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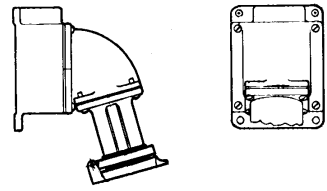
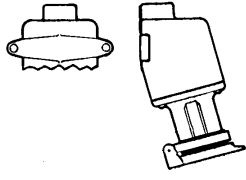
Weather & Explosion-Proof Receptacles

SECTION	DESCRIPTION	UNIT	MAN HOURS	MAT'L	LABOR	TOTAL
1614100100	Explosion-Proof Plug, Type CPH, 30A 2W 3P, .750-1.000 Cable	EA	.640	\$333	\$24.32	\$357
1614100200	30A 3W 4P, .750-1.000 Cable	EA	.640	357	24.32	381
1614100300	60A 2W 3P, .500-.750 Cable	EA	.950	436	36.10	472
1614100400	60A 2W 3P, .750-1.000 Cable	EA	.950	436	36.10	472
1614100500	60A 2W 3P, 1.000-1.375 Cable	EA	.950	436	36.10	472
1614100600	60A 3W 4P, .500-.750 Cable	EA	.950	378	36.10	414
1614100700	60A 3W 4P, .750-1.000 Cable	EA	.950	417	36.10	453
1614100800	60A 3W 4P, 1.000-1.375 Cable	EA	.950	417	36.10	453
1614100900	Explosion-Proof Plug, Type CPP, 20A 2W 3P, .250-.375 Cable	EA	.500	167	19.00	186
1614101000	20A 2W 3P, .375-.500 Cable	EA	.500	167	19.00	186
1614101100	20A 2W 3P, .500-.625 Cable	EA	.500	167	19.00	186
1614101200	30A 2W 3P, .500-.625 Cable	EA	.640	275	24.32	299
1614101300	30A 2W 3P, .625-.750 Cable	EA	.640	275	24.32	299
1614101400	30A 2W 3P, .750-.875 Cable	EA	.640	275	24.32	299
1614101500	30A 3W 4P, .500-.625 Cable	EA	.640	296	24.32	321
1614101600	30A 3W 4P, .625-.750 Cable	EA	.640	296	24.32	321
1614101700	30A 3W 4P, .750-.875 Cable	EA	.640	296	24.32	321
1614101800	Explosion-Proof Receptacle, Type CES, 30A 2W 3P, (3) 3/4" Hubs	EA	2.00	622	76.00	698
1614101900	30A 3W 4P, (3) 3/4" Hubs	EA	2.00	666	76.00	742
1614102000	60A 2W 3P, (3) 1-1/4" Hubs	EA	3.50	889	133	1,022
1614102100	60A 3W 4P, (3) 1-1/4" Hubs	EA	3.50	868	133	1,001
1614102200	Explosion-Proof Receptacle, Type CESD, 30A 2W 3P, (1) 3/4" Hub	EA	2.00	622	76.00	698
1614102300	30A 3W 4P, (1) 3/4" Hub	EA	2.00	666	76.00	742
1614102400	60A 2W 3P, (1) 1-1/4" Hub	EA	3.50	889	133	1,022
1614102500	60A 3W 4P, (1) 1-1/4" Hub	EA	3.50	868	133	1,001
1614102600	Explosion-Proof Receptacle, Type CPS, 20A 2W 3P, Straight, 1/2" Hub	EA	1.70	367	64.60	431
1614102700	20A 2W 3P, Straight, 3/4" Hub	EA	1.70	348	64.60	412
1614102800	20A 2W 3P, Straight, 1/2" Hub	EA	1.70	365	64.60	429
1614102900	20A 2W 3P, Straight, 3/4" Hub	EA	1.70	396	64.60	461
1614103000	20A 2W 3P, Angle, 1/2" Hub	EA	1.70	367	64.60	431
1614103100	20A 2W 3P, Angle, 3/4" Hub	EA	1.70	346	64.60	411
1614103200	20A 2W 3P, Dead End, 1/2" Hub	EA	1.70	367	64.60	431
1614103300	20A 2W 3P, Dead End, 3/4" Hub	EA	1.70	346	64.60	411
1614103400	20A 2W 3P, Dead End, 1" Hub	EA	1.70	398	64.60	463
1614103500	20A 2W 3P, Feed Thru, 1/2" Hubs	EA	1.70	348	64.60	412
1614103600	20A 2W 3P, Feed Thru, 3/4" Hubs	EA	1.70	350	64.60	414
1614103700	20A 2W 3P, Feed Thru, 1" Hubs	EA	1.70	407	64.60	471
1614103800	Weatherproof Plug, Type APR, 20A 2W 2P, .250-.500	EA	.500	237	19.00	256
1614103900	20A 2W 2P, .500-.875	EA	.500	237	19.00	256
1614104000	30A 2W 2P, .875-1.375	EA	.640	273	24.32	297
1614104100	30A 3W 3P, .875-1.375	EA	.640	255	24.32	280
1614104200	30A 4W 4P, .875-1.375	EA	.640	281	24.32	306
1614104300	30A 5W 5P, .500-.875	EA	.640	376	24.32	400
1614104400	60A 2W 2P, .875-1.375	EA	.950	447	36.10	483
1614104500	60A 3W 3P, .875-1.375	EA	.950	418	36.10	454
1614104600	60A 4W 4P, .875-1.375	EA	.950	489	36.10	525
1614104700	100A 2W 2P, 1.375-1.875	EA	1.50	653	57.00	710
1614104800	100A 3W 3P, 1.375-1.875	EA	1.50	636	57.00	693
1614104900	100A 3W 3P, 1.375-1.875	EA	1.50	656	57.00	713
1614105000	Weatherproof Receptacle, Type ARE, 20A 2W 2P, 1/2" w/ Spring Door	EA	1.70	158	64.60	223

