

01 51 Temporary Utilities

01 51 13 - Temporary Electricity

01 51 13.50 Temporary Power Equip (Pro-Rated Per Job)		Crew	Daily Output	Labor-Hours	Unit	Material	2018 Bare Costs		Total	Total Incl O&P
							Labor	Equipment		
0630	Tap cord, 100 Amp	1 Elec	6	1.333	Ea.	600	77.50		677.50	775
0700	Connections									
0710	Compressor or pump									
0720	30 Amp	1 Elec	7	1.143	Ea.	15.65	66.50		82.15	117
0730	60 Amp		5.30	1.509		28.50	88		116.50	162
0740	100 Amp		4	2		64	116		180	245
0750	Tower crane									
0760	60 Amp	1 Elec	4.50	1.778	Ea.	28.50	103		131.50	186
0770	100 Amp	"	3	2.667	"	64	155		219	305
0780	Manlift									
0790	Single	1 Elec	3	2.667	Ea.	33	155		188	268
0800	Double	"	2	4	"	68	233		301	425
0810	Welder with disconnect									
0820	50 Amp	1 Elec	5	1.600	Ea.	180	93		273	335
0830	100 Amp		3.80	2.105		315	123		438	530
0840	200 Amp		2.50	3.200		570	186		756	910
0850	400 Amp		1	8		1,325	465		1,790	2,150

01 51 13.80 Temporary Utilities

0010	TEMPORARY UTILITIES									
0350	Lighting, lamps, wiring, outlets, 40,000 S.F. building, 8 strings	1 Elec	34	.235	CSF Flr	5.60	13.70		19.30	26.50
0360	16 strings	"	17	.471		11.20	27.50		38.70	53.50
0400	Power for temp lighting only, 6.6 KWH, per month								.92	1.01
0430	11.8 KWH, per month								1.65	1.82
0450	23.6 KWH, per month								3.30	3.63
0600	Power for job duration incl. elevator, etc., minimum								47	51.50
0650	Maximum								110	121
0700	Temporary construction water bill per month, average				Month	69			69	76
1000	Toilet, portable, see Equip. Rental 01 54 33 in Reference Section									

01 52 Construction Facilities

01 52 13 - Field Offices and Sheds

01 52 13.20 Office and Storage Space

0010	OFFICE AND STORAGE SPACE									
0020	Office trailer, furnished, no hookups, 20' x 8', buy	2 Skwk	1	16	Ea.	8,900	840		9,740	11,100
0250	Rent per month					198			198	218
0300	32' x 8', buy	2 Skwk	.70	22.857		14,200	1,200		15,400	17,400
0350	Rent per month					247			247	272
0400	50' x 10', buy	2 Skwk	.60	26.667		29,300	1,400		30,700	34,400
0450	Rent per month					355			355	395
0500	50' x 12', buy	2 Skwk	.50	32		25,900	1,675		27,575	31,100
0550	Rent per month					450			450	495
0700	For air conditioning, rent per month, add					50			50	55
0800	For delivery, add per mile				Mile	12			12	13.20
0890	Delivery each way				Ea.	2,725			2,725	3,000
0900	Bunk house trailer, 8' x 40' duplex dorm with kitchen, no hookups, buy	2 Carp	1	16		87,000	810		87,810	96,500
0910	9 man with kitchen and bath, no hookups, buy		1	16		89,000	810		89,810	99,000
0920	18 man sleeper with bath, no hookups, buy		1	16		96,000	810		96,810	106,500
1000	Portable buildings, prefab, on skids, economy, 8' x 8'		265	.060	S.F.	25	3.06		28.06	32
1100	Deluxe, 8' x 12'		150	.107	"	28	5.40		33.40	39.50
1200	Storage boxes, 20' x 8', buy	2 Skwk	1.80	8.889	Ea.	3,325	465		3,790	4,375
1250	Rent per month					84.50			84.50	93

2 41 Demolition

41 19 - Selective Demolition

41 19.19 Selective Demolition		Crew	Daily Output	Labor-Hours	Unit	Material	2018 Bare Costs		Total	Total Ind O&P
							Labor	Equipment		
0	Delivery, average for all sizes				Ea.	75			75	82.50
0	Haul, average for all sizes					235			235	259
0	Rent per day, average for all sizes					20			20	22
0	Rent per month, average for all sizes					80			80	88
0	Disposal fee per ton, average for all sizes				Ton	88			88	97
0	Load, haul, dump and return, 0'-50' haul, hand carried	2 Clab	24	.667	C.Y.		26.50		26.50	40.50
5	Wheeled		37	.432			17.25		17.25	26.50
0	0'-100' haul, hand carried		16.50	.970			38.50		38.50	59
5	Wheeled		25	.640			25.50		25.50	39
0	Forklift	A-3R	25	.320			16.40	5.95	22.35	31.50
10	Haul and return, add per each extra 100' haul, hand carried	2 Clab	35.50	.451			17.95		17.95	27.50
15	Wheeled		54	.296			11.80		11.80	18
20	For travel in elevators, up to 10 floors, add		140	.114			4.55		4.55	6.95
30	0'-50' haul, incl. up to 5 riser stairs, hand carried		23	.696			27.50		27.50	42
35	Wheeled		35	.457			18.20		18.20	28
40	6-10 riser stairs, hand carried		22	.727			29		29	44
45	Wheeled		34	.471			18.75		18.75	28.50
50	11-20 riser stairs, hand carried		20	.800			32		32	48.50
55	Wheeled		31	.516			20.50		20.50	31.50
60	21-40 riser stairs, hand carried		16	1			40		40	60.50
65	Wheeled		24	.667			26.50		26.50	40.50
70	0-100' haul, incl. 5 riser stairs, hand carried		15	1.067			42.50		42.50	65
75	Wheeled		23	.696			27.50		27.50	42
80	6-10 riser stairs, hand carried		14	1.143			45.50		45.50	69.50
85	Wheeled		21	.762			30.50		30.50	46.50
90	11-20 riser stairs, hand carried		12	1.333			53		53	81
95	Wheeled		18	.889			35.50		35.50	54
00	21-40 riser stairs, hand carried		8	2			79.50		79.50	121
05	Wheeled		12	1.333			53		53	81
10	Haul and return, add per each extra 100' haul, hand carried		35.50	.451			17.95		17.95	27.50
15	Wheeled		54	.296			11.80		11.80	18
20	For each additional flight of stairs, up to 5 risers, add		550	.029	Flight		1.16		1.16	1.77
25	6-10 risers, add		275	.058			2.32		2.32	3.53
30	11-20 risers, add		138	.116			4.62		4.62	7.05
35	21-40 risers, add		69	.232			9.25		9.25	14.10
40	Loading & trucking, including 2 mile haul, chute loaded	B-16	45	.711	C.Y.		30	12.05	42.05	58.50
40	Hand loading truck, 50' haul	"	48	.667			28	11.30	39.30	55
480	Machine loading truck	B-17	120	.267			11.80	5.40	17.20	24
400	Haul, per mile, up to 8 C.Y. truck	B-34B	1165	.007			.32	.47	.79	.99
400	Over 8 C.Y. truck	"	1550	.005			.24	.35	.59	.75

2 41 19.20 Selective Demolition, Dump Charges

SELECTIVE DEMOLITION, DUMP CHARGES		R024119-10	
010	Dump charges, typical urban city, tipping fees only		
100	Building construction materials		Ton
200	Trees, brush, lumber		63
300	Rubbish only		63
500	Reclamation station, usual charge		74

02 65 Underground Storage Tank Removal

02 65 10 - Underground Tank and Contaminated Soil Removal

02 65 10.30 Removal of Underground Storage Tanks		Crew	Daily Output	Labor Hours	Unit	Material	2018 Bare Costs		Total	Total Incl O&P	
							Labor	Equipment			
0010	REMOVAL OF UNDERGROUND STORAGE TANKS										
0011	Petroleum storage tanks, non-leaking										
0100	Excavate & load onto trailer										
0110	3,000 gal. to 5,000 gal. tank	G	B-14	4	12	Ea.	505	78	583	855	
0120	6,000 gal. to 8,000 gal. tank	G	B-3A	3	13.333	↓	570	298	868	1,200	
0130	9,000 gal. to 12,000 gal. tank	G	"	2	20	↓	855	445	1,300	1,800	
0190	Known leaking tank, add					%			100%	100%	
0200	Remove sludge, water and remaining product from bottom										
0201	of tank with vacuum truck										
0300	3,000 gal. to 5,000 gal. tank	G	A-13	5	1.600	Ea.	82	144	226	282	
0310	6,000 gal. to 8,000 gal. tank	G	↓	4	2	↓	103	180	283	355	
0320	9,000 gal. to 12,000 gal. tank	G	↓	3	2.667	↓	137	240	377	470	
0390	Dispose of sludge off-site, average					Gal.			6.25	6.80	
0400	Insert inert solid CO ₂ "dry ice" into tank										
0401	For cleaning/transporting tanks (1.5 lb./100 gal. cap)	G	1 Clab	500	.016	Lb.	1.19	.64	1.83	2.28	
0403	Insert solid carbon dioxide, 1.5 lb./100 gal.	G	"	400	.020	"	1.19	.80	1.99	2.52	
0503	Disconnect and remove piping	G	1 Plum	160	.050	L.F.		3.11	3.11	4.68	
0603	Transfer liquids, 10% of volume	G	"	1600	.005	Gal.		.31	.31	.47	
0703	Cut accessway into underground storage tank	G	1 Clab	5.33	1.501	Ea.	60		60	91	
0813	Remove sludge, wash and wipe tank, 500 gal.	G	1 Plum	8	1	↓	62		62	93.50	
0823	3,000 gal.	G	↓	6.67	1.199	↓	74.50		74.50	112	
0833	5,000 gal.	G	↓	6.15	1.301	↓	81		81	122	
0843	8,000 gal.	G	↓	5.33	1.501	↓	93.50		93.50	140	
0853	10,000 gal.	G	↓	4.57	1.751	↓	109		109	164	
0863	12,000 gal.	G	↓	4.21	1.900	↓	118		118	178	
1020	Haul tank to certified salvage dump, 100 miles round trip					Ea.			760	830	
1023	3,000 gal. to 5,000 gal. tank					↓			880	960	
1026	6,000 gal. to 8,000 gal. tank					↓			1,050	1,150	
1029	9,000 gal. to 12,000 gal. tank					↓					
1100	Disposal of contaminated soil to landfill					C.Y.			145	160	
1110	Minimum					"			400	440	
1111	Maximum										
1120	Disposal of contaminated soil to										
1121	bituminous concrete batch plant					C.Y.			80	88	
1130	Minimum					"			115	125	
1131	Maximum										
1203	Excavate, pull, & load tank, backfill hole, 8,000 gal. +	G	B-12C	.50	32	Ea.	1,525	2,100	3,625	4,650	
1213	Haul tank to certified dump, 100 miles rt, 8,000 gal. +	G	B-34K	1	8	↓	370	835	1,205	1,475	
1223	Excavate, pull, & load tank, backfill hole, 500 gal.	G	B-11C	1	16	↓	750	310	1,060	1,475	
1233	Excavate, pull, & load tank, backfill hole, 3,000-5,000 gal.	G	B-11M	.50	32	↓	1,500	770	2,270	3,125	
1243	Haul tank to certified dump, 100 miles rt, 500 gal.	G	B-34L	1	8	↓	410	188	598	825	
1253	Haul tank to certified dump, 100 miles rt, 3,000-5,000 gal.	G	B-34M	1	8	↓	410	238	648	880	
2010	Decontamination of soil on site incl poly tarp on top/bottom										
2011	Soil containment berm and chemical treatment										
2020	Minimum	G	B-11C	100	.160	C.Y.	7.45	7.50	3.12	18.07	23
2021	Maximum	G	"	100	.160	↓	9.65	7.50	3.12	20.27	25.50
2050	Disposal of decontaminated soil, minimum								135	150	
2055	Maximum					↓			400	440	

