1,000 /lot	10.0	0 lot	\$10,000
No.	Item De	escription		Item Quantity/Unit	Prod	uction rate (	Other fixed time		Total time
		lew Boreholes		2160 If		lf/day	Strict fixed time	21.6	work days
-		manhours	Labor	Equipment		Material	Subcontra		Item Cost
		0		<b>\$0</b>		<b>\$0</b>	\$211,68		\$211,680
		0.000		\$0.00		\$0.00	\$98.0		\$98.00
		Status (Additive)	ψ0.00	Work schedule		Ψ3.00	Other ST pay		ner OT pay
	1.000	Schedule factor (Normal)	8 hr/shift	1 shift/day	5	day/week	0 hr/shift		hr/shift
R/T	Code	Resource Description	Resource Qty/Unit	Production rate	Factor	Resource Unit Co			Resource Cost
S	drill	Drilling Subcontractor			. 40101	\$98.00 /lf	216		\$211,680



Project Client Job No. Estimator Rev Computed on Alto Tunnel
Alto Tunnel Abandonment Study

Client Job No. Estimator Rev Computed on 5581.0 TLP 0 6/20/2017

\*\*Tunnel Abandonment Study\*\*

Computed on 7/20/2017

\*\*Tunnel Abandonment Study\*\*

4:05 PM

## DIRECT COST DETAIL Item Quantity/Unit

Production rate

Other fixed time

Total time

	Conta	act Grout Remaining Voids		7016.17 cy	220 4	cy/day	2 days	32.5 work	dave
010	Conta	•	uro Lobor	•	230 (		•	32.5 WUIK	-
		manhou		Equipment		Material	Subcontract	•	Item Cost
		3,38		\$112,913		\$215,108	\$0	Þ	563,816
		0.48	32 \$33.61	\$16.09		\$30.66	\$0.00		\$80.36
		Status (Additive)		Work schedule			Other ST pay	Other OT p	•
	1.000	Schedule factor (Normal)	8 hr/shift	1 shift/day	5 (	day/week	0 hr/shift	0 hr/shi	ift
	2	2 days setup/takedown							
	2049	) LF							
	33%	Void Percentage							
R/T	Code	Resource Description	Resource Qty/Unit	Production rate	Factor	Resource Unit (	Cost Resource C	uantity Reso	ource Cost
M	sts	Small tools and supplies				\$3.00 /n	nhr 3380	mhr	\$10,140
L	lfm	Labor FM			2	\$67.17 /n	nhr 520.0	mhr	\$34,929
L	lab	General Labor (Grp 3)			6	\$63.14 /n	nhr 1560	mhr	\$98,492
L	lo35-	Loader oper. <3.5cy (OG4)			2	\$79.39 /n	nhr 520.0	mhr	\$41,282
L	MW	HD Mech/Welder (OG4)				\$79.39 /n	nhr 260.0		\$20,641
L	conc	Concrete equip.oper. (OG5)	1		2	\$77.79 /n			\$40,451
M	cb	Cement, bulk	872.9 ton		_	\$119 /td			103,940
M	h20	Water	139.3 kgal			\$108 /k			\$15,078
M		Grout Admixtures	100.0 Kgai			\$10.83 /c			
	xg				0		-	•	\$75,950
E	1950	Wheel Loader Cat 950/3.5c	у		2	\$99.13 /h			\$51,548
E	gsm	Grout Slurry Mixer, 4cy			2	\$20.74 /h			\$10,782
E	c76	Conc. pump, trailer 76cy/hr			2	\$51.78 /h			\$26,926
Е		Generator, skid 210kW			2	\$40.29 /h			\$20,952
Е	p140	Pump, subm. 140gpm/20ft h	nead			\$1.42 /h	r 260.0	hr	\$369
Ε	wtp	Water Treatment Plant				\$8.99 /h	r 260.0	hr	\$2,337
			Hoses, pipes, etc	-					
М	xmisc	Miscellaneous material	10.00 lot			\$1,000 /ld	ot 10.00	lot	\$10,000
No.	Item De	escription		Item Quantity/Unit	Produ	uction rate	Other fixed time	Total tir	me
011	Drill N	New Tertiary Boreholes		432 If	100 I	lf/day		4.3 work	days
		manhou	irs Labor	Equipment		Material	Subcontract		Item Cost
		manhou	trs Labor \$0	Equipment <b>\$0</b>		Material <b>\$0</b>	Subcontract \$42,336		Item Cost <b>\$42,336</b>
		manhou 0.00	0 \$0						
			0 \$0	\$0		\$0	\$42,336		<b>\$42,336</b> \$98.00
	1.000	0.00	0 \$0	<b>\$0</b> \$0.00	5 (	\$0	<b>\$42,336</b> \$98.00	:	<b>\$42,336</b> \$98.00 pay
R/T	1.000 Code	0.00 Status (Additive) Schedule factor (Normal)	0 \$0 00 \$0.00 8 hr/shift	\$0.00 Work schedule	5 ( Factor	<b>\$0</b> \$0.00 day/week	<b>\$42,336</b> \$98.00 Other ST pay 0 hr/shift	Other OT p 0 hr/shi	\$42,336 \$98.00 pay ift
R/T S		0.00 Status (Additive)	<b>0 \$0</b> 00 \$0.00	\$0 \$0.00 Work schedule 1 shift/day		<b>\$0</b> \$0.00	\$42,336 \$98.00 Other ST pay 0 hr/shift Cost Resource C	Other OT p 0 hr/shi	<b>\$42,336</b> \$98.00 pay
	Code drill	0.00 Status (Additive) Schedule factor (Normal) Resource Description	0 \$0 00 \$0.00 8 hr/shift	\$0 \$0.00 Work schedule 1 shift/day	Factor	\$0.00 \$0.00 day/week Resource Unit (	\$42,336 \$98.00 Other ST pay 0 hr/shift Cost Resource C	Other OT p 0 hr/shi	\$42,336 \$98.00 pay ifft purce Cost \$42,336
S No.	Code drill	0.00 Status (Additive) Schedule factor (Normal) Resource Description Drilling Subcontractor	0 \$0 00 \$0.00 8 hr/shift	\$0 \$0.00 Work schedule 1 shift/day Production rate	Factor	\$0 \$0.00 day/week Resource Unit of \$98.00 //ff	\$42,336 \$98.00 Other ST pay 0 hr/shift Cost Resource C 432.0	Other OT p 0 hr/shi duantity Resc If	\$42,336 \$98.00 pay iff purce Cost \$42,336
S No.	Code drill	Status (Additive) Schedule factor (Normal) Resource Description Drilling Subcontractor escription ary Grouting	0 \$0 00 \$0.00 8 hr/shift Resource Qty/Unit	\$0 \$0.00 Work schedule 1 shift/day Production rate	Factor	\$0 \$0.00 day/week Resource Unit 0 \$98.00 /lf	\$42,336 \$98.00 Other ST pay 0 hr/shift Cost Resource C 432.0	Other OT p 0 hr/shi tuantity Resc If  Total tir 2.9 work	\$42,336 \$98.00 pay ifft purce Cost \$42,336 me days
S No.	Code drill	O.00 Status (Additive) Schedule factor (Normal) Resource Description Drilling Subcontractor escription ary Grouting manhou	\$0 \$0 \$0.00	\$0 \$0.00 Work schedule 1 shift/day Production rate  Item Quantity/Unit 212.611 cy Equipment	Factor	\$0 \$0.00 day/week Resource Unit of \$98.00 /lf uction rate cy/day Material	\$42,336 \$98.00 Other ST pay 0 hr/shift Cost Resource C 432.0 Other fixed time 2 days Subcontract	Other OT p 0 hr/shi tuantity Resc If Total tir 2.9 work	\$42,336 \$98.00 pay iff burce Cost \$42,336 me days Item Cost
S No.	Code drill	Status (Additive) Schedule factor (Normal) Resource Description Drilling Subcontractor escription ary Grouting manhou	8 hr/shift Resource Qty/Unit Labor 22 \$21,040	\$0 \$0.00 Work schedule 1 shift/day Production rate Item Quantity/Unit 212.611 cy Equipment \$10,075	Factor	\$0 \$0.00 day/week Resource Unit of \$98.00 /lf uction rate cy/day Material \$132,225	\$42,336 \$98.00 Other ST pay 0 hr/shift Cost Resource C 432.0 Other fixed time 2 days Subcontract \$0	Other OT p 0 hr/shi tuantity Resc If  Total tir 2.9 work	\$42,336 \$98.00 pay ifft burce Cost \$42,336 me days Item Cost 163,340
S No.	Code drill	Status (Additive) Schedule factor (Normal) Resource Description Drilling Subcontractor escription ary Grouting manhou	8 hr/shift Resource Qty/Unit Labor 22 \$21,040	\$0 \$0.00 Work schedule 1 shift/day Production rate Item Quantity/Unit 212.611 cy Equipment \$10,075 \$47.39	Factor	\$0 \$0.00 day/week Resource Unit of \$98.00 /lf uction rate cy/day Material	\$42,336 \$98.00 Other ST pay 0 hr/shift Cost Resource C 432.0 Other fixed time 2 days Subcontract \$0 \$0.00	Other OT p 0 hr/shi tuantity Resc If  Total tir 2.9 work	\$42,336 \$98.00 pay iff ource Cost \$42,336 me days Item Cost 163,340 \$768.26
S No.	Code drill Item De	Status (Additive)  Schedule factor (Normal)  Resource Description  Drilling Subcontractor  escription  ary Grouting  manhou  30  1.41  Status (Additive)	8 hr/shift Resource Qty/Unit Labor 22 \$21,040 9 \$98.96	\$0 \$0.00 Work schedule 1 shift/day Production rate Item Quantity/Unit 212.611 cy Equipment \$10,075 \$47.39 Work schedule	Produ 230 (	\$0 \$0.00 day/week Resource Unit of \$98.00 //if uction rate cy/day Material \$132,225 \$621.91	\$42,336 \$98.00 Other ST pay 0 hr/shift Cost Resource C 432.0 Other fixed time 2 days Subcontract \$0 \$0.00 Other ST pay	Other OT p O hr/shi tuantity Resc If  Total tir 2.9 work	\$42,336 \$98.00 pay ifft burce Cost \$42,336 me days Item Cost 163,340 \$768.26
S No.	Code drill Item De P. Tertia	Status (Additive) Schedule factor (Normal) Resource Description Drilling Subcontractor escription ary Grouting  manhou 30 1.41 Status (Additive) Schedule factor (Normal)	8 hr/shift Resource Qty/Unit Labor 22 \$21,040	\$0 \$0.00 Work schedule 1 shift/day Production rate Item Quantity/Unit 212.611 cy Equipment \$10,075 \$47.39	Produ 230 (	\$0 \$0.00 day/week Resource Unit of \$98.00 /lf uction rate cy/day Material \$132,225	\$42,336 \$98.00 Other ST pay 0 hr/shift Cost Resource C 432.0 Other fixed time 2 days Subcontract \$0 \$0.00	Other OT p 0 hr/shi tuantity Resc If  Total tir 2.9 work	\$42,336 \$98.00 pay ifft burce Cost \$42,336 me days Item Cost 163,340 \$768.26