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Weather & Explosion-Proof Receptacles



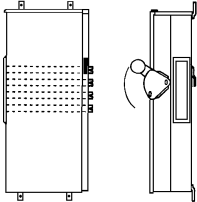
SECTION	DESCRIPTION	UNIT	MAN HOURS	MAT'L	LABOR	TOTAL
1614105100	20A 2W 2P, 3/4" w/ Spring Door	EA	1.70	\$177	\$64.60	\$242
1614105200	30A 2W 2P, 1/2" w/ Spring Door	EA	2.00	200	76.00	276
1614105300	30A 2W 2P, 3/4" w/ Spring Door	EA	2.00	240	76.00	316
1614105400	30A 3W 3P, 3/4" w/ Spring Door	EA	2.00	240	76.00	316
1614105500	30A 3W 3P, 1" w/ Spring Door	EA	2.00	245	76.00	321
1614105600	30A 4W 4P, 3/4" w/ Spring Door	EA	2.00	268	76.00	344
1614105700	30A 4W 4P, 1" w/ Spring Door	EA	2.00	272	76.00	348
1614105800	30A 5W 5P, 1" w/ Spring Door	EA	2.00	319	76.00	395
1614105900	60A 2W 2P, 1" w/ Spring Door	EA	3.00	320	114	434
1614106000	60A 2W 2P, 1-1/4" w/ Spring Door	EA	3.00	315	114	429
1614106100	60A 3W 3P, 1" w/ Spring Door	EA	3.00	373	114	487
1614106200	60A 3W 3P, 1-1/4" w/ Spring Door	EA	3.00	376	114	490
1614106300	60A 4W 4P, 1-1/4" w/ Spring Door	EA	3.00	406	114	520
1614106400	60A 4W 4P, 1-1/2" w/ Spring Door	EA	3.00	409	114	523
1614106500	Weatherproof Receptacle, Type AREA, 60A 2W 2P, 1" w/ Spring Door	EA	3.00	463	114	577
1614106600	60A 2W 2P, 1-1/4" w/ Spring Door	EA	3.00	452	114	566
1614106700	60A 3W 3P, 1" w/ Spring Door	EA	3.00	520	114	634
1614106800	60A 3W 3P, 1-1/4" w/ Spring Door	EA	3.00	520	114	634
1614106900	60A 4W 4P, 1-1/4" w/ Spring Door	EA	3.00	550	114	664
1614107000	60A 4W 4P, 1-1/2" w/ Spring Door	EA	3.00	550	114	664
1614107100	100A 2W 2P, 1-1/4" w/ Spring Door	EA	3.75	420	143	563
1614107200	100A 2W 2P, 1-1/2" w/ Spring Door	EA	3.75	610	143	753
1614107300	100A 3W 3P, 1-1/4" w/ Spring Door	EA	3.75	605	143	748
1614107400	100A 3W 3P, 1-1/2" w/ Spring Door	EA	3.75	605	143	748
1614107500	100A 4W 4P, 1-1/2" w/ Spring Door	EA	3.75	675	143	818
1614107600	100A 4W 4P, 2" w/ Spring Door	EA	3.75	675	143	818



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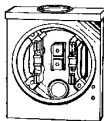
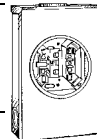
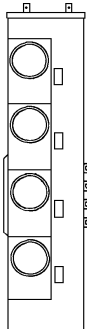
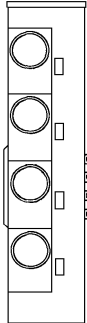
Meter Centers

SECTION	DESCRIPTION	UNIT	MAN HOURS	MAT'L	LABOR	TOTAL
1643000100	Meter Center Service Cubicle, Indoor Fusible Switch Type, 1P 400A	EA	9.50	\$1,496	\$361	\$1,857
1643000200	 1P 600A	EA	13.8	1,924	524	2,448
1643000300		EA	16.9	2,993	642	3,635
1643000400		EA	19.9	4,251	756	5,007
1643000500		EA	9.5	1,853	361	2,214
1643000600		EA	13.8	2,161	524	2,686
1643000700		EA	16.9	4,251	642	4,893
1643000800		EA	19.9	5,819	756	6,575
1643000900	Meter Center Service Cubicle, Indoor Main Breaker Type, 1P 200A	EA	7.90	765	300	1,065
1643001000	400A	EA	9.50	1,758	361	2,119
1643001100	600A	EA	13.8	2,684	524	3,208
1643001200	800A	EA	16.9	3,373	642	4,015
1643001300	1000A	EA	19.0	4,703	722	5,425
1643001400	1200A	EA	19.9	6,508	756	7,264
1643001500	1600A	EA	22.3	11,115	847	11,962
1643001600	Meter Center Service Cubicle, Indoor Main Breaker Type, 3P 200A	EA	7.90	926	300	1,226
1643001700	 400A	EA	9.50	2,138	361	2,499
1643001800		EA	13.8	3,444	524	3,968
1643001900		EA	16.9	4,489	642	5,131
1643002000		EA	19.0	5,581	722	6,303
1643002100		EA	19.9	7,386	756	8,142
1643002200		EA	22.3	11,733	847	12,580
1643002300	Meter Center Service Cubicle, Indoor Main Terminal Type, 1P 800A	EA	16.0	333	608	941
1643002400	1P 1600A	EA	21.0	1,188	798	1,986
1643002500	3P 800A	EA	16.0	428	608	1,036
1643002600	3P 1600A	EA	21.0	1,663	798	2,461
1643002700	Meter Center Service Cubicle, Outdoor Fusible Switch Type, 1P 400A	EA	9.50	1,639	361	2,000
1643002800	 1P 600A	EA	13.8	2,375	524	2,899
1643002900		EA	16.9	3,515	642	4,157
1643003000		EA	19.9	4,988	756	5,744
1643003100		EA	9.50	1,948	361	2,309
1643003200		EA	13.8	3,111	524	3,636
1643003300		EA	16.9	5,106	642	5,748
1643003400		EA	19.9	6,888	756	7,644
1643003500	Meter Center Service Cubicle, Outdoor Main Breaker Type, 1P 200A	EA	7.90	903	300	1,203
1643003600	1P 400A	EA	9.50	2,043	361	2,404
1643003700	1P 600A	EA	13.8	3,111	524	3,636
1643003800	1P 800A	EA	16.9	4,180	642	4,822
1643003900	1P 1000A	EA	19.0	5,653	722	6,375
1643004000	1P 1200A	EA	19.9	7,244	756	8,000
1643004100	1P 1600A	EA	22.3	12,469	847	13,316
1643004200	3P 200A	EA	7.90	1,069	300	1,369
1643004300	3P 400A	EA	9.50	2,446	361	2,807
1643004400	3P 600A	EA	13.8	4,014	524	4,538
1643004500	3P 800A	EA	16.9	5,249	642	5,891
1643004600	3P 1000A	EA	19.0	6,365	722	7,087
1643004700	3P 1200A	EA	19.9	8,360	756	9,116
1643004800	3P 1600A	EA	22.3	13,110	847	13,957
1643004900	Meter Center Service Cubicle, Outdoor Main Terminal Type, 1P 800A	EA	16.0	356	608	964
1643005000	1P 1600A	EA	21.0	1,306	798	2,104

