



Computations

Project: WCRS(23) **Project #** 57603.00
Location: MIDDLEBURY **Sheet:** 1 of 1
Calculated by: E. Lawes **Date:** 1/20/2016
Checked by: K. Barry **Date:** 1/20/2016
Title: Order-of-Magnitude 18.67' VC

Look at Vertical Clearance Savings from previous 60% Plan Submittal of 21' VC to 18'-8" VC.
 Vertical profile of roadway was adjusted slightly to raise the road ~6" in the vicinity of the tunnel, roadway will still be an improvement over current conditions.
 Vertical profile of railroad has been re-worked for an 18'-8" profile which includes tying into the Otter Creek Railroad bridge to the south and prior to Elm Street to the north.

The following items have been evaluated based on 18'-8" and the estimated savings are as follows:

Item #	Item Description	Unit	21' VC Quantity	18'-8" VC Quantity	Estimate Savings		
					Engineer's	CMGC	ICE
203.15	COMMON EXCAVATION (RAIL)	CY	7,750	6,810	\$14,814	\$38,822	\$113,317
203.16	SOLID ROCK EXCAVATION (RAIL)	CY	1,840	1,050	\$1,185,000	\$868,739	\$758,163
204.25	STRUCTURE EXCAVATION (RAIL)	CY	16,000	12,225	\$41,525	\$247,942	\$210,607
204.30	GRANULAR BACKFILL FOR STRUCTURES	CY	7,600	5,150	\$84,280	\$277,414	\$262,665
505.35	PERMANENT STEEL SHEET PILING	SF	5,000	5,200	-\$8,190	-\$11,842	-\$10,900
505.36	TEMPORARY STEEL SHEET PILING	SF	28,000	18,000	\$250,000	\$274,700	\$262,600
506.60	STRUCTURAL STEEL	LB	395,000	365,000	\$68,400	\$28,500	\$23,700
514.10	WATER REPELLENT, SILANE	GAL	450	300	\$7,965	\$11,447	\$9,488
540.10	PRECAST CONCRETE STRUCTURE (U-WALLS)	LS	1	1	\$1,616,000	\$867,309	\$932,414
540.10	PRECAST CONCRETE STRUCTURE (THICKENED U-WALLS)	LS	1	1	\$380,000	\$549,037	\$200,348
540.10	PRECAST CONCRETE STRUCTURE (TUNNEL)	LS	1	1	\$240,000	\$54,575	\$184,235
620.12	CHAIN-LINK FENCE, 6 FEET	LF	2,865	2,150	\$13,521	\$15,201	\$14,300
900.608	SPECIAL PROVISION (TEMPORARY RAILROAD BALLAST INSTALLATION)	CY	4,200	1,050	\$78,750	\$69,237	\$139,293
900.620	SPECIAL PROVISION (REMOVAL AND REPLACEMENT OF CROSS TIES)	EA	2,030	1,790	\$27,600	\$53,719	\$60,360
900.640	SPECIAL PROVISION (REMOVE & REPLACE RAILROAD TRACKS)	LF	3,588	3,159	\$53,625	\$100,789	\$66,748
900.640	SPECIAL PROVISION (REMOVE AND RESET RAILROAD TRACKS)	LF	6,600	5,600	\$150,000	\$67,280	\$57,120
900.670	SPECIAL PROVISION (RETAINING WALL)	SF	1,750	1,400	\$199,850	\$17,126	\$29,908
900.680	SPECIAL PROVISION (TEMPORARY RAILROAD BALLAST STOCKPILE)	TON	6,900	1,700	\$312,000	\$133,484	\$148,044
900.680	SPECIAL PROVISION (RAILROAD BALLAST STOCKPILE AND INSTALLATION)	TON	6,475	5,875	\$57,000	\$22,506	\$26,382
SUBTOTAL SAVINGS =					\$4,772,141	\$3,685,985	\$3,488,791

NOTES for Engineer's Estimate:

1. Savings only include adjustment to individual item costs, do not include any decrease in Mobilization/Demobilization, drainage, or any savings to the construction schedule.
2. Reduce U-Wall lengths by 300' and shorten height of walls per the new profile.
3. Reduce Thickened U-Wall Lengths by 50' and shortening height of walls per the new profile.
4. Tunnel Length stays the same, however the overall height of the tunnel has decreased by ~2.0' per the new profile.
5. For the engineer's estimate, the costs we have been using are as follows:
 - a. \$1,000 /CY for Concrete
 - b. \$4.00 /LB for Reinforcing (assumed 150 LB of rebar per 1 CY of Concrete)