S No.	Code drill  Item De Tertia	Status (Additive) Schedule factor (Normal) Resource Description Drilling Subcontractor escription ary Grouting  manhou 30 1.41 Status (Additive) Schedule factor (Normal)	8 hr/shift Resource Qty/Unit Labor 22 \$21,040 9 \$98.96	\$0 \$0.00 Work schedule 1 shift/day Production rate Item Quantity/Unit 212.611 cy Equipment \$10,075 \$47.39 Work schedule	Produ 230 (	\$0 \$0.00 day/week Resource Unit of \$98.00 //if uction rate cy/day Material \$132,225 \$621.91	\$42,336 \$98.00 Other ST pay 0 hr/shift Cost Resource C 432.0 Other fixed time 2 days Subcontract \$0 \$0.00 Other ST pay	Other OT p O hr/shi tuantity Resc If  Total tir 2.9 work	\$42,336 \$98.00 pay ifft burce Cost \$42,336 me days Item Cost 163,340 \$768.26
S No.	Code drill  Item De Tertia  1.000 2049	Status (Additive) Schedule factor (Normal) Resource Description Drilling Subcontractor escription ary Grouting  manhou 30 1.41 Status (Additive) Schedule factor (Normal) d days setup/takedown	8 hr/shift Resource Qty/Unit Labor 22 \$21,040 9 \$98.96	\$0 \$0.00 Work schedule 1 shift/day Production rate Item Quantity/Unit 212.611 cy Equipment \$10,075 \$47.39 Work schedule	Produ 230 (	\$0 \$0.00 day/week Resource Unit of \$98.00 //if uction rate cy/day Material \$132,225 \$621.91	\$42,336 \$98.00 Other ST pay 0 hr/shift Cost Resource C 432.0 Other fixed time 2 days Subcontract \$0 \$0.00 Other ST pay	Other OT p O hr/shi tuantity Resc If  Total tir 2.9 work	\$42,336 \$98.00 pay ifft burce Cost \$42,336 me days Item Cost 163,340 \$768.26
No. <b>012</b>	Code drill ltem De Tertia 1.0000 2 2049 1%	Status (Additive) Schedule factor (Normal) Resource Description Drilling Subcontractor  escription ary Grouting  manhou 30 1.41 Status (Additive) Schedule factor (Normal) 2 days setup/takedown 3 LF 5 Void Percentage	8 hr/shift  Resource Qty/Unit  Labor 22 \$21,040 9 \$98.96	\$0 \$0.00 Work schedule 1 shift/day Production rate  Item Quantity/Unit 212.611 cy Equipment \$10,075 \$47.39 Work schedule 1 shift/day	Produ 230 d	\$0 \$0.00 day/week Resource Unit of \$98.00 //if uction rate cy/day Material \$132,225 \$621.91 day/week	\$42,336 \$98.00 Other ST pay 0 hr/shift Cost Resource C 432.0 Other fixed time 2 days Subcontract \$0 \$0.00 Other ST pay 0 hr/shift	Other OT p 0 hr/shi tuantity Resc If  Total tir 2.9 work  Stanta of the other OT p 0 hr/shi	\$42,336 \$98.00 pay ifft burce Cost \$42,336 me days Item Cost 163,340 \$768.26 pay iff
No. <b>012</b>	Code drill Item De Tertia  1.000 2049 1% Code	Status (Additive)  Schedule factor (Normal)  Resource Description  Drilling Subcontractor  escription  ary Grouting  manhou  30  1.41  Status (Additive)  Schedule factor (Normal)  days setup/takedown  LF  Void Percentage  Resource Description	8 hr/shift Resource Qty/Unit Labor 22 \$21,040 9 \$98.96	\$0 \$0.00 Work schedule 1 shift/day Production rate Item Quantity/Unit 212.611 cy Equipment \$10,075 \$47.39 Work schedule	Produ 230 (	\$0 \$0.00 day/week Resource Unit of \$98.00 //lf uction rate cy/day Material \$132,225 \$621.91 day/week	\$42,336 \$98.00 Other ST pay 0 hr/shift Cost Resource C 432.0 Other fixed time 2 days Subcontract \$0 \$0.00 Other ST pay 0 hr/shift	Other OT p 0 hr/shi tuantity Resc If  Total tir 2.9 work  Other OT p 0 hr/shi	\$42,336 \$98.00 bay ifft burce Cost \$42,336 me days Item Cost 163,340 \$768.26 bay iff
No. <b>012</b>	Code drill ltem De Tertia  1.000 2049 1% Code sts	Status (Additive) Schedule factor (Normal) Resource Description Drilling Subcontractor  escription ary Grouting  manhou 30 1.41 Status (Additive) Schedule factor (Normal) days setup/takedown LF Void Percentage Resource Description Small tools and supplies	8 hr/shift  Resource Qty/Unit  Labor 22 \$21,040 9 \$98.96	\$0 \$0.00 Work schedule 1 shift/day Production rate  Item Quantity/Unit 212.611 cy Equipment \$10,075 \$47.39 Work schedule 1 shift/day	Produ 230 (	\$0 \$0.00 day/week Resource Unit of \$98.00 //if uction rate cy/day Material \$132,225 \$621.91 day/week	\$42,336 \$98.00 Other ST pay 0 hr/shift Cost Resource C 432.0 Other fixed time 2 days Subcontract \$0 \$0.00 Other ST pay 0 hr/shift  Cost Resource C thr 301.6	Other OT p 0 hr/shi tuantity Resc If  Total tir 2.9 work  Other OT p 0 hr/shi	\$42,336 \$98.00 bay ifft burce Cost \$42,336 me days Item Cost 163,340 \$768.26 bay iff
No. 012	tem De Proposition 1.000 2 2049 1% Code sts Ifm	Status (Additive) Schedule factor (Normal) Resource Description Drilling Subcontractor  escription ary Grouting  manhou 30 1.41 Status (Additive) Schedule factor (Normal) days setup/takedown LF Void Percentage Resource Description Small tools and supplies Labor FM	8 hr/shift  Resource Qty/Unit  Labor 22 \$21,040 9 \$98.96	\$0 \$0.00 Work schedule 1 shift/day Production rate  Item Quantity/Unit 212.611 cy Equipment \$10,075 \$47.39 Work schedule 1 shift/day	Produ 230 (	\$0 \$0.00  day/week  Resource Unit of \$98.00 //ff  uction rate cy/day  Material \$132,225 \$621.91  day/week  Resource Unit of \$3.00 /n \$67.17 /n	\$42,336 \$98.00 Other ST pay 0 hr/shift Cost Resource C 432.0  Other fixed time 2 days Subcontract \$0 \$0.00 Other ST pay 0 hr/shift  Cost Resource C othr 301.6 othr 46.40	Other OT p 0 hr/shi tuantity Resc If  Total tir 2.9 work  Other OT p 0 hr/shi tuantity Resc mhr mhr	\$42,336 \$98.00 bay ifft burce Cost \$42,336 me days Item Cost 163,340 \$768.26 bay ifft
No. <b>012</b>	1.000 2049 1% Code sts Ifm	Status (Additive) Schedule factor (Normal) Resource Description Drilling Subcontractor  escription ary Grouting  manhou 30 1.41 Status (Additive) Schedule factor (Normal) days setup/takedown LF Void Percentage Resource Description Small tools and supplies Labor FM General Labor (Grp 3)	8 hr/shift  Resource Qty/Unit  Labor 22 \$21,040 9 \$98.96	\$0 \$0.00 Work schedule 1 shift/day Production rate  Item Quantity/Unit 212.611 cy Equipment \$10,075 \$47.39 Work schedule 1 shift/day	Produ 230 ( 5 ( Factor	\$0 \$0.00 day/week Resource Unit of \$98.00 //lf uction rate cy/day Material \$132,225 \$621.91 day/week	\$42,336 \$98.00 Other ST pay 0 hr/shift Cost Resource C 432.0  Other fixed time 2 days Subcontract \$0 \$0.00 Other ST pay 0 hr/shift  Cost Resource C hhr 301.6 hhr 46.40 hhr 139.2	Other OT p 0 hr/shi tuantity Resc If  Total tir 2.9 work  Stantity Resc Other OT p 0 hr/shi tuantity Resc mhr mhr	\$42,336 \$98.00 bay ifft burce Cost \$42,336 me days Item Cost 163,340 \$768.26 bay ifft burce Cost \$905 \$3,117 \$8,789
No. 012	1.000 2049 1% Code sts Ifm	Status (Additive) Schedule factor (Normal) Resource Description Drilling Subcontractor  escription ary Grouting  manhou 30 1.41 Status (Additive) Schedule factor (Normal) days setup/takedown LF Void Percentage Resource Description Small tools and supplies Labor FM	8 hr/shift  Resource Qty/Unit  Labor 22 \$21,040 9 \$98.96	\$0 \$0.00 Work schedule 1 shift/day Production rate  Item Quantity/Unit 212.611 cy Equipment \$10,075 \$47.39 Work schedule 1 shift/day	Produ 230 (	\$0 \$0.00  day/week  Resource Unit of \$98.00 //ff  uction rate cy/day  Material \$132,225 \$621.91  day/week  Resource Unit of \$3.00 /n \$67.17 /n	\$42,336 \$98.00 Other ST pay 0 hr/shift Cost Resource C 432.0  Other fixed time 2 days Subcontract \$0 \$0.00 Other ST pay 0 hr/shift  Cost Resource C hhr 301.6 hhr 46.40 hhr 139.2	Other OT p 0 hr/shi tuantity Resc If  Total tir 2.9 work  Standard Resc Other OT p 0 hr/shi tuantity Resc mhr mhr mhr	\$42,336 \$98.00 bay ifft burce Cost \$42,336 me days Item Cost 163,340 \$768.26 bay ifft