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Meter Centers

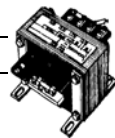
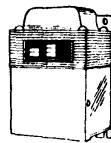
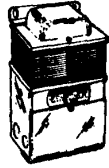
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1643005100	3P 800A	EA	16.0	\$461	\$608	\$1,069
1643005200	3P 1600A	EA	21.0	1,734	798	2,532
1643005300	Meter Center, Indoor Stacking Unit, 1-P 2-Meter, 125A Breaker Space Each	EA	5.20	366	198	563
1643005400	2-Meter, 150A Breaker Space Each	EA	5.85	546	222	769
1643005500	2-Meter, 200A Breaker Space Each	EA	6.70	646	255	901
1643005600	3-Meter, 125A Breaker Space Each	EA	7.15	475	272	747
1643005700	3-Meter, 150A Breaker Space Each	EA	7.80	817	296	1,113
1643005800	3-Meter, 200A Breaker Space Each	EA	8.45	974	321	1,295
1643005900	4-Meter, 125A Breaker Space Each	EA	9.10	618	346	963
1643006000	4-Meter, 150A Breaker Space Each	EA	9.73	1,093	370	1,462
1643006100	4-Meter, 200A Breaker Space Each	EA	10.5	1,306	399	1,705
1643006200	5-Meter, 125A Breaker Space Each	EA	11.0	774	418	1,192
1643006300	5-Meter, 150A Breaker Space Each	EA	11.5	1,354	437	1,791
1643006400	6-Meter, 125A Breaker Space Each	EA	12.0	926	456	1,382
1643006500	Meter Center, Indoor, 400A ML, 4-Meter 2-High, 150A Breaker Space Each	EA	9.73	865	370	1,234
1643006600	Meter Center, Outdoor Stacking Unit, 1-P 2-Meter, 125A Breaker Space Each	EA	5.20	394	198	592
1643006700	2-Meter, 150A Breaker Space Each	EA	5.85	580	222	802
1643006800	2-Meter, 200A Breaker Space Each	EA	6.70	684	255	939
1643006900	3-Meter, 125A Breaker Space Each	EA	7.15	508	272	780
1643007000	3-Meter, 150A Breaker Space Each	EA	7.80	865	296	1,161
1643007100	3-Meter, 200A Breaker Space Each	EA	8.45	1,021	321	1,342
1643007200	4-Meter, 125A Breaker Space Each	EA	9.10	684	346	1,030
1643007300	4-Meter, 150A Breaker Space Each	EA	9.73	1,154	370	1,524
1643007400	4-Meter, 200A Breaker Space Each	EA	10.5	1,354	399	1,753
1643007500	5-Meter, 125A Breaker Space Each	EA	11.0	855	418	1,273
1643007600	5-Meter, 150A Breaker Space Each	EA	11.5	1,449	437	1,886
1643007700	6-Meter, 125A Breaker Space Each	EA	12.0	1,021	456	1,477
1643007800	Meter Center, Outdoor, 230A ML, 2-Meter 2-High, 125A Breaker Space Each	EA	5.20	390	198	587
1643007900	2-Meter 2-High, 200A Breaker Space Each	EA	6.70	518	255	772
1643008000	3-Meter 3-High, 125A Breaker Space Each	EA	7.15	466	272	737
1643008100	3-Meter 3-High, 150A Breaker Space Each	EA	7.80	665	296	961
1643008200	3-Meter 3-High, 200A Breaker Space Each	EA	8.45	760	321	1,081
1643008300	Meter Center, Outdoor, 400A ML, 4-Meter 2-High, 125A Breaker Space Each	EA	9.10	632	346	978
1643008400	4-Meter 2-High, 150A Breaker Space Each	EA	9.73	903	370	1,272
1643008500	4-Meter 2-High, 200A Breaker Space Each	EA	10.5	1,045	399	1,444
1643008600	6-Meter 3-High, 125A Breaker Space Each	EA	12.0	917	456	1,373
1643008700	Meter Center, Outdoor, 600A ML, 6-Meter 3-High, 125A Breaker Space Each	EA	12.5	1,021	475	1,496
1643008800	150A Breaker Space Each	EA	13.0	1,306	494	1,800
1643008900	200A Breaker Space Each	EA	13.5	1,425	513	1,938
1643009000	Meter Socket, Commercial Single, 1-Phase 4-Terminal, 100A	EA	2.80	146	106	253
1643009100	1-Phase 4-Terminal, 200A	EA	4.70	272	179	451
1643009200	3-Phase 7-Terminal, 100A	EA	3.00	210	114	324
1643009300	3-Phase 7-Terminal, 200A	EA	5.00	362	190	552
1643009400	Meter Socket, Standard Single, 1-Phase 4-Terminal, 100A	EA	2.38	26.98	90.44	117
1643009500	1-Phase 4-Terminal, 150A	EA	3.31	32.29	126	158
1643009600	1-Phase 4-Terminal, 200A	EA	4.00	37.22	152	189
1643009610	3-Phase 7 Terminal, 100A	EA	3.00	73.64	114	188
1643009620	3-Phase 7 Terminal, 200A	EA	5.00	122	190	312