02 81 Transportation and Disposal of Hazardous Materials

02 81 20 – Hazardous Waste Handling

02 81 20.10 Hazardous Waste Cleanup/Pickup/Disposal		Crew	Daily Output	Labor-Hours	Unit	Material	2018 Bare Costs		Total	Total Incl O&P
							Labor	Equipment		
0010	HAZARDOUS WASTE CLEANUP/PICKUP/DISPOSAL									
0100	For contractor rental equipment, i.e., dozer,									
0110	Front end loader, dump truck, etc., see 01 54 30 Reference Section									
1000	Solid pickup									
1100	55 gal. drums				Ea.				240	265
1120	Bulk material, minimum				Ton				190	210
1130	Maximum				"				595	655
1200	Transportation to disposal site									
1220	Truckload = 80 drums or 25 C.Y. or 18 tons									
1260	Minimum				Mile				3.95	4.4
1270	Maximum				"				7.95	7.3
3000	Liquid pickup, wagon truck, stainless steel tank									
3100	Minimum charge, 4 hours									
3110	1 compartment, 2200 gallon				Hr.				140	155
3120	2 compartment, 5000 gallon				"				200	225
3400	Transportation in 6900 gallon bulk truck				Mile				7.95	8.7
3410	In teflon lined truck				"				10.20	11.2
5000	Heavy sludge or dry vacuumable material				Hr.				140	160
6000	Dumpsite disposal charge, minimum				Ton				140	155
6020	Maximum				"				475	455

31 05 Common Work Results for Earthwork

31 05 19 – Geosynthetics for Earthwork

31 05 19.53 Reservoir Liners HDPE		Daily Crew	Labor Output	Hours	Unit	Material	2018 Bare Costs		Total	Total Incl Q&P
							Labor	Equipment		
0010	RESERVOIR LINERS HDPE									
0011	Membrane lining									
1100	30 mil thick	3 Skwk	1850	.013	S.F.	.41	.68		1.09	1.41
1200	60 mil thick		1600	.015		.58	.79		1.37	1.84
1300	120 mil thick		1440	.017		.67	.87		1.54	2.08

31 05 23 – Cement and Concrete for Earthwork

31 05 23.30 Plant Mixed Bituminous Concrete

0010	PLANT MIXED BITUMINOUS CONCRETE									
0020	Asphaltic concrete plant mix (145 lb./C.F.)				Ton	65			65	71.50
0040	Asphaltic concrete less than 300 tons add trucking costs									
0050	See Section 31 23 23.20 for hauling costs									
0200	All weather patching mix, hot				Ton	65.50			65.50	72
0250	Cold patch					73.50			73.50	80.50
0300	Berm mix					64			64	70
0400	Base mix					65			65	71.50
0500	Binder mix					65			65	71.50
0600	Sand or sheet mix					65			65	71.50

31 05 23.40 Recycled Plant Mixed Bituminous Concrete

0010	RECYCLED PLANT MIXED BITUMINOUS CONCRETE									
0200	Reclaimed pavement in stockpile	G			Ton	22			22	24
0400	Recycled pavement, at plant, ratio old:new, 70:30	G				35			35	38.50
0600	Ratio old:new, 30:70	G				52.50			52.50	57.50

31 06 Schedules for Earthwork

31 06 60 – Schedules for Special Foundations and Load Bearing Elements

31 06 60.14 Piling Special Costs

0010	PILING SPECIAL COSTS									
0011	Piling special costs, pile caps, see Section 03 30 53.40									
0500	Cutoffs, concrete piles, plain	1 Pile	5.50	1.455	Ea.		74.50		74.50	118
0600	With steel thin shell, add		38	.211			10.80		10.80	17.05
0700	Steel pile or "H" piles		19	.421			21.50		21.50	34
0800	Wood piles		38	.211			10.80		10.80	17.05
0900	Pre-augering up to 30' deep, average soil, 24" diameter	B-43	180	.267	L.F.		11.85	13.60	25.45	33
0920	36" diameter		115	.417			18.50	21.50	40	51.50
0960	48" diameter		70	.686			30.50	35	65.50	84.50
0980	60" diameter		50	.960			42.50	49	91.50	119
1000	Testing, any type piles, test load is twice the design load									
1050	50 ton design load, 100 ton test				Ea.				14,000	15,500
1100	100 ton design load, 200 ton test								20,000	22,000
1150	150 ton design load, 300 ton test								26,000	28,500
1200	200 ton design load, 400 ton test								28,000	31,000
1250	400 ton design load, 800 ton test								32,000	35,000
1500	Wet conditions, soft damp ground									
1600	Requiring mats for crane, add								40%	40%
1700	Barge mounted driving rig, add								30%	30%

31 06 60.15 Mobilization

0010	MOBILIZATION									
0020	Set up & remove, air compressor, 600 CFM	A-5	3.30	5.455	Ea.		220	14.30	234.30	350
0100	1,200 CFM	"	2.20	8.182			330	21.50	351.50	525
0200	Crane, with pile leads and pile hammer, 75 ton	B-19	.60	107			5,600	3,225	8,825	12,200

1 06 Schedules for Earthwork

1 06 60 – Schedules for Special Foundations and Load Bearing Elements

1 06 60.15 Mobilization		Crew	Daily Output	Labor Hours	Unit	Material	2018 Bare Costs			Total Incl O&P
							Labor	Equipment	Total	
300	150 ton	B-19	.36	178	Ea.		9,325	5,350	14,675	20,300
500	Drill rig, for caissons, to 36", minimum	B-43	2	24			1,075	1,225	2,300	2,975
520	Maximum		.50	96			4,250	4,900	9,150	11,800
500	Up to 84"		1	48			2,125	2,450	4,575	5,925
300	Auxiliary boiler, for steam small	A-5	1.66	10.843			440	28.50	468.50	695
900	Large	"	.83	21.687			875	57	932	1,400
100	Rule of thumb: complete pile driving set up, small	B-19	.45	142			7,450	4,275	11,725	16,300
200	Large	"	.27	237			12,400	7,150	19,550	27,200
300	Mobilization by water for barge driving rig									
310	Minimum				Ea.				7,000	7,700
320	Maximum				"				45,000	49,500
500	Mobilization, barge, by tug boat	B-83	25	.640	Mile		30	27	57	75.50
600	Standby time for shore pile driving crew				Hr.				715	890
700	Standby time for barge driving rig				"				1,000	1,250

31 11 Clearing and Grubbing

31 11 10 – Clearing and Grubbing Land

31 11 10.10 Clear and Grub Site

31 11 10.10 CLEAR AND GRUB SITE		Crew	Daily Output	Labor Hours	Unit	Material	2018 Bare Costs			Total Incl O&P
							Labor	Equipment	Total	
1020	Cut & chip light trees to 6" diam.	B-7	1	48	Acres		2,050	1,700	3,750	4,950
1150	Grub stumps and remove	B-30	2	12			585	990	1,575	1,975
1200	Cut & chip medium trees to 12" diam.	B-7	.70	68.571			2,925	2,425	5,350	7,075
1250	Grub stumps and remove	B-30	1	24			1,175	1,975	3,150	3,925
1300	Cut & chip heavy trees to 24" diam.	B-7	.30	160			6,800	5,625	12,425	16,500
1350	Grub stumps and remove	B-30	.50	48			2,325	3,950	6,275	7,875
1400	If burning is allowed, deduct cut & chip								40%	40%
1800	Chipping stumps, to 18" deep, 12" diam.	B-86	20	.400	Ea.		21.50	9.20	30.70	42.50
1804	18" diameter		16	.500			27	11.50	38.50	53
1808	24" diameter		14	.571			30.50	13.15	43.65	61
1810	30" diameter		12	.667			36	15.35	51.35	71
1812	36" diameter		10	.800			43	18.40	61.40	85.50
1816	48" diameter		8	1			54	23	77	107
5000	Tree thinning, feller buncher, conifer									
5080	Up to 8" diameter	B-93	240	.033	Ea.		1.79	3.38	5.17	6.40
5120	12" diameter		160	.050			2.69	5.05	7.74	9.60
5240	Hardwood, up to 4" diameter		240	.033			1.79	3.38	5.17	6.40
5280	8" diameter		180	.044			2.39	4.50	6.89	8.55
5320	12" diameter		120	.067			3.58	6.75	10.33	12.85
7000	Tree removal, congested area, aerial lift truck									
7040	8" diameter	B-85	7	5.714	Ea.		251	135	386	530
7080	12" diameter		6	6.667			292	158	450	620
7120	18" diameter		5	8			350	190	540	740
7160	24" diameter		4	10			440	237	677	925
7240	36" diameter		3	13.333			585	315	900	1,225
7280	48" diameter		2	20			875	475	1,350	1,850
9000	Site clearing with 335 HP dozer, trees to 6" diameter	B-10M	280	.043			2.11	6.55	8.66	10.40
9010	To 12" diameter		150	.080			3.93	12.20	16.13	19.35
9020	To 24" diameter		100	.120			5.90	18.30	24.20	29
9030	To 36" diameter		50	.240			11.80	36.50	48.30	58
9100	Grub stumps, trees to 6" diameter		400	.030			1.47	4.57	6.04	7.30
9103	To 36" diameter		195	.062			3.02	9.40	12.42	14.85