No. 012	1.000 2049 1% Code sts Ifm	Status (Additive) Schedule factor (Normal) Resource Description Drilling Subcontractor  escription ary Grouting  manhou 30 1.41 Status (Additive) Schedule factor (Normal) days setup/takedown LF Void Percentage Resource Description Small tools and supplies Labor FM General Labor (Grp 3)	8 hr/shift  Resource Qty/Unit  Labor 22 \$21,040 9 \$98.96	\$0 \$0.00 Work schedule 1 shift/day Production rate  Item Quantity/Unit 212.611 cy Equipment \$10,075 \$47.39 Work schedule 1 shift/day	Produ 230 ( 5 ( Factor	\$0 \$0.00 day/week Resource Unit of \$98.00 //lf uction rate cy/day Material \$132,225 \$621.91 day/week	\$42,336 \$98.00 Other ST pay 0 hr/shift Cost Resource C 432.0  Other fixed time 2 days Subcontract \$0 \$0.00 Other ST pay 0 hr/shift  Cost Resource C hhr 301.6 hhr 46.40 hhr 139.2 hhr 46.40	Other OT p 0 hr/shi tuantity Resc If  Total tir 2.9 work  \$ Other OT p 0 hr/shi tuantity Resc mhr mhr mhr mhr mhr	\$42,336 \$98.00 bay ifft burce Cost \$42,336 me days Item Cost 163,340 \$768.26 bay ifft burce Cost \$905 \$3,117 \$8,789
No.   012	1.000 2049 1% Code sts Ifm Iab Io35-	Status (Additive) Schedule factor (Normal) Resource Description Drilling Subcontractor  escription ary Grouting  manhou 30 1.41 Status (Additive) Schedule factor (Normal) days setup/takedown LF Void Percentage Resource Description Small tools and supplies Labor FM General Labor (Grp 3) Loader oper. <3.5cy (OG4)	8 hr/shift  Resource Qty/Unit  10 \$9.00  8 hr/shift  Resource Qty/Unit  11 \$2 \$21,040  12 \$21,040  13 \$9 \$98.96  8 hr/shift  Resource Qty/Unit	\$0 \$0.00 Work schedule 1 shift/day Production rate  Item Quantity/Unit 212.611 cy Equipment \$10,075 \$47.39 Work schedule 1 shift/day	Produ 230 ( 5 ( Factor	\$0 \$0.00 day/week Resource Unit of \$98.00 /lf uction rate cy/day Material \$132,225 \$621.91 day/week Resource Unit of \$3.00 /n \$67.17 /n \$63.14 /n \$79.39 /n	\$42,336 \$98.00 Other ST pay 0 hr/shift Cost Resource C 432.0  Other fixed time 2 days Subcontract \$0 \$0.00 Other ST pay 0 hr/shift  Cost Resource C hhr 301.6 hhr 46.40 hhr 139.2 hhr 46.40 hhr 23.20	Other OT p 0 hr/shi tuantity Resc If  Total tir 2.9 work  \$ Other OT p 0 hr/shi tuantity Resc mhr mhr mhr mhr mhr mhr mhr mhr	\$42,336 \$98.00 bay ifft burce Cost \$42,336 me days Item Cost 163,340 \$768.26 bay ifft burce Cost \$905 \$3,117 \$8,789 \$3,684 \$1,842
No. 012	1.000 2049 1% Code sts Ifm Iab Io35- MW conc	Status (Additive) Schedule factor (Normal) Resource Description Drilling Subcontractor  escription ary Grouting  manhou 30 1.41 Status (Additive) Schedule factor (Normal) C days setup/takedown LF Void Percentage Resource Description Small tools and supplies Labor FM General Labor (Grp 3) Loader oper. <3.5cy (OG4) HD Mech/Welder (OG4) Concrete equip.oper. (OG5)	8 hr/shift  Resource Qty/Unit  10 \$9.00  8 hr/shift  Resource Qty/Unit  11 \$2 \$21,040  12 \$21,040  13 \$98.96  14 8 hr/shift  Resource Qty/Unit	\$0 \$0.00 Work schedule 1 shift/day Production rate  Item Quantity/Unit 212.611 cy Equipment \$10,075 \$47.39 Work schedule 1 shift/day	Factor  Factor  Factor  230 (	\$0 \$0.00 day/week Resource Unit of \$98.00 //lf \$98.00 //lf uction rate cy/day Material \$132,225 \$621.91 day/week Resource Unit of \$3.00 /n \$67.17 /n \$63.14 /n \$79.39 /n \$79.39 /n	\$42,336 \$98.00 Other ST pay 0 hr/shift Cost Resource C 432.0 Other fixed time 2 days Subcontract \$0 \$0.00 Other ST pay 0 hr/shift  Cost Resource C hhr 301.6 hhr 46.40 hhr 139.2 hhr 46.40 hhr 23.20 hhr 46.40	Other OT p 0 hr/shi tuantity Resc If  Total tir 2.9 work  Standard Resc Other OT p 0 hr/shi tuantity Resc mhr	\$42,336 \$98.00 bay ifft burce Cost \$42,336 me days Item Cost 163,340 \$768.26 bay ifft burce Cost \$905 \$3,117 \$8,789 \$3,684 \$1,842 \$3,609
No.   O12	1.000 2049 1% Code sts Ifm Iab Io35- MW conc cb	Status (Additive) Schedule factor (Normal) Resource Description Drilling Subcontractor  escription ary Grouting  manhou 30 1.41 Status (Additive) Schedule factor (Normal) days setup/takedown LF Void Percentage Resource Description Small tools and supplies Labor FM General Labor (Grp 3) Loader oper. <3.5cy (OG4) HD Mech/Welder (OG4) Concrete equip.oper. (OG5) Cement, bulk	80 \$0.00 \$0.	\$0 \$0.00 Work schedule 1 shift/day Production rate  Item Quantity/Unit 212.611 cy Equipment \$10,075 \$47.39 Work schedule 1 shift/day	Factor  Factor  Factor  230 (	\$0 \$0.00 day/week Resource Unit of \$98.00 /lf \$98.00 /lf uction rate cy/day Material \$132,225 \$621.91 day/week Resource Unit of \$3.00 /n \$67.17 /n \$63.14 /n \$79.39 /n \$79.39 /n \$77.79 /n	\$42,336 \$98.00 Other ST pay 0 hr/shift Cost Resource C 432.0  Other fixed time 2 days Subcontract \$0 \$0.00 Other ST pay 0 hr/shift  Cost Resource C hhr 301.6 hhr 46.40 hhr 139.2 hhr 46.40 hhr 23.20 hhr 46.40 on 872.9	Other OT p 0 hr/shi tuantity Resc If  Total tir 2.9 work  Other OT p 0 hr/shi tuantity Resc mhr	\$42,336 \$98.00 pay fift burce Cost \$42,336 me days Item Cost 163,340 \$768.26 pay fift burce Cost \$905 \$3,117 \$8,789 \$3,684 \$1,842 \$3,609 103,940
No.   O12     R/T   M   L   L   L   L   M   M   M   M	1.000  1.000  2049 1% Code sts Ifm Iab Io35- MW conc cb h20	Status (Additive) Schedule factor (Normal) Resource Description Drilling Subcontractor  escription  ary Grouting  manhou 30 1.41 Status (Additive) Schedule factor (Normal) 2 days setup/takedown 3 LF Void Percentage Resource Description Small tools and supplies Labor FM General Labor (Grp 3) Loader oper. <3.5cy (OG4) HD Mech/Welder (OG4) Concrete equip.oper. (OG5) Cement, bulk Water	8 hr/shift  Resource Qty/Unit  10 \$9.00  8 hr/shift  Resource Qty/Unit  11 \$2 \$21,040  12 \$21,040  13 \$98.96  14 8 hr/shift  Resource Qty/Unit	\$0 \$0.00 Work schedule 1 shift/day Production rate  Item Quantity/Unit 212.611 cy Equipment \$10,075 \$47.39 Work schedule 1 shift/day	Factor  Produ 230 (  5 (  Factor  2 6 2	\$0 \$0.00 day/week Resource Unit of \$98.00 /lf \$98.00 /lf uction rate cy/day Material \$132,225 \$621.91 day/week Resource Unit of \$3.00 /n \$67.17 /n \$63.14 /n \$79.39 /n \$77.79 /n \$119 /to \$108 /k	\$42,336 \$98.00 Other ST pay 0 hr/shift Cost Resource C 432.0  Other fixed time 2 days Subcontract \$0 \$0.00 Other ST pay 0 hr/shift  Cost Resource C hhr 301.6 hhr 46.40 hhr 139.2 hhr 46.40 hhr 23.20 hhr 46.40 hhr 46.40 hhr 372.9 gal 139.3	Other OT p 0 hr/shi tuantity Resc If  Total tir 2.9 work  Other OT p 0 hr/shi  tuantity Resc mhr	\$42,336 \$98.00 pay ifft burce Cost \$42,336 me days Item Cost 163,340 \$768.26 pay ifft burce Cost \$905 \$3,117 \$8,789 \$3,684 \$1,842 \$3,609 103,940 \$15,078
No.   O12	1.000 2049 1% Code sts Ifm Iab Io35- MW conc cb	Status (Additive) Schedule factor (Normal) Resource Description Drilling Subcontractor  escription ary Grouting  manhou 30 1.41 Status (Additive) Schedule factor (Normal) days setup/takedown LF Void Percentage Resource Description Small tools and supplies Labor FM General Labor (Grp 3) Loader oper. <3.5cy (OG4) HD Mech/Welder (OG4) Concrete equip.oper. (OG5) Cement, bulk	872.9 ton 139.3 kgal	\$0 \$0.00 Work schedule 1 shift/day Production rate  Item Quantity/Unit 212.611 cy Equipment \$10,075 \$47.39 Work schedule 1 shift/day	Factor  Produ 230 (  5 (  Factor  2 6 2	\$0 \$0.00 day/week Resource Unit of \$98.00 /lf \$98.00 /lf uction rate cy/day Material \$132,225 \$621.91 day/week Resource Unit of \$3.00 /n \$67.17 /n \$63.14 /n \$79.39 /n \$79.39 /n \$77.79 /n	\$42,336 \$98.00 Other ST pay 0 hr/shift Cost Resource C 432.0  Other fixed time 2 days Subcontract \$0 \$0.00 Other ST pay 0 hr/shift  Cost Resource C hhr 301.6 hhr 46.40 hhr 139.2 hhr 46.40 hhr 23.20 hhr 46.40 hhr 23.20 hhr 46.40 hhr 372.9 gal 139.3 y 212.6	Other OT p 0 hr/shi tuantity Resc If  Total tir 2.9 work  Other OT p 0 hr/shi  wantity Resc mhr	\$42,336 \$98.00 pay fift burce Cost \$42,336 me days Item Cost 163,340 \$768.26 pay fift burce Cost \$905 \$3,117 \$8,789 \$3,684 \$1,842 \$3,609 103,940