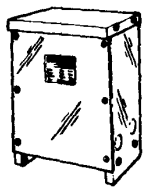
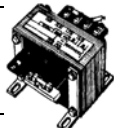
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Transformers

SECTION	DESCRIPTION	UNIT	MAN HOURS	MAT'L	LABOR	TOTAL
164600010	Buck & Boost Transformer, 1P 120/240V Primary 12/24V Secondary, .05KVA	EA	.800	\$76.75	\$30.40	\$107
164600020	.10KVA	EA	.950	91.80	36.10	128
164600030	.15KVA	EA	1.15	104	43.70	147
164600040	.25KVA	EA	1.33	179	50.54	229
164600050	.50KVA	EA	1.90	229	72.20	301
164600060	.75KVA	EA	2.45	301	93.10	394
164600070	1KVA	EA	3.80	252	144	396
164600080	1.5KVA	EA	4.22	311	160	471
164600090	2KVA	EA	4.75	401	181	581
164600100	3KVA	EA	5.42	807	206	1,013
164600110	5KVA	EA	6.34	876	241	1,117
164600120	7.5KVA	EA	7.00	1,260	266	1,526
164600130	10KVA	EA	7.80	1,575	296	1,871
164600140	Buck & Boost Transformer, 1P 120/240V Primary 16/32V Secondary, .05KVA	EA	.800	63.00	30.40	93.40
164600150	.10KVA	EA	.950	81.90	36.10	118
164600160	.15KVA	EA	1.15	85.50	43.70	129
164600170	.25KVA	EA	1.33	144	50.54	194
164600180	.50KVA	EA	1.90	179	72.20	251
164600190	.75KVA	EA	2.45	234	93.10	327
164600200	1KVA	EA	3.80	219	144	363
164600210	1.5KVA	EA	4.22	272	160	432
164600220	2KVA	EA	4.75	344	181	524
164600230	3KVA	EA	5.42	480	206	686
164600240	5KVA	EA	6.34	851	241	1,091
164600250	7.5KVA	EA	7.00	1,265	266	1,531
164600260	10KVA	EA	7.80	1,575	296	1,871
164600270	Buck & Boost Transformer, 1P 240/480V Primary 24/48V Secondary, .05KVA	EA	.800	94.50	30.40	125
164600280	.10KVA	EA	.950	102	36.10	138
164600290	.15KVA	EA	1.15	123	43.70	167
164600300	.25KVA	EA	1.33	142	50.54	193
164600310	.50KVA	EA	1.90	205	72.20	277
164600320	.75KVA	EA	2.45	248	93.10	341
164600330	1KVA	EA	3.80	284	144	428
164600340	1.5KVA	EA	4.22	324	160	484
164600350	2KVA	EA	4.75	437	181	617
164600360	3KVA	EA	5.42	614	206	820
164600370	5KVA	EA	6.34	905	241	1,145
164600380	7.5KVA	EA	7.00	1,395	266	1,661
164600390	10KVA	EA	7.80	1,733	296	2,029
164600400	Control Transformer, 120V Primary 6V Secondary, .05KVA	EA	.800	66.60	30.40	97.00
164600410	6V Secondary, .10KVA	EA	.950	81.00	36.10	117
164600420	24V Secondary, .05KVA	EA	.800	43.20	30.40	73.60
164600430	24V Secondary, .10KVA	EA	.950	54.00	36.10	90.10
164600440	Control Transformer, 208V Primary 24V Secondary, .05KVA	EA	.800	45.00	30.40	75.40
164600450	24V Secondary, .10KVA	EA	.950	54.00	36.10	90.10
164600460	120V Secondary, .05KVA	EA	.800	43.20	30.40	73.60
164600470	120V Secondary, .10KVA	EA	.950	52.20	36.10	88.30
164600480	Control Transformer, 240/480V Primary 12V Secondary, .10KVA	EA	.950	75.60	36.10	112
164600490	24V Secondary, .05KVA	EA	.800	46.80	30.40	77.20
164600500	24V Secondary, .10KVA	EA	.950	55.80	36.10	91.90