31 32 Soil Stabilization

31 32 36 – Soil Nailing

31 32 36.16 Grouted Soil Nailing	Crew	Daily Output	Labor-Hours	Unit	Material	2018 Bare Costs		Total	Total Incl O&P
						Labor	Equipment		
4680	B-47G	7.60	4.211	Eq.	700	182	239	1,121	1,300
4690		7.30	4.384		755	189	249	1,193	1,400
4700		7.10	4.507		810	195	256	1,261	1,475
4710		6.80	4.706		865	203	267	1,335	1,550
4790	Severe soil nailing, grade 75, 30 min. setup per hole & 120' /hr. drilling								
4800	B-47G	12	2.667	Eq.	150	115	151	416	505
4810		11.20	2.857		187	123	162	472	575
4820		10.70	2.991		340	129	170	639	740
4830		10	3.200		400	138	182	720	845
4840		9.60	3.333		455	144	189	788	925
4850		9.10	3.516		510	152	200	862	1,000
4860		8.70	3.678		585	159	209	953	1,125
4870		8.30	3.855		640	167	219	1,026	1,200
4880		8	4		700	173	227	1,100	1,275
4890		7.60	4.211		755	182	239	1,176	1,375
4900		7.40	4.324		810	187	246	1,243	1,450
4910		7.10	4.507		865	195	256	1,316	1,525

31 33 Rock Stabilization

31 33 13 – Rock Bolting and Grouting

31 33 13.10 Rock Bolting

0010 ROCK BOLTING									
2020	Hollow core, prestressable anchor, 1" diameter, 5' long	2-Skwk	32	.500	Eq.	180	26	206	238
2025	10' long		24	.667		305	35	340	390
2060	2" diameter, 5' long		32	.500		685	26	711	790
2065	10' long		24	.667		1,225	35	1,260	1,400
2100	Super high-tensile, 3/4" diameter, 5' long		32	.500		48.50	26	74.50	93.50
2105	10' long		24	.667		130	35	165	196
2160	2" diameter, 5' long		32	.500		405	26	431	485
2165	10' long		24	.667		690	35	725	815
4400	Drill hole for rock bolt, 1-3/4" diam., 5' long (for 3/4" bolt)	B-56	17	.941			43	85.50	128.50
4405	10' long		9	1.778			81	162	243
4420	2" diameter, 5' long (for 1" bolt)		13	1.231			56	112	168
4425	10' long		7	2.286			104	208	312
4460	3-1/2" diameter, 5' long (for 2" bolt)		10	1.600			73	145	218
4465	10' long		5	3.200			146	291	437

31 36 Gabions

31 36 13 – Gabion Boxes

31 36 13.10 Gabion Box Systems

0010 GABION BOX SYSTEMS									
0400	Gabions, galvanized steel mesh mats or boxes, stone filled, 6" deep	B-13	200	.280	S.Y.	19	12.25	2.95	34.20
0500	9" deep		163	.344		23.50	15	3.62	42.12
0600	12" deep		153	.366		31.50	16	3.86	51.36
0700	18" deep		102	.549		44.50	24	5.80	74.30
0800	36" deep		60	.933		75.50	41	9.85	126.35

31 37 Riprap

31 37 13 - Machined Riprap

31 37 13.10 Riprap and Rock Lining		Crew	Daily Output	Labor-Hours	Unit	Material	2018 Bare Costs		Total	Total Incl O&P
RIPRAP AND ROCK LINING							Labor	Equipment		
0010	Random, broken stone									
0100	Machine placed for slope protection	B-126	62	.258	L.C.Y.	30.50	12.40	14.05	56.95	67.50
0110	3/8 to 1/4 C.Y. pieces, grouted	B-13	80	.700	S.Y.	63	30.50	7.40	100.90	124
0200	18" minimum thickness, not grouted	"	53	1.057	"	19.15	46	11.15	76.30	103
0300	Dumped, 50 lb. average	B-11A	800	.020	Ton	25.50	.94	1.59	28.03	31
0350	100 lb. average	↓	700	.023	↓	25.50	1.07	1.82	28.39	31.50
0370	300 lb. average	↓	600	.027	↓	25.50	1.25	2.12	28.87	32

31 41 Shoring

31 41 13 - Timber Shoring

31 41 13.10 Building Shoring

31 41 13.10 BUILDING SHORING										
0020	Shoring, existing building, with timber, no salvage allowance	B-51	2.20	21.818	M.B.F.	890	895	86	1,871	2,425
1000	On cribbing with 35 ton screw jacks, per box and jack	"	3.60	13.333	Jack	65	545	52.50	662.50	960
1100	Masonry openings in walls, see Section 02 41 19.16									

31 41 16 - Sheet Piling

31 41 16.10 Sheet Piling Systems

31 41 16.10 SHEET PILING SYSTEMS										
0020	Sheet piling, 50,000 psi steel, not incl. wales, 22 psf, left in place	B-40	10.81	5.920	Ton	1,575	310	330	2,215	2,600
0100	Drive, extract & salvage		6	10.667		515	560	595	1,670	2,100
0300	20' deep excavation, 27 psf, left in place		12.95	4.942		1,575	259	275	2,109	2,450
0400	Drive, extract & salvage		6.55	9.771		515	510	545	1,570	1,975
0600	25' deep excavation, 38 psf, left in place		19	3.368		1,575	177	187	1,939	2,225
0700	Drive, extract & salvage		10.50	6.095		515	320	340	1,175	1,450
0900	40' deep excavation, 38 psf, left in place		21.20	3.019		1,575	158	168	1,901	2,175
1000	Drive, extract & salvage		12.25	5.224		515	274	291	1,080	1,325
1200	15' deep excavation, 22 psf, left in place		983	.065	S.F.	18.40	3.41	3.62	25.43	29.50
1300	Drive, extract & salvage		545	.117		5.80	6.15	6.55	18.50	23
1500	20' deep excavation, 27 psf, left in place		960	.067		23	3.49	3.71	30.20	35
1600	Drive, extract & salvage		485	.132		7.55	6.90	7.35	21.80	27
1800	25' deep excavation, 38 psf, left in place		1000	.064		34	3.35	3.56	40.91	46.50
1900	Drive, extract & salvage		553	.116		10.30	6.05	6.45	22.80	28
2100	Rent steel sheet piling and wales, first month				Ton	310			310	340
2200	Per added month					31			31	34
2300	Rental piling left in place, add to rental					1,150			1,150	1,275
2500	Wales, connections & struts, 2/3 salvage					480			480	525
2700	High strength piling, 60,000 psi, add					158			158	174
2800	65,000 psi, add					237			237	261
3000	Tie rod, not upset, 1-1/2" to 4" diameter with turnbuckle					2,075			2,075	2,275
3100	No turnbuckle					1,650			1,650	1,800
3300	Upset, 1-3/4" to 4" diameter with turnbuckle					2,375			2,375	2,625
3400	No turnbuckle					2,100			2,100	2,300
3600	Lightweight, 18" to 28" wide, 7 ga., 9.22 psf, and									
3610	9 ga., 8.6 psf, minimum				Lb.	.82			.82	.90
3700	Average					.88			.88	.97
3750	Maximum					1.05			1.05	1.16
3900	Wood, solid sheeting, incl. wales, braces and spacers,									
3910	drive, extract & salvage, 8' deep excavation	B-31	330	.121	S.F.	1.84	5.15	.67	7.66	10.60
4000	10' deep, 50 S.F./hr. in & 150 S.F./hr. out	↓	300	.133	↓	1.89	5.65	.73	8.27	11.50

32 18 Athletic and Recreational Surfacing

32 18 23 – Athletic Surfacing

32 18 23.33 Running Track Surfacing		Daily Crew	Labor- Output	Hours Unit	Material	2018 Bare Costs		Total	Total Incl O&P	
						Labor	Equipment			
0010	RUNNING TRACK SURFACING									
0020	Running track, asphalt concrete pavement, 2-1/2"	B-37	300	.160	S.Y.	14.90	6.75	.50	22.15	27
0102	Surface, latex rubber system, 1/2" thick, black	B-20	115	.209		47.50	9.30		56.80	66.50
0152	Colors		115	.209		58	9.30		67.30	78
0302	Urethane rubber system, 1/2" thick, black		110	.218		35.50	9.75		45.25	54
0402	Color coating		110	.218		43.50	9.75		53.25	63

32 31 Fences and Gates

32 31 11 – Gate Operators

32 31 11.10 Gate Operators

32 31 11.10 GATE OPERATORS		Daily Crew	Labor- Output	Hours Unit	Material	2018 Bare Costs		Total	Total Incl O&P	
						Labor	Equipment			
0010	GATE OPERATORS									
7810	Motor operators for gates (no elec wiring), 3' wide swing	2 Skwk	.50	32	Ea.	1,175	1,675		2,850	3,850
7815	Up to 20' wide swing		.50	32		1,525	1,675		3,200	4,250
7820	Up to 45' sliding		.50	32		2,750	1,675		4,425	5,600
7825	Overhead gate, 6' to 18' wide, sliding/cantilever		45	.356	L.F.	320	18.60		338.60	380
7830	Gate operators, digital receiver		7	2.286	Ea.	74.50	120		194.50	265
7835	Two button transmitter		24	.667		23	35		58	79
7840	3 button station		14	1.143		39.50	60		99.50	135
7845	Master slave system		4	4		173	209		382	510