No. Item Description

	Tunne	el andonment Study		ient Iarin County			Job No. <b>5581.0</b>		Rev C	
			DI	RECT COST DETA	IL					
Е	gsm	Grout Slurry Mixer, 4cy			2	\$20.74	/hr	46.40	hr	\$962
Е	c76	Conc. pump, trailer 76cy/hr			2	\$51.78	/hr	46.40	hr	\$2,403
Е		Generator, skid 210kW			2	\$40.29		46.40		\$1,870
E		Pump, subm. 140gpm/20ft he	ead			\$1.42		23.20		\$33
Е	wtp	Water Treatment Plant	11			\$8.99	/hr	23.20	hr	\$209
М	xmisc	Miscellaneous material	Hoses, pipes, etc. 10.00 lot			\$1,000	/lot	10.00	lot	\$10,000
No.		escription		Item Quantity/Unit	Product	tion rate		fixed time		Total time
013	South	Portal Site Restoration		1 LS		M. 1 . 2 . 1	5	days	5	work days
		manhour: <b>80</b>		Equipment <b>\$0</b>		Material <b>\$240</b>		Subcontract \$10,000		Item Cost <b>\$15,452</b>
		Status (Additive)	, φ3,212	Work schedule		Ψ240	Oth	ner ST pay	Ot	her OT pay
	1.000	Schedule factor (Normal)	8 hr/shift	1 shift/day	5 da	ıy/week		hr/shift		hr/shift
R/T	Code	Resource Description	Resource Qty/Unit	Production rate		Resource Un		Resource Q		Resource Cost
M	sts	Small tools and supplies	,			\$3.00		80.00		\$240
S	sr	Site restoration	1.00 acre			\$10,000	/acre	1.00	acre	\$10,000
L	lab	General Labor (Grp 3)				\$63.14		40.00		\$2,525
L	lfm	Labor FM				\$67.17	/mhr	40.00	mhr	\$2,687
No.	Item De	escription		Item Quantity/Unit	Product	tion rate	Other	fixed time		Total time
014	North	Portal Site Restoration		1 LS			5	days	5	work days
		manhour		Equipment		Material		Subcontract		Item Cost
		80	\$5,212	\$0		\$240		\$10,000		\$15,452
	1 000	Status (Additive)	0  /- -:4	Work schedule		/		ner ST pay		her OT pay
D/T	1.000 Code	Schedule factor (Normal)  Resource Description	8 hr/shift Resource Qty/Unit	1 shift/day Production rate		y/week Resource Un		hr/shift Resource Q		hr/shift Resource Cost
R/T M	sts	Small tools and supplies	nesource Qty/Onit	Production rate	racioi	\$3.00		80.00		\$240
S	sr	Site restoration	1.00 acre			\$10,000		1.00		\$10,000
Ĺ	lab	General Labor (Grp 3)				\$63.14		40.00		\$2,525
L	lfm	Labor FM				\$67.17	/mhr	40.00	mhr	\$2,687
No.	Item De	escription		Item Quantity/Unit	Product	tion rate	Other	fixed time		Total time
015	Unde	rhill Site Restoration		1 LS			5	days	5	work days
		manhour		Equipment		Material		Subcontract		Item Cost
		80	\$5,212	\$0		\$240		\$5,000		\$10,452
	1 000	Status (Additive)	0  /- -:4	Work schedule				ner ST pay		her OT pay
R/T	Code	Schedule factor (Normal)  Resource Description	8 hr/shift Resource Qty/Unit	1 shift/day Production rate		ı <b>y/week</b> Resource Un		hr/shift Resource Q		hr/shift Resource Cost
M	sts	Small tools and supplies	nesource Qty/Offit	Froduction rate	racioi	\$3.00		80.00		\$240
S	sr	Site restoration	0.50 acre			\$10,000		0.50		\$5,000
Ĺ	lab	General Labor (Grp 3)				\$63.14		40.00		\$2,525
L	lfm	Labor FM				\$67.17	/mhr	40.00	mhr	\$2,687
No.		escription		Item Quantity/Unit	Product	tion rate	Other	fixed time		Total time
016	Camii	no Alto Site Restoration		1 LS			5	days	5	work days
		manhour		Equipment		Material		Subcontract		Item Cost
		80	\$5,212	\$0		\$240	0.11	\$5,000	٥.	\$10,452
	1 000	Status (Additive) Schedule factor (Normal)	8 hr/shift	Work schedule 1 shift/day	5 do	ıy/week		ner ST pay hr/shift		her OT pay hr/shift
R/T	Code	Resource Description	Resource Qty/Unit	Production rate		Resource Un		Resource Q		Resource Cost
M	sts	Small tools and supplies	riosource Qty/Oriit	. Toduction rate	i aciti	\$3.00		80.00		\$240
S	sr	Site restoration	0.50 acre			\$10,000		0.50		\$5,000
Ĺ	lab	General Labor (Grp 3)				\$63.14		40.00		\$2,525
L	lfm	Labor FM				\$67.17		40.00		\$2,687



ProjectClientJob No.EstimatorRevComputed onAlto TunnelMarin County5581.0TLP06/20/2017Tunnel Abandonment Study

#### DIRECT COST DETAIL

No.	Item De	escription			Item Quantity/Unit	Produ	uction rate	Other fixed time	Total time
017	Stets	on Ave. Site Restoration			1 LS			5 days	5 work days
		man	hours	Labor	Equipment		Material	Subcontract	Item Cost
			80	\$5,212	\$0		\$240	\$5,000	\$10,452
		Status (Additive)			Work schedule			Other ST pay	Other OT pay
	1.000	Schedule factor (Normal)		8 hr/shift	1 shift/day	5 0	day/week	0 hr/shift	0 hr/shift
R/T	Code	Resource Description		Resource Qty/Unit	Production rate	Factor	Resource Unit Co	st Resource Qua	antity Resource Cost
M	sts	Small tools and supplies					\$3.00 /mh	ır 80.00 n	nhr \$240
S	sr	Site restoration		0.50 acre			\$10,000 /aci	re 0.50 a	cre \$5,000
L	lab	General Labor (Grp 3)					\$63.14 /mh	r 40.00 n	nhr \$2,525
L	lfm	Labor FM					\$67.17 /mh	r 40.00 n	nhr \$2,687



Project Client Job No. Estimator Rev Computed on Alto Tunnel
Alto Tunnel Abandonment Study