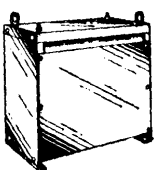
16460		Transformers				
SECTION	DESCRIPTION	UNIT	MAN HOURS	MAT'L	LABOR	TOTAL
1646000510	120V Secondary, .05KVA	EA	.800	\$45.00	\$30.40	\$75.40
1646000520	120V Secondary, .10KVA	EA	.950	56.70	36.10	92.80
1646000530	120V Secondary, .15KVA	EA	1.15	63.00	43.70	107
1646000540	120V Secondary, .25KVA	EA	1.33	73.80	50.54	124
1646000550	Control Transformer, 240V Primary 120V Secondary, .05KVA	EA	.800	43.20	30.40	73.60
1646000560	.10KVA	EA	.950	55.80	36.10	91.90
1646000570	Control Transformer, 277V Primary 24V Secondary, .05KVA	EA	.800	49.50	30.40	79.90
1646000580	24V Secondary, .10KVA	EA	.950	59.40	36.10	95.50
1646000590	120V Secondary, .05KVA	EA	.800	43.20	30.40	73.60
1646000600	120V Secondary, .10KVA	EA	.950	55.80	36.10	91.90
1646000610	Control Transformer, 480V Primary 120V Secondary, .05KVA	EA	.800	43.20	30.40	73.60
1646000620	120V Secondary, .10KVA	EA	.950	55.80	36.10	91.90
1646000630	240V Secondary, .05KVA	EA	.800	50.40	30.40	80.80
1646000640	240V Secondary, .10KVA	EA	.950	63.00	36.10	99.10
1646000650	Control Transformer, 600V Primary 24V Secondary, .05KVA	EA	.800	58.50	30.40	88.90
1646000660	24V Secondary, .10KVA	EA	.950	69.30	36.10	105
1646000670	120V Secondary, .05KVA	EA	.800	58.50	30.40	88.90
1646000680	120V Secondary, .10KVA	EA	.950	57.60	36.10	93.70
1646000690	Dry Non-Vent Transformer, 1P 240/480V Primary 120/240V Secondary, 15KVA	EA	12.7	1,881	483	2,364
1646000700	25KVA	EA	15.2	2,826	578	3,404
1646000710	37.5KVA	EA	19.0	4,185	722	4,907
1646000720	50KVA	EA	21.7	5,378	825	6,203
1646000730	75KVA	EA	23.4	6,570	889	7,459
1646000740	100KVA	EA	25.0	8,325	950	9,275
1646000750	Dry Non-Vent Transformer, 1P 600V Primary 120/240V Secondary, 15KVA	EA	12.7	2,021	483	2,504
1646000760	25KVA	EA	15.2	3,047	578	3,625
1646000770	37.5KVA	EA	19.0	4,613	722	5,335
1646000780	50KVA	EA	21.7	5,355	825	6,180
1646000790	75KVA	EA	23.4	7,290	889	8,179
1646000800	100KVA	EA	25.0	8,978	950	9,928
1646000810	Dry Non-Vent Transformer, 3P 480V Primary 208Y/120V Secondary, 15KVA	EA	13.8	2,533	524	3,057
1646000820	30KVA	EA	16.9	3,180	642	3,822
1646000830	45KVA	EA	19.0	4,617	722	5,339
1646000840	75KVA	EA	21.7	7,124	825	7,949
1646000850	112.5KVA	EA	23.4	9,653	889	10,542
1646000860	150KVA	EA	25.0	12,452	950	13,402
1646000870	225KVA	EA	29.2	18,765	1,110	19,875
1646000880	300KVA	EA	34.5	20,588	1,311	21,899
1646000890	Dry Non-Vent Transformer, 3P 480V Primary 240V Secondary, 15KVA	EA	13.8	1,733	524	2,257
1646000900	30KVA	EA	16.9	3,015	642	3,657
1646000910	45KVA	EA	19.0	4,622	722	5,344
1646000920	75KVA	EA	21.7	7,124	825	7,949
1646000930	112.5KVA	EA	23.4	9,653	889	10,542
1646000940	150KVA	EA	25.0	12,465	950	13,415
1646000950	225KVA	EA	29.2	18,765	1,110	19,875
1646000960	300KVA	EA	34.5	20,480	1,311	21,791
1646000970	Dry Non-Vent Transformer, 3P 600V Primary 208Y/120V Secondary, 15KVA	EA	13.8	1,816	524	2,340
1646000980	30KVA	EA	16.9	3,285	642	3,927
1646000990	45KVA	EA	19.0	5,009	722	5,731
1646001000	75KVA	EA	21.7	7,673	825	8,498