32 31 13 – Chain Link Fences and Gates

32 31 13.20 Fence, Chain Link Industrial

32 31 13.20 FENCE, CHAIN LINK INDUSTRIAL		Daily Crew	Labor- Output	Hours Unit	Material	2018 Bare Costs		Total	Total Incl O&P	
						Labor	Equipment			
0010	FENCE, CHAIN LINK INDUSTRIAL									
0011	Schedule 40, including concrete									
0020	3 strands barb wire, 2" post @ 10' OC, set in concrete, 6' H									
0200	9 ga. wire, galv. steel, in concrete	B-80C	240	.100	L.F.	19.80	4.14	.82	24.76	29
0248	Fence, add for vinyl coated fabric				S.F.	.68			.68	.75
0300	Aluminized steel	B-80C	240	.100	L.F.	22	4.14	.82	26.96	31
0301	Fence, wrought iron		240	.100		30	4.14	.82	34.96	40
0500	6 ga. wire, galv. steel		240	.100		25	4.14	.82	29.96	34.50
0600	Aluminized steel		240	.100		30.50	4.14	.82	35.46	40.50
0800	6 ga. wire, 6' high but omit barbed wire, galv. steel		250	.096		20	3.97	.78	24.75	29
0900	Aluminized steel, in concrete		250	.096		24	3.97	.78	28.75	33.50
0920	8' H, 6 ga. wire, 2-1/2" line post, galv. steel, in concrete		180	.133		32	5.50	1.09	38.59	44.50
0940	Aluminized steel, in concrete		180	.133		39	5.50	1.09	45.59	52.50
1400	Gate for 6' high fence, 1-5/8" frame, 3' wide, galv. steel		10	2.400	Ea.	208	99.50	19.60	327.10	400
1500	Aluminized steel, in concrete		10	2.400	"	209	99.50	19.60	328.10	405
2000	5'-0" high fence, 9 ga., no barbed wire, 2" line post, in concrete									
2010	10' OC, 1-5/8" top rail, in concrete									
2100	Galvanized steel, in concrete	B-80C	300	.080	L.F.	21	3.31	.65	24.96	28.50
2200	Aluminized steel, in concrete		300	.080	"	19.05	3.31	.65	23.01	26.50
2400	Gate, 4' wide, 5' high, 2" frame, galv. steel, in concrete		10	2.400	Ea.	219	99.50	19.60	338.10	415
2500	Aluminized steel, in concrete		10	2.400	"	197	99.50	19.60	316.10	390
3100	Overhead slide gate, chain link, 6' high, to 18' wide, in concrete		38	.632	L.F.	97	26	5.15	128.15	152
3105	8' high, in concrete	B-80	30	1.067		100	47.50	20.50	168	204
3108	10' high, in concrete		24	1.333		169	59	25.50	253.50	305
3110	Cantilever type, in concrete		48	.667		142	29.50	12.75	184.25	215
3120	8' high, in concrete		24	1.333		168	59	25.50	252.50	300
3130	10' high, in concrete		18	1.778		206	79	34	319	385
5000	Double swing gates, incl. posts & hardware, in concrete									
5010	5' high, 12' opening, in concrete	B-80C	3.40	7.059	Opng.	540	292	57.50	889.50	1,100

32 31 Fences and Gates

32 31 13 - Chain Link Fences and Gates

32 31 13.20 Fence, Chain Link Industrial		Crew	Daily Output	Labor Hours	Unit	Material	2018 Bare Costs		Total	Total Incl O&P
							Labor	Equipment		
5020	20' opening, in concrete	B-80C	2.80	8.571	Opng.	605	355	70	1,030	1,275
5060	6' high, 12' opening, in concrete		3.20	7.500		470	310	61	841	1,050
5070	20' opening, in concrete		2.60	9.231		655	380	75.50	1,110.50	1,375
5080	8' high, 12' opening, in concrete	B-80	2.13	15.002		485	665	287	1,437	1,850
5090	20' opening, in concrete		1.45	22.069		785	980	420	2,185	2,800
5100	10' high, 12' opening, in concrete		1.31	24.427		840	1,075	465	2,380	3,100
5110	20' opening, in concrete		1.03	31.068		885	1,375	595	2,855	3,725
5120	12' high, 12' opening, in concrete		1.05	30.476		1,175	1,350	585	3,110	4,000
5130	20' opening, in concrete		.85	37.647		1,250	1,675	720	3,645	4,700
5190	For aluminized steel, add					20%				
7055	Braces, galv. steel	B-80A	960	.025	L.F.	2.78	1	.25	4.03	4.85
7056	Aluminized steel	"	960	.025	"	3.33	1	.25	4.58	5.45

32 31 13.25 Fence, Chain Link Residential

32 31 13.25 FENCE, CHAIN LINK RESIDENTIAL										
0010	Schedule 20, 11 ga. wire, 1-5/8" post									
0020	10' OC, 1-3/8" top rail, 2" corner post, galv. stl. 3' high	B-80C	500	.048	L.F.	2	1.99	.39	4.38	5.65
0050	4' high		400	.060		7.05	2.48	.49	10.02	12.05
0100	6' high		200	.120		8.95	4.97	.98	14.90	18.50
0150	Add for gate 3' wide, 1-3/8" frame, 3' high		12	2	Ea.	76.50	83	16.30	175.80	228
0170	4' high		10	2.400		82.50	99.50	19.60	201.60	263
0190	6' high		10	2.400		103	99.50	19.60	222.10	286
0200	Add for gate 4' wide, 1-3/8" frame, 3' high		9	2.667		86	110	22	218	286
0220	4' high		9	2.667		92	110	22	224	292
0240	6' high		8	3		116	124	24.50	264.50	345
0350	Aluminized steel, 11 ga. wire, 3' high		500	.048	L.F.	8.30	1.99	.39	10.68	12.60
0380	4' high		400	.060		7.75	2.48	.49	10.72	12.85
0400	6' high		200	.120		10.65	4.97	.98	16.60	20.50
0450	Add for gate 3' wide, 1-3/8" frame, 3' high		12	2	Ea.	95.50	83	16.30	194.80	249
0470	4' high		10	2.400		95.50	99.50	19.60	214.60	278
0490	6' high		10	2.400		118	99.50	19.60	237.10	305
0500	Add for gate 4' wide, 1-3/8" frame, 3' high		10	2.400		99.50	99.50	19.60	218.60	282
0520	4' high		9	2.667		114	110	22	246	315
0540	6' high		8	3		123	124	24.50	271.50	350
0620	Vinyl covered, 9 ga. wire, 3' high		500	.048	L.F.	7.40	1.99	.39	9.78	11.55
0640	4' high		400	.060		7.70	2.48	.49	10.67	12.75
0660	6' high		200	.120		9.55	4.97	.98	15.50	19.15
0720	Add for gate 3' wide, 1-3/8" frame, 3' high		12	2	Ea.	89	83	16.30	188.30	242
0740	4' high		10	2.400		95	99.50	19.60	214.10	278
0760	6' high		10	2.400		113	99.50	19.60	232.10	298
0780	Add for gate 4' wide, 1-3/8" frame, 3' high		10	2.400		93.50	99.50	19.60	212.60	276
0800	4' high		9	2.667		97	110	22	229	298
0820	6' high		8	3		121	124	24.50	269.50	350
7076	Fence, for small jobs 100 L.F. fence or less w/or w/o gate, add				L.F.	20%				

32 31 13.26 Tennis Court Fences and Gates

32 31 13.26 TENNIS COURT FENCES AND GATES										
0910	Tennis courts, 11 ga. wire, 2-1/2" post set									
0960	in concrete, 10' OC, 1-5/8" top rail									
0970	10' high	B-80	190	.168	L.F.	21.50	7.45	3.22	32.17	38.50
0990	12' high		170	.188	"	21.50	8.35	3.60	33.45	40
1000	Add for gate 4' wide, 1-5/8" frame 7' high		10	3.200	Ea.	229	142	61	432	535
1040	Aluminized steel, 11 ga. wire 10' high		190	.168	L.F.	20	7.45	3.22	30.67	37
1100	12' high		170	.188	"	22.50	8.35	3.60	34.45	41

32 31 Fences and Gates

32 31 13 – Chain Link Fences and Gates

32 31 13.26 Tennis Court Fences and Gates	Crew	Daily Output	Labor-Hours	Unit	Material	2018 Bare Costs			Total Incl O&P
						Labor	Equipment	Total	
1140 Add for gate 4' wide, 1-5/8" frame, 7' high	B-80	10	3.200	Ea.	240	142	61	443	545
1250 Vinyl covered, 9 ga. wire, 10' high		190	.168	L.F.	20.50	7.45	3.22	31.17	38
1300 12' high		170	.188	"	24	8.35	3.60	35.95	42
1310 Fence, CL, tennis court, transom gate, single, galv., 4' x 7'	B-80A	8.72	2.752	Ea.	279	110	27.50	416.50	500
1400 Add for gate 4' wide, 1-5/8" frame, 7' high	B-80	10	3.200	"	296	142	61	499	610