Client Job No. Estimator Rev Computed on 5581.0 TLP 0 6/20/2017

\*\*Tunnel Abandonment Study\*\*

Computed on 4/20/2017

\*\*Tunnel Abandonment Study\*\*

Accompand on 5581.0 TLP 0 6/20/2017

\*\*Tunnel Abandonment Study\*\*

Computed on 4/20/2017

#### INDIRECT COST DETAIL

No. <b>018</b>	Item Description <b>Equipment Ownership not in</b>	Direc	t Cost	Item Quantity/Unit <b>LS</b>				#N/A		
	Equipment spread to	Directs	Labor	Equipment		Material		Subcontract		Item Cos
		5,900	\$0	\$82,500	_	\$0		\$0		\$82,50
Notes			Pontol/logge	Floot Faut		ment via Equipmo Purchased Eq			ahaaa	\$ Dental
	rce Code: Fleet, Purchase, Mob Purcha nership cost/hr is based on actual equipn			Fleet Equi Value	W/O	Value	W/O	Fleet + Pur Value	W/O	Rental Amount
	site at a single-shift utilization rate of 173			\$859K		\$330K	25%	\$1,189K	14%	\$10K
UI I-8	site at a single-shift utilization rate of 173		nonin.	Unit Purchase cost, Unit	10 /6	Unit Freight &		ψ1,1031	14/0	Project Co:
		Source Code	Number of Units	Book value, or Rental	Project	(carried in Mob		Ownership	Equip.	excludin
R/T	Resource Description	တို လိ	or Rental Period	Rate per period	Write off	Freight in/out	E/D mhr	Cost/hr	mos	freight/erection
M	Sales Tax			\$330,000	0.0%	(no sales tax	()			\$
Hou	rly Equipment used in Direct Co	st Iten	ns: \$95,900							
E	Cat 305 Mini-Exc 11k/.17cy	R	2 mo	\$5,000		\$500		\$50.00	1.2	in direct
E	Wheel Loader Cat 950/3.5cy	F	2 ea	\$217,000	10%	\$1,000		\$43.71	5.7	in direct
E	Generator, skid 210kW	F	2 ea	\$50,000	10%	\$400		\$10.07	5.7	in direct
E	Pump, subm. 140gpm/20ft hea	d F	1 ea	\$5,000	10%	\$50.00		\$0.84	3.4	in direct
E	Water Treatment Plant	F	1 ea	\$40,000	10%	\$500		\$6.76	3.4	in direct
E	Grout Slurry Mixer, 4cy	F	2 ea	\$40,000	10%	\$500		\$9.98	4.6	in direct
E	Conc. pump, trailer 76cy/hr	F	2 ea	\$100,000	10%	\$500		\$17.66	6.5	in direct
Ger	neral Plant: \$82,500									
Ε	Pickups	Р	8 ea	\$30,000	25%	\$400		\$7.88	44.0	\$60,00
Е	Mechanics Truck	Р	1 ea	\$50,000	25%	\$400		\$13.14	5.5	\$12,50
Е	Street Sweep	Р	1 ea	\$40,000	25%	\$400		\$10.51	5.5	\$10,00
	•									
No. <b>019</b>	Item Description  General Mobilization			Item Quantity/Unit <b>0.5 mo</b>		Mob/demob	paid as so	cheduled. Bond	d paid at	NTP.
0.0	manhou	ıre	Labor	Equipment		Material		Subcontract		Item Co
	26		\$16,619	\$5,026		\$151,630		\$0		\$173,27
	522.00		\$33,237.61	\$10,051.41		\$303,259.20		\$0.00		\$346,548.2
	322.00	,0	ψου,207.01	Work schedule		φουσ,200.20	Ot	her ST pay	Oth	er OT pay
			8 hr/shift	1 shift/day	5	day/week		) hr/shift		hr/shift
R/T	Resource Description		Resource Qty/Unit	Production rate	Factor	Resource Ur		Resource Q		Resource Cos
M	sts Small tools and supplies		nesource Qty/Offit	FIOUUCIOITALE	racioi	\$3.00			mhr	\$78
M	Freight-see equipment ownersl		50% of total (	balance in Demobiliz	ation)			of equip. cos		\$4,92
M	Transfer from cost item 024 Bo					φ9,030	LS	or equip. cos	οι <i>)</i>	\$35,92
M	Dryhouse	nus, n	1 ea	400 sf/ea	OD	\$20.00	_	400	cf	\$8,00
M	•		1 loc	400 SI/ea		\$2,000			loc	\$2,00
	Fire protection system									
M	First Aid trailer/furnishings		400 sf			\$40.00		400		\$16,00
M	Fuel+Lube facilities		1 loc			\$5,000			loc	\$5,00
M	Job light and power system		1 loc			\$10,000			loc	\$10,00
M	Job sanitary system		1 loc			\$10,000			loc	\$10,00
M	Job water distribution		1 loc			\$10,000			loc	\$10,00
M	Office copier/computers/fax		1 sets			\$5,000			sets	\$5,00
M	Office furnishings		1 sets	400 11		\$2,000			sets	\$2,00
M	Office trailers		1 ea	400 sf/ea		\$40.00		400		\$16,00
M	Shop		1 loc	800 sf/loc		\$10.00		800		\$8,00
М	Signs		5 loc			\$2,000			loc	\$10,00
M	Warehouse		1 loc	800 sf/loc		\$10.00		800		\$8,00
L	Labor crew - 1 operator x 2 loc				1	\$75.41			mhr	\$6,56
	Labor crew - 2 laborers x 2 loc				2	\$57.81			mhr	\$10,05
L		loc			1	\$57.77	/hr	87	hr	\$5,02
L	Wheel Loader Cat 966/4.8cy 2									
L E No.	Item Description			Item Quantity/Unit		Mob/demob i	paid as so	cheduled. Bond	d paid at	NTP.
L E No.				Item Quantity/Unit 0.5 mo		Mob/demob	paid as so	cheduled. Bond	d paid at	NTP.
L E No.	Item Description  Demobilization/Punchlist manhou	ırs	Labor	<b>0.5 mo</b> Equipment		Material	paid as so	Subcontract	d paid at	Item Co.
L E No.	Item Description  Demobilization/Punchlist	ırs	Labor <b>\$16,437</b>	0.5 mo			paid as so	Subcontract \$0	d paid at	Item Co
L E No.	Item Description  Demobilization/Punchlist manhou	ırs 6 <b>1</b>		<b>0.5 mo</b> Equipment		Material	paid as so	Subcontract	d paid at	Item Co. \$81,85
L E No.	Item Description  Demobilization/Punchlist  manhou  26	ırs 6 <b>1</b>	\$16,437	<b>0.5 mo</b> Equipment \$4,708		Material <b>\$60,708</b>		Subcontract \$0		Item Co. \$81,85
L E No.	Item Description  Demobilization/Punchlist  manhou  26	ırs 6 <b>1</b>	\$16,437	<b>0.5 mo</b> Equipment <b>\$4,708</b> \$9,416.45		Material <b>\$60,708</b>	Ot	Subcontract <b>\$0</b> \$0.00	Oth	Item Cos <b>\$81,85</b> \$163,705.6