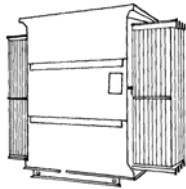
16460		Transformers					
SECTION	DESCRIPTION	UNIT	MAN HOURS	MAT'L	LABOR	TOTAL	
1646001010	112.5KVA	EA	23.4	\$10,440	\$889	\$11,329	
1646001020	150KVA	EA	25.0	12,465	950	13,415	
1646001030	225KVA	EA	29.2	19,305	1,110	20,415	
1646001040	300KVA	EA	34.5	21,195	1,311	22,506	
1646001050	Dry Type Transformer, 1P 2.4KV Primary 120/240V Secondary, 167KVA	EA	29.2	15,651	1,110	16,761	
1646001060	250KVA	EA	34.5	20,409	1,311	21,720	
1646001070	333KVA	EA	42.2	25,069	1,604	26,673	
1646001080	Dry Type Transformer, 1P 5KV Primary 120/240V Secondary, 167KVA	EA	29.2	16,800	1,110	17,910	
1646001090	250KVA	EA	34.5	21,805	1,311	23,116	
1646001100	333KVA	EA	42.2	26,685	1,604	28,289	
1646001110	Dry Type Transformer, 1P 8.66KV Primary 120/240V Secondary, 167KVA	EA	29.2	17,654	1,110	18,764	
1646001120	250KVA	EA	34.5	23,828	1,311	25,139	
1646001130	333KVA	EA	42.2	28,359	1,604	29,963	
1646001140	Dry Type Transformer, 1P 15KV Primary 120/240V Secondary, 167KVA	EA	29.2	19,890	1,110	21,000	
1646001150	250KVA	EA	34.5	25,763	1,311	27,074	
1646001160	333KVA	EA	42.2	30,780	1,604	32,384	
1646001190	Dry Type Transformer, 1P 240/480V Primary 120/240V Secondary, .05KVA	EA	.800	87.81	30.40	118	
1646001200	.10KVA	EA	.950	117	36.10	153	
1646001210	.15KVA	EA	1.15	122	43.70	166	
1646001220	.25KVA	EA	1.33	147	50.54	198	
1646001230	.50KVA	EA	1.90	211	72.20	283	
1646001235	.75KVA	EA	2.75	225	105	330	
1646001240	1KVA	EA	3.80	328	144	472	
1646001250	1.5KVA	EA	4.40	351	167	518	
1646001260	2KVA	EA	4.75	522	181	703	
1646001265	3KVA	EA	5.40	651	205	856	
1646001270	5KVA	EA	6.30	849	239	1,088	
1646001280	7.5KVA	EA	6.90	1,193	262	1,455	
1646001290	10KVA	EA	9.50	1,479	361	1,840	
1646001300	15KVA	EA	12.7	1,862	483	2,345	
1646001310	25KVA	EA	15.2	2,423	578	3,001	
1646001320	37.5KVA	EA	19.0	3,229	722	3,951	
1646001330	50KVA	EA	21.7	3,928	825	4,753	
1646001340	75KVA	EA	23.1	5,327	878	6,205	
1646001350	100KVA	EA	25.0	5,009	950	5,959	
1646001355	167KVA	EA	27.0	7,359	1,026	8,385	
1646001370	Dry Type Transformer, 1P 480V Primary 120/240V Secondary, 3KVA	EA	5.40	651	205	856	
1646001380	5KVA	EA	6.34	849	241	1,090	
1646001390	7.5KVA	EA	6.90	1,193	262	1,455	
1646001400	10KVA	EA	9.50	1,479	361	1,840	
1646001410	15KVA	EA	12.7	1,983	483	2,466	
1646001412	25KVA	EA	16.9	2,423	642	3,065	
1646001420	Dry Type Transformer, 1P 600V Primary 120/240V Secondary, 15KVA	EA	12.7	1,463	483	1,946	
1646001430	25KVA	EA	15.2	1,917	578	2,495	
1646001440	75KVA	EA	23.4	4,189	889	5,078	
1646001450	100KVA	EA	25.0	5,441	950	6,391	
1646001460	167KVA	EA	27.0	8,455	1,026	9,481	
1646001470	3KVA	EA	5.40	462	205	667	
1646001480	5KVA	EA	6.34	624	241	865	
1646001490	7.5KVA	EA	6.90	875	262	1,137	

16460	Transformers					
SECTION	DESCRIPTION	UNIT	MAN HOURS	MAT'L	LABOR	TOTAL
1646001500	10KVA	EA	9.50	\$1,088	\$361	\$1,449
1646001510	37.5KVA	EA	19.0	2,544	722	3,266
1646001520	50KVA	EA	21.7	3,093	825	3,918
1646001530	Dry Type Transformer, 3P 2.4KV Primary 277/480V Secondary, 225KVA	EA	34.5	22,793	1,311	24,104
1646001540	300KVA	EA	42.2	27,113	1,604	28,717
1646001550	500KVA	EA	54.3	35,730	2,063	37,793
1646001560	750KVA	EA	59.4	46,967	2,257	49,224
1646001570	1000KVA	EA	63.3	55,170	2,405	57,575
1646001580	1500KVA	EA	70.3	64,238	2,671	66,909
1646001590	2000KVA	EA	76.0	75,452	2,888	78,340
1646001600	2500KVA	EA	95.0	85,815	3,610	89,425
1646001610	Dry Type Transformer, 3P 5KV Primary 277/480V Secondary, 225KVA	EA	34.5	22,793	1,311	24,104
1646001620	300KVA	EA	42.2	27,113	1,604	28,717
1646001630	500KVA	EA	54.3	35,739	2,063	37,802
1646001640	750KVA	EA	59.4	46,958	2,257	49,215
1646001650	1000KVA	EA	63.4	55,170	2,409	57,579
1646001660	1500KVA	EA	70.4	64,238	2,675	66,913
1646001670	2000KVA	EA	76.0	75,452	2,888	78,340
1646001680	2500KVA	EA	95.0	85,815	3,610	89,425
1646001690	Dry Type Transformer, 3P 8.66KV Primary 277/480V Secondary, 225KVA	EA	34.5	25,065	1,311	26,376
1646001700	300KVA	EA	42.2	31,455	1,604	33,059
1646001710	500KVA	EA	54.3	40,590	2,063	42,653
1646001720	750KVA	EA	59.4	50,983	2,257	53,240
1646001730	1000KVA	EA	63.4	58,298	2,409	60,707
1646001740	1500KVA	EA	70.4	66,933	2,675	69,608
1646001750	2000KVA	EA	76.0	74,876	2,888	77,764
1646001760	2500KVA	EA	95.0	86,445	3,610	90,055
1646001770	3000KVA	EA	106	102,758	4,009	106,767
1646001780	Dry Type Transformer, 3P 15KV Primary 277/480V Secondary, 225KVA	EA	34.5	27,225	1,311	28,536
1646001790	300KVA	EA	42.2	34,223	1,604	35,827
1646001800	500KVA	EA	54.3	44,055	2,063	46,118
1646001810	750KVA	EA	59.4	55,283	2,257	57,540
1646001820	1000KVA	EA	63.3	63,045	2,405	65,450
1646001830	1500KVA	EA	70.3	72,549	2,671	75,220
1646001840	2000KVA	EA	76.0	81,180	2,888	84,068
1646001850	2500KVA	EA	95.0	93,690	3,610	97,300
1646001860	3000KVA	EA	106	111,398	4,009	115,407
1646001870	Dry Type Transformer, 3P 480V Delta Primary 208Y/120V Secondary, 3KVA	EA	7.60	1,100	289	1,389
1646001880	6KVA	EA	9.50	1,260	361	1,621
1646001890	9KVA	EA	10.9	1,684	414	2,098
1646001900	15KVA	EA	13.8	2,533	524	3,057
1646001910	30KVA	EA	16.9	3,023	642	3,665
1646001920	45KVA	EA	19.0	5,483	722	6,205
1646001930	75KVA	EA	21.7	5,483	825	6,308
1646001940	112.5KVA	EA	23.4	7,296	889	8,185
1646001950	150KVA	EA	25.0	8,669	950	9,619
1646001960	225KVA	EA	29.2	8,039	1,110	9,149
1646001970	300KVA	EA	34.5	8,591	1,311	9,902
1646001980	500KVA	EA	44.4	18,835	1,687	20,522
1646001990	750KVA	EA	48.6	32,144	1,847	33,991