32 31 13.30 Fence, Chain Link, Gates and Posts

0010 FENCE, CHAIN LINK, GATES & POSTS									
0011 (1/3 post length in ground)									
0013 For Concrete, See Section 03 31									
6580 Line posts, galvanized, 2-1/2" OD, set in conc., 4'	B-80	80	.400	Ea.	28.50	17.75	7.65	53.90	67
6585 5'		76	.421		35.50	18.70	8.05	62.25	76.50
6590 6'		74	.432		37	19.20	8.25	64.45	79
6595 7'		72	.444		42.50	19.70	8.50	70.70	86.50
6600 8'		69	.464		49	20.50	8.85	78.35	94.50
6635 Vinyl coated, 2-1/2" OD, set in conc., 4'		79	.405		40.50	18	7.75	66.25	80
6640 5'		77	.416		42.50	18.45	7.95	68.90	83.50
6645 6'		74	.432		44	19.20	8.25	71.45	86.50
6650 7'		72	.444		51.50	19.70	8.50	79.70	96
6655 8'		69	.464		68	20.50	8.85	97.35	115
6660 End gate post, steel, 3" OD, set in conc., 4'		68	.471		47	21	9	77	93.50
6665 5'		65	.492		50.50	22	9.40	81.90	99
6670 6'		63	.508		52	22.50	9.70	84.20	102
6675 7'		61	.525		62.50	23.50	10.05	96.05	116
6680 8'		59	.542		72.50	24	10.35	106.85	127
6685 Vinyl, 4'		68	.471		33	21	9	63	78
6690 5'		65	.492		41.50	22	9.40	72.90	89
6695 6'		63	.508		49.50	22.50	9.70	81.70	99
6700 7'		61	.525		47	23.50	10.05	80.55	98
6705 8'		59	.542		53.50	24	10.35	87.85	107
6710 Corner post, galv. steel, 4" OD, set in conc., 4'		65	.492		61	22	9.40	92.40	110
6715 6'		63	.508		91.50	22.50	9.70	123.70	145
6720 7'		61	.525		108	23.50	10.05	141.55	165
6725 8'		65	.492		122	22	9.40	153.40	177
6730 Vinyl, 5'		65	.492		37.50	22	9.40	68.90	85
6735 6'		63	.508		75	22.50	9.70	107.20	127
6740 7'		61	.525		68.50	23.50	10.05	102.05	122
6745 8'		59	.542		83.50	24	10.35	117.85	140
7031 For corner, end, & pull post bracing, add					20%	15%			
7795 Cantilever, manual, exp. roller (pr), 40' wide x 8' high	B-22	1	30	Ea.	5,675	1,400	194	7,269	8,600
7800 30' wide x 8' high		1	30		4,225	1,400	194	5,819	7,025
7805 24' wide x 8' high		1	30		3,050	1,400	194	4,644	5,725
7900 Auger fence post hole, 3' deep, medium soil, by hand	1 Clab	30	.267			10.65		10.65	16.20
7925 By machine	B-80	175	.183			8.10	3.50	11.60	16.15
7950 Rock, with jackhammer	B-9	32	1.250			50.50	7.30	57.80	84.50
7975 With rock drill	B-47C	65	.246			11.20	23	34.20	42.50

32 31 13.33 Chain Link Backstops

0010 CHAIN LINK BACKSTOPS									
0015 Backstops, baseball, prefabricated, 30' wide, 12' high & 1 overhang	B-1	1	24	Ea.	2,625	970		3,595	4,350
0100 40' wide, 12' high & 2 overhangs	"	.75	32		6,925	1,300		8,225	9,575
0300 Basketball, steel, single goal	B-13	3.04	18.421		1,725	805	194	2,724	3,350
0400 Double goal	"	1.92	29.167		2,125	1,275	310	3,710	4,600
0600 Tennis, wire mesh with pair of ends	B-1	2.48	9.677	Set	2,700	390		3,090	3,550

32 31 Fences and Gates

32 31 13 - Chain Link Fences and Gates

32 31 13.33 Chain Link Backstops		Crew	Daily Output	Labor-Hours	Unit	Material	2018 Bare Costs		Total	Total Incl O&P
Enclosed court		B-1	1.30	18.462	Ea.	9,150	750		9,900	11,300

32 31 13.40 Fence, Fabric and Accessories

FENCE, FABRIC & ACCESSORIES										
010	Fabric, 9 ga., galv., 1.2 oz. coat, 2" chain link, 4'	B-80A	304	.079	L.F.	3.55	3.15	.78	7.48	9.55
000	5'		285	.084		4.27	3.36	.84	8.47	10.70
0150	6'		266	.090		8.30	3.60	.90	12.80	15.60
0200	7'		247	.097		10	3.87	.96	14.83	17.95
0250	8'		228	.105		12.80	4.19	1.04	18.03	21.50
0300	9 ga., fused, 4'		304	.079		4.16	3.15	.78	8.09	10.25
0400	5'		285	.084		4.74	3.36	.84	8.94	11.20
0450	6'		266	.090		4.77	3.60	.90	9.27	11.75
0500	7'		247	.097		6.15	3.87	.96	10.98	13.70
0550	8'		228	.105		9.50	4.19	1.04	14.73	18
0600	Barbed wire, galv., cost per strand		2280	.011		.13	.42	.10	.65	.89
0650	Vinyl coated		2280	.011	↓	.17	.42	.10	.69	.94
0700	Extension arms, 3 strands		143	.168	Ea.	4.03	6.70	1.66	12.39	16.45
0750	6 strands, 2-3/8"		119	.202	↓	10.45	8.05	2	20.50	26
0800	Eye tops, 2-3/8"		143	.168	↓	1.77	6.70	1.66	10.13	14
0850	Top rail, incl. tie wires, 1-5/8", galv.		912	.026	L.F.	4.79	1.05	.26	6.10	7.15
0900	Vinyl coated		912	.026		5.40	1.05	.26	6.71	7.85
0950	Rail, middle/bottom, w/tie wire, 1-5/8", galv.		912	.026		4.79	1.05	.26	6.10	7.15
1000	Vinyl coated		912	.026		5.40	1.05	.26	6.71	7.85
1050	Reinforcing wire, coiled spring, 7 ga. galv.		2279	.011		.10	.42	.10	.62	.86
1100	9 ga., vinyl coated		2282	.011	↓	.54	.42	.10	1.06	1.34
1150	Steel T-post, galvanized with clips, 5', common earth, flat		200	.120	Ea.	9.45	4.78	1.19	15.42	19
1200	Clay		176	.136		9.45	5.45	1.35	16.25	20
1250	Soil & rock		144	.167		9.45	6.65	1.65	17.75	22.50
1300	5-1/2', common earth, flat		200	.120		9.80	4.78	1.19	15.77	19.40
1350	Clay		176	.136		9.80	5.45	1.35	16.60	20.50
1400	Soil & rock		144	.167		9.80	6.65	1.65	18.10	22.50
1450	6', common earth, flat		200	.120		11.25	4.78	1.19	17.22	21
1500	Clay		176	.136		11.25	5.45	1.35	18.05	22
1550	Soil & rock		144	.167		11.25	6.65	1.65	19.55	24.50
1600	Steel T-post, galvanized with clips, 5', common earth, hills		180	.133		9.45	5.30	1.32	16.07	19.95
1650	Clay		160	.150		9.45	6	1.49	16.94	21
1700	Soil & rock		130	.185		9.45	7.35	1.83	18.63	23.50
1750	5-1/2', common earth, hills		180	.133		9.80	5.30	1.32	16.42	20.50
1800	Clay		160	.150		9.80	6	1.49	17.29	21.50
1850	Soil & rock		130	.185		9.80	7.35	1.83	18.98	24
1900	6', common earth, hills		180	.133		11.25	5.30	1.32	17.87	22
1950	Clay		160	.150		11.25	6	1.49	18.74	23
2000	Soil & rock		130	.185		11.25	7.35	1.83	20.43	25.50

32 31 13.64 Chain Link Terminal Post

CHAIN LINK TERMINAL POST										
0010	16 ga., steel, 2-1/2" x 6' x 0.065 wall, incl. post cap, excavation	B-80C	80	.300	Ea.	12.80	12.40	2.45	27.65	35.50
00110	2-1/2" x 7'-6" x 0.065 wall		80	.300		16.80	12.40	2.45	31.65	40
00120	2-1/2" x 8'-6" x 0.095 wall		80	.300		25	12.40	2.45	39.85	49
00130	16 ga., steel, 2-1/2" x 6' x 0.065 wall, incl. floor flange	B-80A	80	.300		31.50	11.95	2.98	46.43	56
00210	2-1/2" x 8' x 0.065 wall		80	.300		35.50	11.95	2.98	50.43	60.50
00220	4" x 10' x 0.160 wall		80	.300		114	11.95	2.98	128.93	146
00230	4" x 12' x 0.160 wall		80	.300		125	11.95	2.98	139.93	159
00240	16 ga., steel, 4" x 11' x 0.226 wall, incl. post cap, excavation	B-80C	80	.300		185	12.40	2.45	199.85	225

32 31 Fences and Gates

32 31 26 - Wire Fences and Gates

32 31 26.10 Fences, Misc. Metal		Crew	Daily Output	Labor-Hours	Unit	Material	2018 Bare Costs		Total	Total Incl O&P
							Labor	Equipment		
4600	16' high	B-80	20	1.600	L.F.	79	71	30.50	180.50	229
4990	Security fence, prison grade, set in concrete, 10' high		25	1.280		61.50	57	24.50	143	181
32 31 26.20 Wire Fencing, General										
0010 WIRE FENCING, GENERAL										
0015	Barbed wire, galvanized, domestic steel, hi-tensile 15-1/2 ga.				M.L.F.	130			130	142
0020	Standard, 12-3/4 ga.					146			146	160
0210	Barbless wire, 2-strand galvanized, 12-1/2 ga.					146			146	160
0500	Helical razor ribbon, stainless steel, 18" diam. x 18" spacing				C.L.F.	174			174	191
0600	Hardware cloth galv., 1/4" mesh, 23 ga., 2' wide				C.S.F.	34.50			34.50	38
0700	3' wide					26.50			26.50	29
0900	1/2" mesh, 19 ga., 2' wide					36			36	39.50
1000	4' wide					45			45	49.50
1200	Chain link fabric, steel, 2" mesh, 6 ga., galvanized					61			61	67
1300	9 ga., galvanized					54			54	59.50
1350	Vinyl coated					30			30	33
1360	Aluminized					184			184	203
1400	2-1/4" mesh, 11-1/2 ga., galvanized					42.50			42.50	46.50
1600	1-3/4" mesh (tennis courts), 11-1/2 ga. (core), vinyl coated					48			48	53
1700	9 ga., galvanized					85			85	93.50
2100	Welded wire fabric, galvanized, 1" x 2", 14 ga.	2 Carp	1600	.010	S.F.	.65	.51		1.16	1.49
2200	2" x 4", 12-1/2 ga.				C.S.F.	33			33	36