March   Frequency   Frequency   Symbol   Symbo		et Tunnel nel Abandonment Study		Client Marin County			Job No. <b>5581.0</b>		Computed on 6/20/2017 4:05 PM
March   Frequency   Septembro   Septembr			IN	DIRECT COST DETA	<b>AIL</b>				
Material   Solid   S	М	sts Small tools and supplies				\$3.00 /	mhr	261 mhr	\$783
L clapingment Operator   1 \$73.31 mlm   174 mlm   54.078   1 \$73.31 mlm   86.078   1 \$75.41 mlm   87 mlm   87.078   1 \$75.41 mlm   87 mlm	M	Freight-see equipment ownership	50% of total (b	alance in Mobilizatio	n)	\$9,850 t	otal		\$4,925
	M	50% of Gen'l Mob matl less freight	1 LS		0.5	\$110,000 /	LS	0.5 LS	\$55,000
Mineral Loader Cat 966/4 8ey 2 loc   1 \$54.12 /hr 87 hr \$4.708	L				2	\$57.81 /	mhr		\$10,058
	L							•	\$6,378
	E	Wheel Loader Cat 966/4.8cy 2 loc			1	\$54.12 /	hr	87 hr	\$4,708
	No.	·		Item Quantity/Unit		The duration is fro	om the ei	nd of mob to the start	of demob.
	021	General Plant Operation/Mainten	ance	5.5 mo					
Resource Description									Item Cost
RT   Resource Description   Resource CityUnit   S   hr/shift   S									
S hr/shift		86.545	\$5,303.07	·		\$10,059.64			
Resource Description									
Mater   Sama				•		•			
M Access road maintenance \$2,500 /mo 5.5 mo \$13,750 MO Cell phone/radio fees \$10 umo/mo \$5,200 /mo 5.5 mo \$8,800 MO Craft shop maintenance \$800 /mo 5.5 mo \$8,300 MO Drivhouse supplies \$1,500 /mo 5.5 mo \$3,300 MO Drivhouse supplies \$1,500 /mo 5.5 mo \$3,300 MO Drivhouse supplies \$1,500 /mo 5.5 mo \$3,300 MO First Aid supplies \$1,500 /mo 5.5 mo \$3,300 MO Drivhouse supplies \$1,500 /mo 5.5 mo \$3,300 MO Drive cleaning \$1,500 /mo 5.5 mo \$2,750 MO Drive copier/computers/fax supplies \$1,500 /mo 5.5 mo \$2,750 MO Drive copier/computers/fax supplies \$1,500 /mo 5.5 mo \$2,750 MO Drive copier/computers/fax supplies \$1,500 /mo 5.5 mo \$2,750 MO Drive copier/computers/fax supplies \$1,500 /mo 5.5 mo \$2,750 MO Drive copier/computers/fax supplies \$1,500 /mo 5.5 mo \$2,750 MO Drive copier/computers/fax supplies \$1,500 /mo 5.5 mo \$3,300 MO Drive copier/computers/fax supplies \$1,500 /mo 5.5 mo \$3,300 MO Drive copier/computers/fax supplies \$1,500 /mo 5.5 mo \$3,300 MO Drive copier/computers/fax supplies \$1,500 /mo 5.5 mo \$3,300 MO Drive copier/computers/fax supplies \$1,500 /mo 5.5 mo \$3,300 MO Drive copier/computers/fax supplies \$1,500 /mo 5.5 mo \$3,300 MO Drive copier/computers/fax supplies \$1,500 /mo 5.5 mo \$3,300 MO Drive copier/computers/fax supplies \$1,500 /mo 5.5 mo \$3,300 MO Drive copier/computers/fax supplies \$1,500 /mo 5.5 mo \$3,300 MO Drive copier/computers/fax supplies \$1,500 /mo 5.5 mo \$3,300 MO Drive copier/computers/fax supplies \$1,500 MO Drive copier/computers/fax supplies \$1,		•	Resource Qty/Unit	Production rate	Factor				
Marcon   Carla shop maintenance   10 umo/mo   \$120 /umo   55 umo   \$3,300	M							-	
Machine   Septiment   Septim	M								
Machine   Mach		1		10 umo/mo					
March   Dryhou'se supplies   1 \$1,000 /mo   5.5 mo   \$3,500		•							
Material   Secure									
Marting   Mart						* ;	-		
Material   Stop   State   St									
Solidar   Soli									
S Office cleaning   1   \$1,500 /mo   5.5 mo   \$8,250									
Modifice copier/computers/tax supplies   1 \$500 /mo 5.5 mo \$2.750									
Modifice phone/tax/data line fees		•							
Mater treatment plant supplies   1 \$600 /mo 5.5 mo \$3.300			S						
Water treatment plant supplies   1   \$500 /mo   5.5 mo   \$2,750									
Water truck/Sweeper driver   September		• •							
See the 'Resources' sheet for an explanation of field supervisory class codes, and associated labor burdens.   See the 'Resources' sheet for an explanation of field supervisory class codes, and associated labor burdens.   R7' and 'V?' codes denote if relocation expenses (both ways) are paid or a vehicle assigned, respectively - see cost item 023.   See the 'Resource Description   R? V?   Personnel   Duration   Factor   Resource Unit Cost   Resource Quantity   Resource Cost   R7   Project Manager   Y   1 ea   0.5 \$15,000 /mmo   4.25 mmo   \$42,500 /mmo	L								\$2,750 \$29,167
See the 'Resources' sheet for an explanation of field supervisory class codes, and associated labor burdens.   See the 'Resources' sheet for an explanation of field supervisory class codes, and associated labor burdens.   R7' and 'V?' codes denote if relocation expenses (both ways) are paid or a vehicle assigned, respectively - see cost item 023.   See the 'Resource Description   R? V?   Personnel   Duration   Factor   Resource Unit Cost   Resource Quantity   Resource Cost   R7   Project Manager   Y   1 ea   0.5 \$15,000 /mmo   4.25 mmo   \$42,500 /mmo	No.	Item Description		Item Quantity/Unit		<del>-</del>		NTD:	
The Cos   Same	022	Field Supervision		· · · · · · · · · · · · · · · · · · ·		i ne duration	is from	N I P to project comple	etion.
See the 'Resources' sheet for an explanation of field supervisory class codes, and associated labor burdens.   Resources' sheet for an explanation of field supervisory class codes, and associated labor burdens.   Resources' sheet for an explanation of field supervisory class codes, and associated labor burdens.   Resource Description		•	s Labor	Equipment		Material		Subcontract	Item Cost
Vehicles   5 ea   24 vmo   Relocations   0 ea		3	2 \$380,238	\$0		\$0		\$0	\$380,238
See the 'Resources' sheet for an explanation of field supervisory class codes, and associated labor burdens.  'R?' and 'V?' codes denote if relocation expenses (both ways) are paid or a vehicle assigned, respectively - see cost item 023.  5.50 mo end of mobe to beginning of demob  R/T Class Resource Description R? V? Personnel Duration Factor Resource Unit Cost Resource Quantity Resource Cost  L - Labor burden for personnel below - see the 'Resources' sheet 32.8% weighted average \$93,988 (by 15,000 /mmo 4.25 mmo 4.25 mm		3.76	5 \$44,733.82	\$0.00		\$0.00		\$0.00	\$44,733.82
R?' and 'V?' codes denote if relocation expenses (both ways) are paid or a vehicle assigned, respectively - see cost item 023.   5.50 mo end of mobe to beginning of demob   R? V?   Personnel   Duration   Factor   Resource Unit Cost   Resource Quantity   Resource Cost		11 12						Relocations	0 ea
S.50 mo end of mobe to beginning of demob   R? V?   Personnel   Duration   Factor   Resource Unit Cost   Resource Quantity   Resource Cost								ee cost item 023.	
R/T   Class   Resource Description   R? V?   Personnel   Duration   Factor   Resource Unit Cost   Resource Quantity   Resource Cost				o, are pare or a remo	o 400.9	,ou, .oopoo		00 0001 110111 0201	
L - Labor burden for personnel below - see the 'Resources' sheet L KP Project Manager y 1 ea 0.5 \$15,000 /mmo 4.25 mmo \$63,750 L EP Project Engineer y 1 ea 0.5 \$10,000 /mmo 4.25 mmo \$42,500 L EP Field Engineer 1 ea 5.5 mmo/ea \$6,000 /mmo 5.5 mmo \$33,000 L EP Safety Manager y 1 ea 0.5 \$10,000 /mmo 4.25 mmo \$42,500 L EP Safety Manager y 1 ea 0.5 \$10,000 /mmo 4.25 mmo \$33,000 L EP Safety Manager y 1 ea 0.5 \$10,000 /mmo 4.25 mmo \$42,500 L KP General Superintendent y 1 ea 5.5 mmo/ea 0.5 \$3,000 /mmo 2.75 mmo \$8,250 L KP General Superintendent y 1 ea 5.5 mmo/ea \$13,000 /mmo 5.5 mmo \$71,500 L NL 1st Aid EMT - Dayshift y 1 ea 5.5 mmo/ea \$4,500 /mmo 5.5 mmo \$71,500 /mmo 5.5 mmo \$24,750 /mmo 5.5 mmo \$24,	R/T	· ·	•	Duration	Factor	Resource Unit	t Cost	Resource Quantity	Resource Cost
L KP Project Manager y 1 ea 0.5 \$15,000 /mmo 4.25 mmo \$63,750   L EP Project Engineer y 1 ea 0.5 \$10,000 /mmo 4.25 mmo \$42,500   L EP Field Engineer 1 ea 5.5 mmo/ea \$6,000 /mmo 5.5 mmo \$33,000   L EP Safety Manager y 1 ea 0.5 \$10,000 /mmo 4.25 mmo \$42,500   L EP Safety Manager y 1 ea 0.5 \$10,000 /mmo 4.25 mmo \$42,500   L NL Secretary/Clerk 1 ea 5.5 mmo/ea 0.5 \$3,000 /mmo 2.75 mmo \$8,250   L KP General Superintendent y 1 ea 5.5 mmo/ea \$13,000 /mmo 5.5 mmo \$71,500   L NL 1st Aid EMT - Dayshift y 1 ea 5.5 mmo/ea \$4,500 /mmo 5.5 mmo \$24,750    No. Item Description	L	,	below - see the 'Res						\$93.988
L EP Project Engineer y 1 ea 5.5 mmo/ea 5.5 mmo \$42,500   L EP Field Engineer 1 ea 5.5 mmo/ea \$6,000 /mmo 5.5 mmo \$33,000   L EP Safety Manager y 1 ea 0.5 \$10,000 /mmo 4.25 mmo \$42,500   L NL Secretary/Clerk 1 ea 5.5 mmo/ea 0.5 \$3,000 /mmo 2.75 mmo \$42,500   L NL Secretary/Clerk 1 ea 5.5 mmo/ea 0.5 \$3,000 /mmo 2.75 mmo \$42,500   L KP General Superintendent y 1 ea 5.5 mmo/ea \$13,000 /mmo 5.5 mmo \$71,500   L NL 1st Aid EMT - Dayshift y 1 ea 5.5 mmo/ea \$4,500 /mmo 5.5 mmo \$24,750    No. Item Description	L	'			0.5		•	•	
L EP Field Engineer	L	: : .							
L EP Safety Manager y 1 ea	L	, ,		5.5 mmo/ea	-				
L NL Secretary/Clerk 1 ea 5.5 mmo/ea 0.5 \$3,000 /mmo 2.75 mmo \$8,250 L KP General Superintendent y 1 ea 5.5 mmo/ea \$13,000 /mmo 5.5 mmo \$71,500 L NL 1st Aid EMT - Dayshift y 1 ea 5.5 mmo/ea \$4,500 /mmo 5.5 mmo \$24,750 L NL 1st Aid EMT - Dayshift y 1 ea 5.5 mmo/ea \$4,500 /mmo 5.5 mmo \$24,750 L NL 1st Aid EMT - Dayshift y 1 ea 5.5 mmo/ea \$4,500 /mmo 5.5 mmo \$24,750 L NL 1st Aid EMT - Dayshift y 1 ea 5.5 mmo/ea \$4,500 /mmo 5.5 mmo \$24,750 L NL 1st Aid EMT - Dayshift y 1 ea 5.5 mmo/ea \$4,500 /mmo 5.5 mmo \$24,750 L NL 1st Aid EMT - Dayshift y 1 ea 5.5 mmo/ea \$4,500 /mmo 5.5 mmo \$24,750 L Labor Equipment Material Subcontract Item Cos \$0 \$0 \$70,724 \$296,268 \$366,992 \$0.00 \$0.00 \$8,320.41 \$34,855.11 \$43,175.52 L R/T Resource Description Resource Qty/Unit Production rate Factor Resource Unit Cost Resource Quantity Resource Cost M Payroll processing, wage labor A9 mmo 4.33 chk/mmo \$5.50 /chk 213 chk \$1,172 M Payroll processing, salary labor 32 mmo 2 chk/mmo \$5.50 /chk 64 chk \$352 M Drug tests 10 test \$2,000 L Labor Equipment Resource Cost Resource Quantity Resou	L				0.5				
L KP General Superintendent y 1 ea 5.5 mmo/ea \$13,000 /mmo 5.5 mmo \$71,500 \ L NL 1st Aid EMT - Dayshift y 1 ea 5.5 mmo/ea \$4,500 /mmo 5.5 mmo \$24,750 \  No. Item Description Overhead Maintenance/Service  Labor Equipment Material Subcontract Item Cos \$0 \$0.00 \$70,724 \$296,268 \$366,992 \$0.00 \$0.00 \$8,320.41 \$34,855.11 \$43,175.52 \$0.00	L	, ,		5.5 mmo/ea					
No.   Item Description   Item Quantity/Unit   Resource Description   Resource Qty/Unit   Production rate   Factor   Resource Unit Cost   Resource Quantity   Resource Cost   Resource Quantity   Resource Cost   Resource Quantity   Resource Quantity   Resource Quantity   Resource Quantity   Resource Cost   Resource Quantity   Resourc	L								
8.5 mo         Material Subcontract Item Cos           \$0         \$0         \$0.00         \$8,320.41         \$34,855.11         \$43,175.52           R/T         Resource Description         Resource Qty/Unit Production rate         Production rate         Factor Factor         Resource Unit Cost Resource Quantity         Resource Quantity         Resource Cost           M         Payroll processing, wage labor Payroll processing, salary labor         49 mmo         4.33 chk/mmo         \$5.50 /chk         213 chk         \$1,172           M         Payroll processing, salary labor         32 mmo         2 chk/mmo         \$5.50 /chk         64 chk         \$352           M         Drug tests         10 test         \$200 /test         10 test         \$2,000	L			5.5 mmo/ea		\$4,500 /	mmo		
Ozerhead Maintenance/Service         8.5 mo           Labor         Equipment         Material         Subcontract         Item Cos           \$0         \$0         \$70,724         \$296,268         \$366,992           \$0.00         \$0.00         \$8,320.41         \$34,855.11         \$43,175.52           R/T         Resource Description         Resource Qty/Unit         Production rate         Factor         Resource Unit Cost         Resource Quantity         Resource Cos           M         Payroll processing, wage labor         49 mmo         4.33 chk/mmo         \$5.50 /chk         213 chk         \$1,172           M         Payroll processing, salary labor         32 mmo         2 chk/mmo         \$5.50 /chk         64 chk         \$352           M         Drug tests         10 test         \$200 /test         10 test         \$2,000		•		Item Quantity/Unit		The duration	is from	NTP to project comple	etion.
\$0         \$0         \$70,724         \$296,268         \$366,992           \$0.00         \$0.00         \$8,320.41         \$34,855.11         \$43,175.52           R/T         Resource Description         Resource Qty/Unit         Production rate         Factor         Resource Unit Cost         Resource Quantity         Resource Cost           M         Payroll processing, wage labor         49 mmo         4.33 chk/mmo         \$5.50 /chk         213 chk         \$1,172           M         Payroll processing, salary labor         32 mmo         2 chk/mmo         \$5.50 /chk         64 chk         \$352           M         Drug tests         10 test         \$200 /test         10 test         \$2,000	023	Overhead Maintenance/Service							
R/T         Resource Description         Resource Qtt//Unit         Production rate         Factor         Resource Unit Cost         Resource Quantity         Resource Cost           M         Payroll processing, wage labor         49 mmo         4.33 chk/mmo         \$5.50 /chk         213 chk         \$1,172           M         Payroll processing, salary labor         32 mmo         2 chk/mmo         \$5.50 /chk         64 chk         \$352           M         Drug tests         10 test         \$200 /test         10 test         \$2,000									Item Cost
R/T Resource Description Resource Qty/Unit Production rate Factor Resource Unit Cost Resource Quantity Resource Cost M Payroll processing, wage labor 49 mmo 4.33 chk/mmo \$5.50 /chk 213 chk \$1,172 M Payroll processing, salary labor 32 mmo 2 chk/mmo \$5.50 /chk 64 chk \$352 M Drug tests 10 test \$2,000			•	•					\$366,992
M       Payroll processing, wage labor       49 mmo       4.33 chk/mmo       \$5.50 /chk       213 chk       \$1,172         M       Payroll processing, salary labor       32 mmo       2 chk/mmo       \$5.50 /chk       64 chk       \$352         M       Drug tests       10 test       \$200 /test       10 test       \$2,000			\$0.00	\$0.00		\$8,320.41		\$34,855.11	\$43,175.52
M         Payroll processing, salary labor         32 mmo         2 chk/mmo         \$5.50 /chk         64 chk         \$352           M         Drug tests         10 test         \$200 /test         10 test         \$2,000	R/T	•			Factor				
M Drug tests 10 test \$200 /test 10 test \$2,000	M	, ,							\$1,172
	M	Payroll processing, salary labor	32 mmo	2 chk/mmo		\$5.50 /	chk	64 chk	\$352
M Audit fees 0.7 yr \$4,000 /yr 0.7 yr \$2,800	М	•	i i						\$2,000
	M	Audit fees	0.7 yr			\$4,000 /	yr	0.7 yr	\$2,800



