

31 23 Excavation and Fill

31 23 16 – Excavation

31 23 16.16 Structural Excavation for Minor Structures		Crew	Daily Output	Labor-Hours	Unit	Material	2022 Bare Costs		Total	Total Incl O&P
							Labor	Equipment		
0010	STRUCTURAL EXCAVATION FOR MINOR STRUCTURES	R312316-40								
0015	Hand, pits to 6' deep, sandy soil	1 Clab	8	1	B.C.Y.		45.50		45.50	68
0100	Heavy soil or clay		4	2			91		91	136
0300	Pits 6' to 12' deep, sandy soil		5	1.600			73		73	109
0500	Heavy soil or clay		3	2.667			122		122	181
0700	Pits 12' to 18' deep, sandy soil		4	2			91		91	136
0900	Heavy soil or clay		2	4			182		182	272
1100	Hand loading trucks from stock pile, sandy soil		12	.667			30.50		30.50	45.50
1300	Heavy soil or clay		8	1			45.50		45.50	68
1500	For wet or muck hand excavation, add to above								50%	50%
6000	Machine excavation, for spread and mat footings, elevator pits, and small building foundations									
6001										
6030	Common earth, hydraulic backhoe, 1/2 C.Y. bucket	B-12E	55	.291	B.C.Y.		15.85	11.90	27.75	36.50
6035	3/4 C.Y. bucket	B-12F	90	.178			9.70	9.70	19.40	25
6040	1 C.Y. bucket	B-12A	108	.148			8.05	8.45	16.50	21.50
6050	1-1/2 C.Y. bucket	B-12B	144	.111			6.05	6.85	12.90	16.50
6060	2 C.Y. bucket	B-12C	200	.080			4.36	4.85	9.21	11.80
6070	Sand and gravel, 3/4 C.Y. bucket	B-12F	100	.160			8.70	8.75	17.45	22.50
6080	1 C.Y. bucket	B-12A	120	.133			7.25	7.60	14.85	19.15
6090	1-1/2 C.Y. bucket	B-12B	160	.100			5.45	6.20	11.65	14.90
6100	2 C.Y. bucket	B-12C	220	.073			3.96	4.41	8.37	10.75
6110	Clay, till, or blasted rock, 3/4 C.Y. bucket	B-12F	80	.200			10.90	10.95	21.85	28.50
6120	1 C.Y. bucket	B-12A	95	.168			9.20	9.60	18.80	24
6130	1-1/2 C.Y. bucket	B-12B	130	.123			6.70	7.60	14.30	18.35
6140	2 C.Y. bucket	B-12C	175	.091			4.98	5.55	10.53	13.50
6230	Sandy clay & loam, hydraulic backhoe, 1/2 C.Y. bucket	B-12E	60	.267			14.55	10.90	25.45	33.50
6235	3/4 C.Y. bucket	B-12F	98	.163			8.90	8.90	17.80	23
6240	1 C.Y. bucket	B-12A	116	.138			7.50	7.85	15.35	19.85
6250	1-1/2 C.Y. bucket	B-12B	156	.103			5.60	6.35	11.95	15.25
9010	For mobilization or demobilization, see Section 01 54 36.50									
9020	For dewatering, see Section 31 23 19.20									
9022	For larger structures, see Bulk Excavation, Section 31 23 16.42									
9024	For loading onto trucks, add								15%	15%
9026	For hauling, see Section 31 23 23.20									
9030	For sheeting or soldier bms/lagging, see Section 31 52 16.10									
9040	For trench excavation of strip ftgs, see Section 31 23 16.13									

31 23 16.26 Rock Removal

0010	ROCK REMOVAL									
0015	Drilling only rock, 2" hole for rock bolts	B-47	316	.076	L.F.		3.80	5.20	9	11.35
0800	2-1/2" hole for pre-splitting		250	.096			4.81	6.55	11.36	14.35
4600	Quarry operations, 2-1/2" to 3-1/2" diameter		240	.100			5	6.80	11.80	14.95

31 23 16.30 Drilling and Blasting Rock

0010	DRILLING AND BLASTING ROCK									
0020	Rock, open face, under 1,500 C.Y.	B-47	225	.107	B.C.Y.	4.51	5.35	7.30	17.16	21
0100	Over 1,500 C.Y.		300	.080		4.51	4.01	5.45	13.97	16.90
0200	Areas where blasting mats are required, under 1,500 C.Y.		175	.137		4.51	6.85	9.35	20.71	25.50
0250	Over 1,500 C.Y.		250	.096		4.51	4.81	6.55	15.87	19.30
0300	Bulk drilling and blasting, can vary greatly, average								9.65	12.20
0500	Pits, average								25.50	31.50
1300	Deep hole method, up to 1,500 C.Y.	B-47	50	.480		4.51	24	33	61.51	77
1400	Over 1,500 C.Y.		66	.364		4.51	18.20	25	47.71	59.50
1900	Restricted areas, up to 1,500 C.Y.		13	1.846		4.51	92.50	126	223.01	282