32 31 29 - Wood Fences and Gates

32 31 29.10 Fence, Wood

0010 FENCE, WOOD										
0011	Basket weave, 3/8" x 4" boards, 2" x 4"									
0020	stringers on spreaders, 4" x 4" posts									
0050	No. 1 cedar, 6' high	B-80C	160	.150	L.F.	26	6.20	1.22	33.42	39.50
0070	Treated pine, 6' high	"	150	.160	"	37	6.60	1.31	44.91	52
0200	Board fence, 1" x 4" boards, 2" x 4" rails, 4" x 4" post									
0220	Preservative treated, 2 rail, 3' high	B-80C	145	.166	L.F.	10.30	6.85	1.35	18.50	23
0240	4' high		135	.178		11.85	7.35	1.45	20.65	25.50
0260	3 rail, 5' high		130	.185		12.40	7.65	1.51	21.56	27
0300	6' high		125	.192		15.30	7.95	1.57	24.82	30.50
0320	No. 2 grade western cedar, 2 rail, 3' high		145	.166		12.35	6.85	1.35	20.55	25.50
0340	4' high		135	.178		11.75	7.35	1.45	20.55	25.50
0360	3 rail, 5' high		130	.185		13.85	7.65	1.51	23.01	28.50
0400	6' high		125	.192		14.75	7.95	1.57	24.27	30
0420	No. 1 grade cedar, 2 rail, 3' high		145	.166		13.30	6.85	1.35	21.50	26.50
0440	4' high		135	.178		14.70	7.35	1.45	23.50	29
0460	3 rail, 5' high		130	.185		17.40	7.65	1.51	26.56	32.50
0500	6' high		125	.192		21.50	7.95	1.57	31.02	37.50
0860	Open rail fence, split rails, 2 rail, 3' high, no. 1 cedar		160	.150		9.75	6.20	1.22	17.17	21.50
0870	No. 2 cedar		160	.150		8.15	6.20	1.22	15.57	19.70
0880	3 rail, 4' high, no. 1 cedar		150	.160		12.15	6.60	1.31	20.06	25
0890	No. 2 cedar		150	.160		8	6.60	1.31	15.91	20
0920	Rustic rails, 2 rail, 3' high, no. 1 cedar		160	.150		12.30	6.20	1.22	19.72	24.50
0930	No. 2 cedar		160	.150		11.15	6.20	1.22	18.57	23
0940	3 rail, 4' high		150	.160		11.80	6.60	1.31	19.71	24.50
0950	No. 2 cedar		150	.160		8.05	6.60	1.31	15.96	20.50
1240	Stockade fence, no. 1 cedar, 3-1/4" rails, 6' high		160	.150		13.15	6.20	1.22	20.57	25
1260	8' high		155	.155		18.10	6.40	1.26	25.76	31
1270	Gate, 3'-6" wide		9	2.667	Eq.	260	110	22	392	475

32 31 Fences and Gates

32 31 29 - Wood Fences and Gates

Code	Description	Crew	Daily Output	Labor-Hours	Unit	Material	2018 Bare Costs			Total Incl O&P
							Labor	Equipment	Total	
32 31 29.10	Fence, Wood									
1300	No. 2 cedar, treated wood rails, 6' high	B-80C	160	.150	L.F.	13.45	6.20	1.22	20.87	25.50
1320	Gate, 3'-6" wide		8	3	Ea.	89.50	124	24.50	238	315
1360	Treated pine, treated rails, 6' high		160	.150	L.F.	13.95	6.20	1.22	21.37	26
1400	8' high		150	.160	"	19.80	6.60	1.31	27.71	33.50
1420	Gate, 3'-6" wide		9	2.667	Ea.	100	110	22	232	300

32 31 29.20 Fence, Wood Rail

FENCE, WOOD RAIL										
0010	Picket, No. 2 cedar, Gothic, 2 rail, 3' high	B-1	160	.150	L.F.	8.10	6.10		14.20	18.15
0012	Gate, 3'-6" wide	B-80C	9	2.667	Ea.	78	110	22	210	277
0050	3 rail, 4' high		150	.160	L.F.	9.10	6.60	1.31	17.01	21.50
0400	Gate, 3'-6" wide		9	2.667	Ea.	95	110	22	227	295
0500	Fence rail, redwood, 2" x 4", merch. grade, 8'	B-1	2400	.010	L.F.	2.53	.41		2.94	3.40
5000	Fence post, select redwood, earth packed & treated, 4" x 4" x 6'		96	.250	Ea.	14	10.15		24.15	31
6000	4" x 4" x 8'		96	.250		19.25	10.15		29.40	36.50
6010	Set in concrete, 4" x 4" x 6'		50	.480		22	19.45		41.45	53.50
6020	4" x 4" x 8'		50	.480		23	19.45		42.45	55
6030	Wood post, 4' high, set in concrete, incl. concrete		50	.480		14.20	19.45		33.65	45
6040	Earth packed		96	.250		17.20	10.15		27.35	34.50
6050	6' high, set in concrete, incl. concrete		50	.480		17.70	19.45		37.15	49
6060	Earth packed		96	.250		12.10	10.15		22.25	29
6070										

32 32 Retaining Walls

32 32 13 - Cast-in-Place Concrete Retaining Walls

32 32 13.10 Retaining Walls, Cast Concrete

RETAINING WALLS, CAST CONCRETE										
1800	Concrete gravity wall with vertical face including excavation & backfill									
1850	No reinforcing									
1900	6' high, level embankment	C-17C	36	2.306	L.F.	89	122	15.80	226.80	300
2000	33° slope embankment		32	2.594		103	137	17.80	257.80	345
2200	8' high, no surcharge		27	3.074		110	163	21	294	395
2300	33° slope embankment		24	3.458		133	183	23.50	339.50	450
2500	10' high, level embankment		19	4.368		157	231	30	418	560
2600	33° slope embankment		18	4.611		217	244	31.50	492.50	650
2800	Reinforced concrete cantilever, incl. excavation, backfill & reinf.									
2900	6' high, 33° slope embankment	C-17C	35	2.371	L.F.	80.50	125	16.25	221.75	298
3000	8' high, 33° slope embankment		29	2.862		93	151	19.65	263.65	355
3100	10' high, 33° slope embankment		20	4.150		121	219	28.50	368.50	500
3200	20' high, 500 lb./L.F. surcharge		7.50	11.067		360	585	76	1,021	1,375
3500	Concrete cribbing, incl. excavation and backfill									
3700	12' high, open face	B-13	210	.267	S.F.	40.50	11.65	2.81	54.96	65.50
3900	Closed face	"	210	.267	"	38	11.65	2.81	52.46	62.50
4100	Concrete filled slurry trench, see Section 31 56 23.20									

32 32 23 - Segmental Retaining Walls

32 32 23.13 Segmental Conc. Unit Masonry Retaining Walls

SEGMENTAL CONC. UNIT MASONRY RETAINING WALLS										
0010	Segmental retaining wall system, incl. pins and void fill									
7100	base and backfill not included									
7120	Large unit, 8" high x 18" wide x 20" deep, 3 plane split	B-62	300	.080	S.F.	12.75	3.49	.58	16.82	20
7140	Straight split		300	.080		12.85	3.49	.58	16.92	20
7150	Medium, lt. wt., 8" high x 18" wide x 12" deep, 3 plane split		400	.060		6.30	2.62	.44	9.36	11.35
7160										

01 54 | Construction Aids

01 54 33 | Equipment Rental

		UNIT	HOURLY OPER. COST	RENT PER DAY	RENT PER WEEK	RENT PER MONTH	EQUIPMENT COST/DAY	
40	4100	Pump, centrifugal gas pump, 1-1/2" diameter, 65 GPM	Ea.	3.90	53.50	160	480	63.20
	4200	2" diameter, 130 GPM		5.00	63.50	190	570	78
	4300	3" diameter, 250 GPM		5.15	63.50	190	570	79.20
	4400	6" diameter, 1500 GPM		22.30	197	590	1,775	296.40
	4500	Submersible electric pump, 1-1/4" diameter, 55 GPM		.41	17.65	53	159	13.90
	4600	1-1/2" diameter, 83 GPM		.45	20.50	61	183	15.80
	4700	2" diameter, 120 GPM		1.65	25.50	76	228	28.40
	4800	3" diameter, 300 GPM		2.94	45	135	405	50.50
	4900	4" diameter, 560 GPM		14.70	167	500	1,500	217.60
	5000	6" diameter, 1590 GPM		21.94	218	655	1,975	306.50
	5100	Diaphragm pump, gas, single, 1-1/2" diameter		1.12	54.50	164	490	41.75
	5200	2" diameter		4.00	68.50	205	615	73
	5300	3" diameter		4.05	68.50	205	615	73.40
	5400	Double, 4" diameter		5.85	113	340	1,025	114.80
	5450	Pressure washer 5 GPM, 3000 psi		3.95	53.50	160	480	63.60
	5460	7 GPM, 3000 psi		4.90	63.50	190	570	77.20
	5500	Trash pump, self-priming, gas, 2" diameter		3.80	23.50	70	210	44.40
	5600	Diesel, 4" diameter		6.95	95	285	855	112.60
	5650	Diesel, 6" diameter		16.90	167	500	1,500	235.20
	5655	Grout pump		19.50	275	825	2,475	321
	5700	Salamanders, L.P. gas fired, 100,000 BTU		2.93	14	42	126	31.85
	5705	50,000 BTU		1.67	11.35	34	102	20.15
	5720	Sandblaster, portable, open top, 3 C.F. capacity		.60	27	81	243	21
	5730	6 C.F. capacity		1.00	40	120	360	32
	5740	Accessories for above		.14	22.50	68	204	14.70
	5750	Sander, floor		.77	17.65	53	159	16.75
	5760	Edger		.52	15	45	135	13.15
	5800	Saw, chain, gas engine, 18" long		1.80	22.50	67	201	27.80
	5900	Hydraulic powered, 36" long		.80	66.50	200	600	46.40
	5950	60" long		.80	68.50	205	615	47.40
	6000	Masonry, table mounted, 14" diameter, 5 H.P.		1.32	56.50	170	510	44.55
	6050	Portable cut-off, 8 H.P.		1.85	33.50	100	300	34.80
	6100	Circular, hand held, electric, 7-1/4" diameter		.23	5	15	45	4.85
	6200	12" diameter		.23	8	24	72	6.65
	6250	Wall saw, w/hydraulic power, 10 H.P.		3.30	33.50	100	300	46.40
	6275	Shot blaster, walk-behind, 20" wide		4.85	293	880	2,650	214.80
	6280	Sidewalk broom, walk-behind		2.39	85	255	765	70.10
	6300	Steam cleaner, 100 gallons per hour		3.35	80	240	720	74.80
	6310	200 gallons per hour		4.40	96.50	290	870	93.20
	6340	Tar kettle/pot, 400 gallons		15.15	76.50	230	690	167.20
	6350	Torch, cutting, acetylene-oxygen, 150' hose, excludes gases		.45	15	45	135	12.60
	6360	Hourly operating cost includes tips and gas		21.00				168
	6410	Toilet, portable chemical		.13	22	66	198	14.25
	6420	Recycle flush type		.16	27	81	243	17.50
	6430	Toilet, fresh water flush, garden hose,		.19	32.50	97	291	20.90
	6440	Hoisted, non-flush, for high rise		.16	26.50	79	237	17.10
	6465	Tractor, farm with attachment		17.80	340	1,025	3,075	347.40
	6480	Trailers, platform, flush deck, 2 axle, 3 ton capacity		1.60	21	63	189	25.40
	6500	25 ton capacity		6.25	138	415	1,250	133
	6600	40 ton capacity		8.00	193	580	1,750	180
	6700	3 axle, 50 ton capacity		8.65	215	645	1,925	198.20
	6800	75 ton capacity		10.90	285	855	2,575	258.20
	6810	Trailer mounted cable reel for high voltage line work		5.79	276	827	2,475	211.70
	6820	Trailer mounted cable tensioning rig		11.48	545	1,640	4,925	419.85
	6830	Cable pulling rig		72.98	3,075	9,210	27,600	2,426
	6850	Portable cable/wire puller, 8000 lb. max pulling capacity		3.72	167	502	1,500	130.15
	6900	Water tank trailer, engine driven discharge, 5000 gallons		7.20	150	450	1,350	147.60
	6925	10,000 gallons		9.70	207	620	1,850	201.60