	ct Tunnel nel Abandonment Study		Client Marin County		Job No. <b>5581.0</b>	Estimator Re	Computed on 6/20/2017 4:05 PM
		II	NDIRECT COST DET	AIL			
М	Legal fees	0.7 yr			00 /yr	0.7 yr	\$2,800
М	Personnel recruiting	0.7 yr			00 /yr	0.7 yr	\$700
М	Design department charge	0.7 yr	Home Office Overhea	30 : :	00 /yr	0.7 yr	\$3,500
M	IT/EDP department charge	0.7 yr	items: 0.5% of bid.		00 /yr	0.7 yr	\$1,400
M M	Equipment department charge	0.7 yr 0.7 yr			00 /yr 00 /yr	0.7 yr 0.7 yr	\$3,500 \$2,800
M	Accounting department charge HR department charge	0.7 yr 0.7 yr			00 /yr 00 /yr	0.7 yr 0.7 yr	\$1,400
M	Corporate department charge	0.7 yr 0.7 yr			00 /yr 00 /yr	0.7 yr	\$2,800
M	CPM scheduling charge	8.5 mo			00 /yi 00 /mo	8.5 mo	\$4,250
М	Project website maintenance	0.0		* -	00 /mo	8.5 mo	\$17,000
М	Job photographs/video				00 /mo	8.5 mo	\$4,250
М	Pre-construction survey	1 LS		\$10,0	00 /LS	1 LS	\$10,000
М	Post-construction survey	1 LS		\$10,0	00 /LS	1 LS	\$10,000
S	Grouting Consultant	1 LS		\$10,0	00 /LS	1 LS	\$10,000
S	Environmental Consultant	8.50 mo	32 hr/mo	\$2	50 /hr	272 hr	\$68,000
S	Noise Monitoring Consultant	8.50 mo	32 hr/mo	· -	50 /hr	272 hr	\$68,000
S	Security Service Day/Night/Weekend	8.50 mo		\$17,6	79 /mo	8.5 mo	\$150,268
No.	Item Description	OIM-b	Item Quantity/Unit				
024	Bonds, Insurance, and Taxes not in	Labor	<b>LS</b> Equipment	Unclassified Mate	rial	Subcontract	Item Cost
		\$0		\$238,3		\$0	\$238,389
	is which are specified to be paid under is of contractor's equipment insurance i Xfer to Resource Description Mob?			w purchases.			Deservice Cost
M	Credit for items specified to be transfe				Unit Cost LS	Resource Quantity	Resource Cost -\$35,922
M	Performance bond Y	\$4.5 M unes			00 /K Bid	\$4,490 K bio	
М	Builder's risk	\$4.5 M cost	0.8 yr		00 /K-yr	\$3,592 K-yr	\$10,776
М	Automobile/pickup insurance	24.0 vmo	,		00 /vmo	24 vmo	\$1,680
М	Contractor equip. insurance	0.8 yr	\$1,189 K/yr	\$10.	00 /K	\$951 K	\$9,512
М	Excess liability umbrella	1 LS		\$100,0	00 /LS	1 LS	\$100,000
М	Incident deductibles	1 LS		\$50,0	00 /LS	1 LS	\$50,000
М	State/Local business tax	1 LS			00 /LS	1 LS	\$10,000
М	Permits and licenses	1 LS	*		00 /LS	1 LS	\$50,000
М	Personal property tax	0.8 yr	\$1,189 K/yr	0.45 \$15.	00 /K	428.04 K	\$6,421
No. <b>025</b>	Item Description Contractor Markup		Item Quantity/Unit				
		Labor	Equipment	Unclassified Mate	rial	Subcontract	Item Cost
		\$0	\$0	\$490,3	09	\$0	\$490,309
R/T		Resource Quantity	Markup			12.3% of cost	Resource Cost
М	Direct Labor	\$587,539	35%			5.1%	\$205,639
M	Field Supervision	\$380,238				3.3%	\$133,083
M	Equipment	\$325,037				0.4%	\$16,252
M M	Material Subcontract	\$2,017,167 \$689,534				2.5% 0.9%	\$100,858 \$34,477
No.	Item Description		Item Quantity/Unit				
	Financing Charges		LS				
		Labor		Unclassified Mate		Subcontract	Item Cost
	Status (Additive)	\$0		\$14,5		<b>\$0</b>	\$14,593
Niat	Invoices Securities Securities 1.59/					etained earnings	rnod volvo
Net Calc	30 days 1.5% culate finance charges on the time elap	3.0% sed from expen		•		5% at 75% of ea	
	ipment purchases financing \$33	0,000 + \$0  tax.	930/mo - \$330,000 x 1				
	(60	ραγιτιστιιο χ φυ,	930/1110 - \$330,000 x 1 Average	Project	20 /0 avela	ago job wiiledii.	
R/T	Description	Resource Quantity	•	Allocation	Notes		Resource Cost
М	Direct labor payroll/add-ons	\$531,532	•	100% based on			\$1,908
М	Field supervision payroll/add-ons	\$380,238	38 days	100% based on	2 payroll pe	eriods/mo	\$1,206



	ect o Tunnel unel Abandonment Study		Client <b>Marin County</b>		Job No <b>5581.</b> 0		Rev 0	Computed on 6/20/2017 4:05 PM
		IN	IDIRECT COST DET	AIL				
М	Equipment purchases financing	\$330,000	5 years	100%	of purchase finance	d		\$6,445
М	Material purchases/tax	\$1,665,803	30 days	100%	of cost items 001-02	23		\$4,170
M	First retention release	\$168,383	6 mo	0%	cash; 100% securiti	es; net 1.5%	rate	\$232
М	Last retention release	\$56,128	9 mo	0%	cash; 100% securiti	es; net 1.5%	rate	\$632
No.	Item Description		Item Quantity/Unit					
027	Contractor Contingency		LS					
		Labor	Equipment	Unc	lassified Material	Subcontract		Item Cost
	Status (Additive)	\$0	\$0		\$98,382	\$0		\$98,382
R/T	Resource Description	Resource Qty/Unit	Production rate	Factor		Resource Qu		Resource Cost
М	General Conditions	1 LS			\$2,459,549 /LS	0.02	-	\$49,191
М	Mitigation Measures	1 LS		0.02	\$2,459,549 /LS	0.02	LS	\$49,191
No.	Item Description		Item Quantity/Unit					
028	B Escalation from NTP		LS					
	Status (Additive)	Labor	Equipment		Material	Subcontract		Item Cost
	Escalation up to NTP (not applicable)	\$0	\$0		\$0	\$0		\$0
	Escalation after NTP	\$4,490	\$0		\$14,449	\$0		\$18,939
	Total Escalation	\$4,490	\$0		\$14,449	\$0		\$18,939
	ce a fixed schedule date for NTP is not							
dire	ct costs and on a yearly basis over the		for indirect costs. The	e avera	ge composite annual	l escalation ra	ate is 3	3.0%.
R/T	Resource Description	Unescalated Cost	Escalation Rate/Year		unding Periods	(not applica		Escalated Cost
L	Direct Labor	\$587,539	3.0%	2	(semi-annually)	6/20/20		\$4,490
L	Field Supervision	\$380,238	3.0%	1	(annually)	6/20/20	17	\$0
Е	Equipment	\$325,037	3.0%	1	(annually)	6/20/20	17	\$0
M	Material (including unclassified)	\$2,507,475	3.0%	4	(quarterly)	6/20/20	17	\$14,449
S	Subcontracts	\$689,534	3.0%	1	(annually)	6/20/20	17	\$0
No.	Item Description		Item Quantity/Unit					
029	Owner Contingency		LS					
		Labor	Equipment	Unc	lassified Material	Subcontract		Item Cost
	Status (Additive)	\$0	\$0		\$901,800	\$0		\$901,800
C/T	Type of Contingency		Amount		Contingency Lo			Resource Cost
Т	Design Definition		\$4,508,762		20.0% of total			\$901,800



Job No.