16460	Transformers					
SECTION	DESCRIPTION	UNIT	MAN HOURS	MAT'L	LABOR	TOTAL
1646002000	1000KVA	EA	51.8	\$38,768	\$1,968	\$40,736
1646002002	Dry Type Transformer, 3P 480V Delta Primary 208Y/120V Secondary, 15KVA, NEMA3R	EA	14.8	2,578	562	3,140
1646002003	30KVA, NEMA3R	EA	17.9	3,068	680	3,748
1646002004	45KVA, NEMA3R	EA	20.0	5,528	760	6,288
1646002005	75KVA, NEMA3R	EA	23.7	5,654	901	6,555
1646002006	112.5KVA, NEMA3R	EA	25.9	7,467	984	8,451
1646002007	150KVA, NEMA3R	EA	28.0	9,060	1,064	10,124
1646002008	225KVA, NEMA3R	EA	32.7	8,430	1,243	9,673
1646002009	300KVA, NEMA3R	EA	38.5	9,301	1,463	10,764
1646002010	500KVA, NEMA3R	EA	48.9	19,780	1,858	21,638
1646002011	750KVA, NEMA3R	EA	53.6	33,202	2,037	35,239
1646002019	Dry Type Transformer, 3P 480V Delta Primary 240V Delta Secondary, 6KVA	EA	9.50	860	361	1,221
1646002020	9KVA	EA	10.9	1,150	414	1,564
1646002030	15KVA	EA	13.8	1,490	524	2,014
1646002040	30KVA	EA	16.9	2,200	642	2,842
1646002050	45KVA	EA	19.0	2,647	722	3,369
1646002060	75KVA	EA	21.7	3,992	825	4,817
1646002070	112.5KVA	EA	23.4	5,310	889	6,199
1646002080	150KVA	EA	25.0	6,935	950	7,885
1646002090	225KVA	EA	29.2	8,042	1,110	9,152
1646002100	300KVA	EA	34.5	8,595	1,311	9,906
1646002110	500KVA	EA	44.4	18,833	1,687	20,520
1646002120	750KVA	EA	48.6	32,144	1,847	33,991
1646002130	1000KVA	EA	51.8	38,768	1,968	40,736
1646002140	Dry Type Transformer, 3P 4W 480V Delta Primary 240/120V Secondary, 30KVA	EA	16.9	2,312	642	2,954
1646002150	45KVA	EA	19.0	2,759	722	3,481
1646002160	75KVA	EA	21.7	4,095	825	4,920
1646002170	112.5KVA	EA	23.4	5,783	889	6,672
1646002180	150KVA	EA	25.0	7,245	950	8,195
1646002190	225KVA	EA	29.2	8,339	1,110	9,449
1646002200	300KVA	EA	34.5	8,897	1,311	10,208
1646002210	500KVA	EA	44.4	19,125	1,687	20,812
1646002220	750KVA	EA	48.6	33,750	1,847	35,597
1646002230	1000KVA	EA	51.8	38,835	1,968	40,803
1646002240	Dry Type Transformer, 3P 600V Primary 208Y/120V Secondary, 6KVA	EA	9.50	914	361	1,275
1646002250	9KVA	EA	10.9	1,777	414	2,191
1646002260	15KVA	EA	13.8	1,814	524	2,338
1646002270	30KVA	EA	16.9	2,430	642	3,072
1646002280	45KVA	EA	19.0	2,898	722	3,620
1646002290	75KVA	EA	21.7	4,307	825	5,132
1646002300	112.5KVA	EA	23.4	6,224	889	7,113
1646002310	150KVA	EA	25.0	7,650	950	8,600
1646002320	225KVA	EA	29.2	8,294	1,110	9,404
1646002330	300KVA	EA	34.5	14,085	1,311	15,396
1646002340	500KVA	EA	44.4	21,420	1,687	23,107
1646002350	750KVA	EA	48.6	32,625	1,847	34,472
1646002360	1000KVA	EA	51.8	39,150	1,968	41,118
1646002370	Isolation Transformer, 1P 120/240V Primary 120/240V Secondary, 1.5KVA	EA	3.80	581	144	725
1646002380	2KVA	EA	4.75	653	181	834
1646002390	3KVA	EA	5.42	707	206	913