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		UNIT	HOURLY OPER. COST	RENT PER DAY	RENT PER WEEK	RENT PER MONTH	EQUIPMENT COST/DAY	
6950	Water truck, off highway, 6000 gallons	Ea.	70.16	805	2,420	7,250	1,045	40
7010	Tram car for high voltage line work, powered, 2 conductor		6.85	150	449	1,350	144.60	
7020	Transit (builder's level) with tripod		.10	16.35	49	147	10.60	
7030	Trench box, 3000 lb., 6' x 8'		.56	93.50	280	840	60.50	
7040	7200 lb., 6' x 20'		.75	125	375	1,125	81	
7050	8000 lb., 8' x 16'		1.08	180	540	1,625	116.65	
7060	9500 lb., 8' x 20'		1.21	201	603	1,800	130.30	
7065	11,000 lb., 8' x 24'		1.27	211	633	1,900	136.75	
7070	12,000 lb., 10' x 20'		1.50	251	752	2,250	162.40	
7100	Truck, pickup, 3/4 ton, 2 wheel drive		9.90	60	180	540	115.20	
7200	4 wheel drive		10.20	75	225	675	126.60	
7250	Crew carrier, 9 passenger		14.00	90	270	810	166	
7290	Flat bed truck, 20,000 lb. GVW		14.90	130	390	1,175	197.20	
7300	Tractor, 4 x 2, 220 H.P.		21.00	203	610	1,825	290	
7410	330 H.P.		30.80	280	840	2,525	414.40	
7500	6 x 4, 380 H.P.		35.15	325	975	2,925	476.20	
7600	450 H.P.		43.30	395	1,185	3,550	583.40	
7610	Tractor, with A frame, boom and winch, 225 H.P.		24.10	282	845	2,525	361.80	
7620	Vacuum truck, hazardous material, 2500 gallons		12.85	305	910	2,725	284.80	
7625	5000 gallons		13.11	425	1,270	3,800	358.90	
7650	Vacuum, HEPA, 16 gallon, wet/dry		.90	18	54	162	18	
7655	55 gallon, wet/dry		.81	27	81	243	22.70	
7660	Water tank, portable		.74	123	370	1,100	79.90	
7690	Sewer/catch basin vacuum, 14 C.Y., 1500 gallons		17.59	635	1,910	5,725	522.70	
7700	Welder, electric, 200 amp		3.99	16.35	49	147	41.70	
7800	300 amp		5.90	20	60	180	59.20	
7900	Gas engine, 200 amp		9.10	24.50	74	222	87.60	
8000	300 amp		10.35	26	78	234	98.40	
8100	Wheelbarrow, any size		.06	10.65	32	96	6.90	
8200	Wrecking ball, 4000 lb.		2.45	71.50	215	645	62.60	
50	HIGHWAY EQUIPMENT RENTAL without operators	R015433						50
0050	Asphalt batch plant, portable drum mixer, 100 ton/hr.	Ea.	85.49	1,500	4,505	13,500	1,585	
0060	200 ton/hr.		97.81	1,600	4,800	14,400	1,742	
0070	300 ton/hr.		116.21	1,875	5,625	16,900	2,055	
0100	Backhoe attachment, long stick, up to 185 H.P., 10.5' long		.37	24.50	73	219	17.55	
0140	Up to 250 H.P., 12' long		.41	27	81	243	19.50	
0180	Over 250 H.P., 15' long		.56	37	111	335	26.70	
0200	Special dipper arm, up to 100 H.P., 32' long		1.14	75.50	227	680	54.50	
0240	Over 100 H.P., 33' long		1.42	94.50	284	850	68.15	
0280	Catch basin/sewer cleaning truck, 3 ton, 9 C.Y., 1000 gal.		35.10	405	1,210	3,625	522.80	
0300	Concrete batch plant, portable, electric, 200 C.Y./hr.		24.34	545	1,630	4,900	520.70	
0520	Grader/dozer attachment, ripper/scarifier, rear mounted, up to 135 H.P.		3.15	61.50	185	555	62.20	
0540	Up to 180 H.P.		4.10	91.50	275	825	87.80	
0580	Up to 250 H.P.		5.70	145	435	1,300	132.60	
0700	Pvmt. removal bucket, for hyd. excavator, up to 90 H.P.		2.10	56.50	170	510	50.80	
0740	Up to 200 H.P.		2.25	71.50	215	645	61	
0780	Over 200 H.P.		2.45	88.50	265	795	72.60	
0900	Aggregate spreader, self-propelled, 187 H.P.		50.00	730	2,185	6,550	837	
1000	Chemical spreader, 3 C.Y.		3.15	45	135	405	52.20	
1900	Hammermill, traveling, 250 H.P.		68.23	2,200	6,620	19,900	1,870	
2000	Horizontal borer, 3" diameter, 13 H.P. gas driven		5.50	56.50	170	510	78	
2150	Horizontal directional drill, 20,000 lb. thrust, 78 H.P. diesel		27.50	680	2,045	6,125	629	
2160	30,000 lb. thrust, 115 H.P.		33.65	1,050	3,135	9,400	896.20	
2170	50,000 lb. thrust, 170 H.P.		48.35	1,325	4,005	12,000	1,188	
2190	Mud trailer for HDD, 1500 gallons, 175 H.P., gas		24.10	158	475	1,425	287.80	
2200	Hydromulcher, diesel, 3000 gallon, for truck mounting		16.35	253	760	2,275	282.80	
2300	Gas, 600 gallon		7.40	103	310	930	121.20	
2400	Joint & crack cleaner, walk behind, 25 H.P.		3.10	51.50	155	465	55.80	

General Requirements

R0129 Payment Procedures

R012909-80 Sales Tax by State

State sales tax on materials is tabulated below (5 states have no sales tax). Many states allow local jurisdictions, such as a county or city, to levy additional sales tax.

Some projects may be sales tax exempt, particularly those constructed with public funds.

State	Tax (%)	State	Tax (%)	State	Tax (%)	State	Tax (%)
Alabama	4	Illinois	6.25	Montana	0	Rhode Island	7
Alaska	0	Indiana	7	Nebraska	5.5	South Carolina	6
Arizona	5.6	Iowa	6	Nevada	6.85	South Dakota	5
Arkansas	6.5	Kansas	6.5	New Hampshire	0	Tennessee	7
California	7.25	Kentucky	6	New Jersey	7	Texas	6.25
Colorado	2.9	Louisiana	4	New Mexico	5.125	Utah	5.95
Connecticut	6.35	Maine	5.5	New York	4	Vermont	6
Delaware	0	Maryland	6	North Carolina	4.75	Virginia	5.3
District of Columbia	5.75	Massachusetts	6.25	North Dakota	5	Washington	6.5
Florida	6	Michigan	6	Ohio	5.75	West Virginia	6
Georgia	4	Minnesota	6.875	Oklahoma	4.5	Wisconsin	5
Hawaii	4	Mississippi	7	Oregon	0	Wyoming	4
Idaho	6	Missouri	4.225	Pennsylvania	6	Average	5.11%

Sales Tax by Province (Canada)

GST - a value-added tax, which the government imposes on most goods and services provided in or imported into Canada. PST - a retail sales tax, which five of the provinces impose on the prices of most goods and some

services. QST - a value-added tax, similar to the federal GST, which Quebec imposes. HST - Three provinces have combined their retail sales taxes with the federal GST into one harmonized tax.

Province	PST (%)	QST (%)	GST(%)	HST(%)
Alberta	0	0	5	0
British Columbia	7	0	5	0
Manitoba	8	0	5	0
New Brunswick	0	0	0	15
Newfoundland	0	0	0	15
Northwest Territories	0	0	5	0
Nova Scotia	0	0	0	15
Ontario	0	0	0	13
Prince Edward Island	0	0	0	15
Quebec	0	9.975	5	0
Saskatchewan	6	0	5	0
Yukon	0	0	5	0

R012909-85 Unemployment Taxes and Social Security Taxes

State unemployment tax rates vary not only from state to state, but also with the experience rating of the contractor. The federal unemployment tax rate is 6.0% of the first \$7,000 of wages. This is reduced by a credit of up to 5.4% for timely payment to the state. The minimum federal unemployment tax is 0.6% after all credits.

Social security (FICA) for 2018 is estimated at time of publication to be 7.65% of wages up to \$127,200.