Estimator

Rev

Computed on

Client

**Alto Tunnel Marin County** 5581.0 **TLP** 6/20/2017 **Tunnel Abandonment Study** 4:05 PM **RESOURCE RATE AND USAGE DETAIL DIRECT LABOR** Basis: Prevailing wage rates Employer Insurance Add-ons Ind. Rate Exp. Mod Eff Rate Employer Payroll Tax Add-ons Tax Rate Annual Inc. Cap Memo: Estimate Total Workers' Compensation 6.0% 6.0% \$19,767 Fed. Social Security Tax 6.200% \$118,500 Commercial General Liability 10.0% 10.0% \$32,945 Fed. Medicaid Tax 0.145% CIGA/Terrorism/Other Add-ons 1.0% 1.0% \$3,295 Fed. Unemployment Tax \$7,000 0.600% CA Unemployment Tax 3.400% \$7,000 CA SDI Overtime Rate 1.100% \$100,800 General/Saturday overtime 1.5x Sunday/Holiday overtime 2.0x Weighted average: \$34.56 /mhr Base+Vac

Misc. General	overtime 2.09	% built in ra	tes	\$	7,731		\$33.58 /	mhr Fringes/Ins	/Taxes
		Hourly	Hourly	Daily	Ins &	Misc.	Adjusted		
Code Resource	e/Group Description	Base+Vac	Fringes	Subsistance/Travel	Taxes	Gen'l OT	Rate/mhr	Total mhrs	Total Cost
Labore	ers								
Ifm Labor F	FM	\$35.24	\$22.20		\$8.76	\$0.97	\$67.17	1,393	\$93,556
lab Genera	al Labor (Grp 3)	\$32.04	\$22.20		\$7.97	\$0.92	\$63.14	3,187	\$201,227
Operat	ting Engineers								
eo35+ Excava	ator >.5cy (OG2)	\$41.14	\$30.43		\$10.20	\$1.22	\$82.99	200	\$16,598
lo35- Loader	oper. <3.5cy (OG4)	\$38.28	\$30.43		\$9.50	\$1.18	\$79.39	993	\$78,817
mw HD Me	ch/Welder (OG4)	\$38.28	\$30.43		\$9.50	\$1.18	\$79.39	592	\$46,998
conc Concre	ete equip.oper. (OG5)	\$37.01	\$30.43		\$9.19	\$1.16	\$77.79	1,133	\$88,120
Mobilization L	abor	\$32.34	\$22.45	\$0.00	\$7.95	\$0.93	\$63.67	261	\$16,619
Demobilization	n Labor	\$31.98	\$22.20	\$0.00	\$7.87	\$0.92	\$62.98	261	\$16,437
GP Operation	/Maintenance Labor	\$31.12	\$21.60	\$0.00	\$7.65	\$0.90	\$61.27	476	\$29,167
Craft Labor Es	scalation								\$4,490
	Total Craft Labo	or	\$29	5,853 escalated p	ayroll		8,496 mhrs		\$592,029

#### FIELD SUPERVISORY LABOR (see cost item 022)

Employer Insurance Add-ons Ind. Rate Exp. Mod Eff. Rate Memo: Estimate Total Permanent Employee Benefits Rate Applied to classifications Workers' Compensation 1.8% 1.8% \$5,153 Key empl. bonus plan 8.0% ΚP  $\mathsf{KP},\,\mathsf{EP},\,\mathsf{EL},\,\mathsf{NP},\,\mathsf{NL}$ 5.0% \$14,313 Employee medical plan 10.0% Commercial Gen'l Liability 5.0% Retirement/Pension plan 5.0% KP, EP, NP Non-exempt salaried OT 2.0% NP, NL

Employer Payroll Tax Add-ons

Project

7.6% payroll tax rate based on \$8,945/mmo weighted base salary.

Total Field Supervisory Labor Classification Class Burden Key permanent employee ΚP 37.4% Exempt permanent employee ΕP 29.4% Exempt local hire employee EL 24.4% Non-exempt permanent employee NP 31.4% Non-exempt local hire employee NL 26.4%

				Total IIIII05	i olai Gost
Supervis	sory Salaries			32	\$380,238
	Total Supervisory Labor	\$286,250 escalated payroll	32 mmos		\$380,238



Total Cost

Project Client Job No. Estimator Rev Computed on Alto Tunnel Marin County 5581.0 TLP 0 6/20/2017 Tunnel Abandonment Study 4:05 PM

RESOURCE RATE AND USAGE DETAIL

#### EQUIPMENT (see Cost Item 018 for development of hourly ownership costs) Basis: COE Rates, Year 2011 Unit Cost Memo: Total including General Plant Mob/O&M Electricity \$0.12 /kWh Region 8 65,369 kWh \$7,844 20,391 gal Fuel/Power Factor High \$79.321 Diesel \$3.89 /gal Gas \$3.20 /gal 0 gal \$0 Parts Elec/Fuel Ownership Air Diesel Equipment Code Resource/Group Description Elec Gas HP/CFM HPF Cost/hr Cost/hr Cost/hr Total Cost/hr Value Total hrs **Total Cost** b305 Cat 305 Mini-Exc 11k/.17cy D 47 65 \$72,813 \$7.77 \$6.96 \$50.00 \$64.73 200 \$12,946 Loaders L950 Wheel Loader Cat 950/3.5cy D 197 65 \$217,586 \$26.24 \$29.18 \$43.71 \$99.13 993 \$98,416 **Concrete Equipment** Conc. pump, trailer 76cy/hr D \$58,657 c76 127 70 \$93,635 \$13.87 \$20.26 \$17.66 \$51.78 1,133 Grout Slurry Mixer, 4cy Ε \$40,000 \$2.00 802 gsm 120 80 \$8.76 \$9.98 \$20.74 \$16,621 **Plant Equipment** D 993 \$40,001 g210 Generator, skid 210kW 314 33 \$37,885 \$6.61 \$23.61 \$10.07 \$40.29 p140 Pump, subm. 140gpm/20ft hea Ε 2 90 592 \$4,135 \$0.41 \$0.16 \$0.84 \$1.42 \$840 \$350,000 wtp Water Treatment Plant Ε 15 90 \$1.00 \$1.23 \$8.99 \$5,321 \$6.76 592 Equipment Ownership (excludes \$95,900 componant spread to Direct Costs) \$82,500 Mobilization Equipment 87 \$5,026 \$4,708 **Demobilization Equipment** 87

**Total Equipment** 

6,284 hrs



\$325,037

Project Client Job No. Estimator Rev Computed on Alto Tunnel Marin County 5581.0 TLP 0 6/20/2017 Tunnel Abandonment Study 4:05 PM

#### **RESOURCE RATE AND USAGE DETAIL**

MATE	ERIALS						
				Add Tax	Unit Cost		
Code	Resource/Group Description	Unit Cost/Measure	Notes	(-/N)?	F.O.B Job	Total Quantity	Total Cost
	Add-ons						
tax	Sales Tax	8.250%	Memo: Tax on Material \$	96,403			
			and Equipment Purchases	<i>\$0</i>			
sts	Small tools and supplies	\$3.00 mhr	(4.6% of raw direct labor rate)	1	\$3.00	8,496	\$25,487
	Concrete/Cement						
cb	Cement, bulk	\$110.00 ton	Ashgrove Cement 10/2012		\$119.08	2,459	\$292,848
clsm	Controlled Low Strength Mate	\$90.00 cy			\$97.43	7,969	\$776,383
xg	Grout Admixtures	\$10.00 cy			\$10.83	12,964	\$140,339
	Formwork						
lumb	Lumber for lagging/blocking	\$1.31 bf			\$1.42	1,121	\$1,589
ply1	Plywood MDO 1"	\$1.50 sf			\$1.62	280	\$455
	Permanent Materials						
swpp	Silt Fence / Straw Waddles	\$5.00 If	plug		\$5.41	2,000	\$10,825
h20	Water	\$100.00 kgal			\$108.25	392	\$42,483
xmisc	Miscellaneous material	\$1,000 lot		N	\$1,000	40	\$40,000
Mobili	ization Freight and Materials						\$150,847
Demo	bilization Freight and Materials						\$59,925
Gene	ral Plant Operation/Maintenance Ma	terials					\$53,900
Overh	nead Maintenance/Service Materials						\$70,724
Bonds	s, Insurance, and Taxes not in Gener	ral N (unclassified)					\$238,389
Contra	actor Markup	(unclassified)					\$490,309
Finan	cing Charges	(unclassified)					\$14,593
Contra	actor Contingency	(unclassified)					\$98,382
Mater	ial Escalation	•					\$14,449
				Tot	al Material		\$2,521,924

#### **SUBCONTRACTS**

				Escalated Construction Bid		\$4,508,762
				Total Subcontract		\$689,534
Over	head Maintenance/Service Subcor	ntracts				\$296,268
Gene	eral Plant Operation/Maintenance S	Subcontracts				\$19,250
Drill	Drilling Subcontractor	\$98.00 If		\$98.00	2,592	\$254,016
	Specialty Subcontracts					
tfnc	Temporary Construction Fenc	\$25.00 If		\$25.00	2,000	\$50,000
sr	Site restoration	\$10,000.00 acre	Plug Price	\$10,000	4	\$35,000
cg	Clearing and grubbing	\$10,000.00 acre		\$10,000	4	\$35,000
	Sitework					
Code	Resource/Group Description	Unit Cost/Measure	Notes	To	otal Quantity	Total Cost



Project Client Job No. Estimator Rev Computed on Alto Tunnel Marin County 5581.0 TLP 0 6/20/2017 Tunnel Abandonment Study 4:05 PM

#### RESOURCE RATE AND USAGE DETAIL

#### **SUMMARY BY RESOURCE TYPE**

Cost Type	Labor	Equipment	Material	Subcontract	Total	
Direct* Cost	\$525,316	\$232,803	\$1,327,414	\$374,016	\$2,459,549	
Indirect* Cost	\$442,460	\$92,234	\$338,389	\$315,518	\$2,030,274	
Indirect Cost (unclassified)	-	-	\$841,672	-	φ2,030,2 <i>1</i> 4	
Owner Allowances	-	-	-	_	-	
Escalation from NTP	\$4,490	\$0	\$14,449	\$0	\$18,939	
Escalated Construction Bid	\$972,266	\$325,037	\$2,521,924	\$689,534	\$4,508,762	
Relative Direct* + Indirect* Costs	27%	9%	46%	19%	100% on \$3,648,151	

#### **SUMMARY BY COST TYPE**

		% Direct, Equipment							
Cost Type	Total	% Total Estimate	and Plant Cost	Applicable Cost Items					
Mobilization/Demobilization	\$255,127	5.7%	9.6%	019 - 020					
Directs, Equipment, and Plant	\$2,645,794	58.9%	100.0%	001 - 018, 021 -					
Overhead/Profit	\$1,588,902	35.4%	60.1%	022 - 027					
Owner Allowances	-								
Unescalated Construction Bid	\$4,489,823		169.7%						

#### **UNESCALATED TIME-RELATED INDIRECT COST BREAKDOWN**

Cost Type	Average Cost/month Exclud	e? Monthly costs include adjustments totalling 5.6% for:
Lineal/Other Plant Equipment CFC	\$0 /mo	- bonds, insurance, and taxes
GP operation/maintenance	\$19,926 /mo	- financing charges
Weekend maintenance		but exclude contractor contingency
Field supervision	\$47,254 /mo	
OH maintenance/service	\$45,608 /mo	
Total	\$112,788 /mo (excluding	markup) \$134,100 /mo (including markup)

#### **DISTRIBUTION OF PROJECT NON-WORKDAYS**

														Galeridai	rotai
Type of non-workday	Jan	Feb	Mai	r	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year	Project
Holiday		1	1	0	0	1	0	1	0	1	0	2	2	9	4
Inclement Weather Day		2	2	1	0	0	0	0	0	0	0	2	2	9	3
Total		3	3	1	0	1	0	1	0	1	0	4	4	18	7