R012909-86 Unemployment Tax by State

Information is from the U.S. Department of Labor, state unemployment tax rates.

State	Tax (%)	State	Tax (%)	State	Tax (%)	State	Tax (%)
Alabama	6.74	Illinois	7.75	Montana	6.12	Rhode Island	9.79
Alaska	5.4	Indiana	7.474	Nebraska	5.4	South Carolina	5.46
Arizona	8.91	Iowa	8	Nevada	5.4	South Dakota	9.5
Arkansas	6.0	Kansas	7.6	New Hampshire	7.5	Tennessee	10.0
California	6.2	Kentucky	10.0	New Jersey	5.8	Texas	7.5
Colorado	8.9	Louisiana	6.2	New Mexico	5.4	Utah	7.2
Connecticut	6.8	Maine	5.4	New York	8.5	Vermont	8.4
Delaware	8.0	Maryland	7.50	North Carolina	5.76	Virginia	6.27
District of Columbia	7	Massachusetts	11.13	North Dakota	10.72	Washington	5.7
Florida	5.4	Michigan	10.3	Ohio	8.7	West Virginia	7.5
Georgia	5.4	Minnesota	9.0	Oklahoma	5.5	Wisconsin	12.0
Hawaii	5.6	Mississippi	5.4	Oregon	5.4	Wyoming	8.8
Idaho	5.4	Missouri	9.75	Pennsylvania	10.89	Median	7.47%

R012909-90 Overtime

One way to improve the completion date of a project or eliminate negative float from a schedule is to compress activity duration times. This can be achieved by increasing the crew size or working overtime with the proposed crew.

cost chart based on a five, six, or seven day week with an eight through twelve hour day. Payroll percentage increases for time and one half and double times are shown for the various working days.

To determine the costs of working overtime to compress activity duration times, consider the following examples. Below is an overtime efficiency and

Days per Week	Hours per Day	Production Efficiency					Payroll Cost Factors	
		1st Week	2nd Week	3rd Week	4th Week	Average 4 Weeks	@ 1-1/2 Times	@ 2 Times
5	8	100%	100%	100%	100%	100%	1.000	1.000
	9	100	100	95	90	96	1.056	1.111
	10	100	95	90	85	93	1.100	1.200
	11	95	90	75	65	81	1.136	1.273
	12	90	85	70	60	76	1.167	1.333
6	8	100	100	95	90	96	1.083	1.167
	9	100	95	90	85	93	1.130	1.259
	10	95	90	85	80	88	1.167	1.333
	11	95	85	70	65	79	1.197	1.394
	12	90	80	65	60	74	1.222	1.444
7	8	100	95	85	75	89	1.143	1.286
	9	95	90	80	70	84	1.183	1.365
	10	90	85	75	65	79	1.214	1.429
	11	85	80	65	60	73	1.240	1.481
	12	85	75	60	55	69	1.262	1.524

R013113-40 Builder's Risk Insurance

Builder's risk insurance is insurance on a building during construction. Premiums are paid by the owner or the contractor. Blasting, collapse and underground insurance would raise total insurance costs.

R013113-50 General Contractor's Overhead

There are two distinct types of overhead on a construction project: Project overhead and main office overhead. Project overhead includes those costs at a construction site not directly associated with the installation of construction materials. Examples of project overhead costs include the following:

1. Superintendent
2. Construction office and storage trailers
3. Temporary sanitary facilities
4. Temporary utilities
5. Security fencing
6. Photographs
7. Cleanup
8. Performance and payment bonds

The above project overhead items are also referred to as general requirements and therefore are estimated in Division 1. Division 1 is the first division listed in the CSI MasterFormat but it is usually the last division estimated. The sum of the costs in Divisions 1 through 49 is referred to as the sum of the direct costs.

All construction projects also include indirect costs. The primary components of indirect costs are the contractor's main office overhead and profit. The amount of the main office overhead expense varies depending on the following:

1. Owner's compensation
2. Project managers' and estimators' wages
3. Clerical support wages
4. Office rent and utilities
5. Corporate legal and accounting costs
6. Advertising
7. Automobile expenses
8. Association dues
9. Travel and entertainment expenses

These costs are usually calculated as a percentage of annual sales volume. This percentage can range from 35% for a small contractor doing less than \$500,000 to 5% for a large contractor with sales in excess of \$100 million.

R013113-55 Installing Contractor's Overhead

Installing contractors (subcontractors) also incur costs for general requirements and main office overhead.

Included within the total incl. overhead and profit costs is a percent mark-up for overhead that includes:

1. Compensation and benefits for office staff and project managers
2. Office rent, utilities, business equipment, and maintenance
3. Corporate legal and accounting costs

4. Advertising
5. Vehicle expenses (for office staff and project managers)
6. Association dues
7. Travel, entertainment
8. Insurance
9. Small tools and equipment

R013113-60 Workers' Compensation Insurance Rates by Trade

The table below tabulates the national averages for workers' compensation insurance rates by trade and type of building. The average "Insurance Rate" is multiplied by the "% of Building Cost" for each trade. This produces

the "Workers' Compensation" cost by % of total labor cost, to be added for each trade by building type to determine the weighted average workers' compensation rate for the building types analyzed.

Trade	Insurance Rate (% Labor Cost)		% of Building Cost			Workers' Compensation		
	Range	Average	Office Bldgs.	Schools & Apts.	Mfg.	Office Bldgs.	Schools & Apts.	Mfg.
Excavation, Grading, etc.	2.7 % to 20.1%	8.5%	4.8%	4.9%	4.5%	0.41%	0.42%	0.38%
Piles & Foundations	5.3 to 29.8	13.4	7.1	5.2	8.7	0.95	0.70	1.17
Concrete	4.1 to 28.0	11.8	5.0	14.8	3.7	0.59	1.75	0.44
Masonry	3.9 to 49.3	13.8	6.9	7.5	1.9	0.95	1.04	0.26
Structural Steel	5.3 to 59.1	21.2	10.7	3.9	17.6	2.27	0.83	3.73
Miscellaneous & Ornamental Metals	3.3 to 24.4	10.6	2.8	4.0	3.6	0.30	0.42	0.38
Carpentry & Millwork	4.4 to 32.4	13.0	3.7	4.0	0.5	0.48	0.52	0.07
Metal or Composition Siding	5.5 to 107.2	19.0	2.3	0.3	4.3	0.44	0.06	0.82
Roofing	5.5 to 120.3	29.0	2.3	2.6	3.1	0.67	0.75	0.90
Doors & Hardware	3.2 to 32.4	11.0	0.9	1.4	0.4	0.10	0.15	0.04
Sash & Glazing	4.7 to 25.5	12.1	3.5	4.0	1.0	0.42	0.48	0.12
Lath & Plaster	3.0 to 31.6	10.7	3.3	6.9	0.8	0.35	0.74	0.09
Tile, Marble & Floors	2.7 to 18.3	8.7	2.6	3.0	0.5	0.23	0.26	0.04
Acoustical Ceilings	2.4 to 46.3	8.5	2.4	0.2	0.3	0.20	0.02	0.03
Painting	3.3 to 38.8	11.2	1.5	1.6	1.6	0.17	0.18	0.18
Interior Partitions	4.4 to 32.4	13.0	3.9	4.3	4.4	0.51	0.56	0.57
Miscellaneous Items	2.3 to 97.7	11.2	5.2	3.7	9.7	0.58	0.42	1.09
Elevators	1.3 to 13.7	4.7	2.1	1.1	2.2	0.10	0.05	0.10
Sprinklers	2.0 to 15.5	6.7	0.5	—	2.0	0.03	—	0.13
Plumbing	1.7 to 14.0	6.3	4.9	7.2	5.2	0.31	0.45	0.33
Heat, Vent., Air Conditioning	3.3 to 17.8	8.3	13.5	11.0	12.9	1.12	0.91	1.07
Electrical	1.9 to 11.6	5.2	10.1	8.4	11.1	0.53	0.44	0.58
Total	1.3 % to 120.3%	—	100.0%	100.0%	100.0%	11.71%	11.15%	12.52%
Overall Weighted Average			11.79%					

Workers' Compensation Insurance Rates by States

The table below lists the weighted average Workers' Compensation base rate for each state with a factor comparing this with the national average of 11.8%.

State	Weighted Average	Factor	State	Weighted Average	Factor	State	Weighted Average	Factor
Alabama	15.0%	127	Kentucky	10.4%	88	North Dakota	6.2%	53
Alaska	10.4	88	Louisiana	18.7	158	Ohio	7.2	61
Arizona	9.6	81	Maine	10.4	88	Oklahoma	8.9	75
Arkansas	7.0	59	Maryland	11.3	96	Oregon	9.3	79
California	22.2	188	Massachusetts	11.2	95	Pennsylvania	21.1	179
Colorado	7.5	64	Michigan	8.2	69	Rhode Island	13.7	116
Connecticut	17.5	148	Minnesota	16.9	143	South Carolina	16.5	140
Delaware	13.9	118	Mississippi	11.8	100	South Dakota	11.8	100
District of Columbia	9.1	77	Missouri	12.4	105	Tennessee	8.6	73
Florida	11.1	94	Montana	8.8	75	Texas	6.6	56
Georgia	31.9	270	Nebraska	13.5	114	Utah	7.4	63
Hawaii	8.5	72	Nevada	7.5	64	Vermont	10.9	92
Idaho	9.4	80	New Hampshire	12.0	102	Virginia	6.9	58
Illinois	21.1	179	New Jersey	14.8	125	Washington	9.1	77
Indiana	4.1	35	New Mexico	13.3	113	West Virginia	4.5	38
Iowa	13.7	116	New York	19.2	163	Wisconsin	12.2	103
Kansas	6.5	55	North Carolina	15.8	134	Wyoming	5.6	47
Weighted Average for U.S. is			11.8% of payroll = 100%					

The weighted average skilled worker rate for 35 trades is 11.8%. For bidding purposes, apply the full value of Workers' Compensation directly to total labor costs, or if labor is 38%, materials 42% and overhead and profit 20% of total cost, carry 38/80 x 11.8% = 6.0% of cost (before overhead and profit)

into overhead. Rates vary not only from state to state but also with the experience rating of the contractor.

Rates are the most current available at the time of publication.