16460	Transformers						
SECTION	DESCRIPTION	UNIT	MAN HOURS	MAT'L	LABOR	TOTAL	
1646002400		5KVA	EA	6.34	\$900	\$241	\$1,141
1646002410		7.5KVA	EA	6.90	1,197	262	1,459
1646002420		10KVA	EA	9.50	1,485	361	1,846
1646002430		15KVA	EA	12.7	2,025	483	2,508
1646002440		25KVA	EA	15.2	2,849	578	3,427
1646002450	Isolation Transformer, 3P 208V Delta Primary 208Y/120V Secondary, 9KVA	EA	10.9	1,724	414	2,138	
1646002460	15KVA	EA	13.8	2,147	524	2,671	
1646002470	30KVA	EA	16.9	2,700	642	3,342	
1646002480	45KVA	EA	19.0	3,249	722	3,971	
1646002490	75KVA	EA	21.7	4,905	825	5,730	
1646002500	112.5KVA	EA	23.4	6,840	889	7,729	
1646002510	150KVA	EA	25.0	8,055	950	9,005	
1646002520	225KVA	EA	29.2	10,778	1,110	11,888	
1646002530	300KVA	EA	34.5	14,153	1,311	15,464	
1646002540	500KVA	EA	44.4	21,645	1,687	23,332	
1646002550	Isolation Transformer, 3P 480V Delta Primary 208Y/120V Secondary, 9KVA	EA	10.9	1,724	414	2,138	
1646002560		15KVA	EA	13.8	2,147	524	2,671
1646002570		30KVA	EA	16.9	2,700	642	3,342
1646002580		45KVA	EA	19.0	3,249	722	3,971
1646002590		75KVA	EA	21.7	4,905	825	5,730
1646002600		112.5KVA	EA	23.4	6,368	889	7,257
1646002610		150KVA	EA	25.0	8,132	950	9,082
1646002620		225KVA	EA	29.2	10,778	1,110	11,888
1646002630		300KVA	EA	34.5	14,153	1,311	15,464
1646002640		500KVA	EA	44.4	21,645	1,687	23,332
1646003500	K Rated Dry Transformer, K13 3P 480V Delta Primary 208Y/120V Secondary, 15KVA	EA	13.8	2,614	524	3,138	
1646003502	30KVA	EA	16.9	3,591	642	4,233	
1646003504	45KVA	EA	19.0	4,221	722	4,943	
1646003505	75KVA	EA	21.7	5,976	825	6,801	
1646003506	112.5KVA	EA	23.4	12,209	889	13,098	
1646003508	150KVA	EA	25.0	14,828	950	15,778	
1646003510	225KVA	EA	29.2	21,600	1,110	22,710	
1646003512	300KVA	EA	34.5	30,389	1,311	31,700	
1646003514	500KVA	EA	44.4	46,350	1,687	48,037	
1646003520	K Rated Dry Transformer, K13 3P 480V Delta Primary 208Y/120V Secondary, 15KVA 3R	EA	14.8	2,659	562	3,221	
1646003522	30KVA 3R	EA	17.9	3,636	680	4,316	
1646003524	45KVA 3R	EA	20.0	4,266	760	5,026	
1646003526	75KVA 3R	EA	23.7	6,147	901	7,048	
1646003528	112.5KVA 3R	EA	25.9	12,380	984	13,364	
1646003530	150KVA 3R	EA	28.0	14,999	1,064	16,063	
1646003532	225KVA 3R	EA	32.7	21,992	1,243	23,235	
1646003534	300KVA 3R	EA	38.0	31,099	1,444	32,543	
1646003536	500KVA 3R	EA	48.9	47,295	1,858	49,153	
1646003600	K Rated Dry Transformer, K4 3P 480V Delta Primary 208Y/120V Secondary, 15KVA	EA	13.8	1,994	524	2,518	
1646003602	30KVA	EA	16.9	3,056	642	3,698	
1646003604	45KVA	EA	19.0	3,533	722	4,255	
1646003605	75KVA	EA	21.7	4,824	825	5,649	
1646003606	112.5KVA	EA	23.4	8,033	889	8,922	
1646003608	150KVA	EA	25.0	10,643	950	11,593	
1646003610	225KVA	EA	29.2	16,178	1,110	17,288	

16460	Transformers						
SECTION	DESCRIPTION	UNIT	MAN HOURS	MAT'L	LABOR	TOTAL	
1646003612	300KVA	EA	34.5	\$22,433	\$1,311	\$23,744	
1646003614	500KVA	EA	44.4	31,005	1,687	32,692	
1646003630	K Rated Dry Transformer, K4 3P 480V Delta Primary 208Y/120V Secondary, 15KVA 3R	EA	14.8	2,039	562	2,601	
1646003632	30KVA 3R	EA	17.9	3,101	680	3,781	
1646003634	45KVA 3R	EA	20.0	3,578	760	4,338	
1646003636	75KVA 3R	EA	23.7	4,995	901	5,896	
1646003638	112.5KVA 3R	EA	25.9	8,204	984	9,188	
1646003640	150KVA 3R	EA	28.0	11,034	1,064	12,098	
1646003642	225KVA 3R	EA	32.7	16,569	1,243	17,812	
1646003644	300KVA 3R	EA	38.0	23,143	1,444	24,587	
1646003646	500KVA 3R	EA	48.9	31,950	1,858	33,808	
1646003700	Stainless Steel Dry Transformer, 1P 480V Primary 240Y/120V Secondary, 3KVA 3R	EA	5.40	1,000	205	1,205	
1646003702	5KVA 3R	EA	6.30	1,440	239	1,679	
1646003704	7.5KVA 3R	EA	6.90	1,553	262	1,815	
1646003706	10KVA 3R	EA	9.50	1,778	361	2,139	
1646003708	15KVA 3R	EA	12.0	2,597	456	3,053	
1646003710	25KVA 3R	EA	15.2	3,578	578	4,156	
1646003750	Stainless Steel Dry Transformer, 3P 480V Primary 208Y/120V Secondary, 3KVA 3R	EA	6.50	1,517	247	1,764	
1646003752	6KVA 3R	EA	9.50	1,832	361	2,193	
1646003754	9KVA 3R	EA	10.9	2,241	414	2,655	
1646003756	15KVA 3R	EA	13.8	2,880	524	3,404	
1646003758	30KVA 3R	EA	16.9	4,851	642	5,493	
1646005000	Oil Filled Transformer, 3P 5KV Primary 277/480V Secondary, 150KVA	EA	30.0	13,815	1,140	14,955	
1646005002	225KVA	EA	36.0	16,740	1,368	18,108	
1646005004	300KVA	EA	44.0	20,723	1,672	22,395	
1646005006	500KVA	EA	50.0	26,033	1,900	27,933	
1646005008	750KVA	EA	53.0	33,210	2,014	35,224	
1646005010	1000KVA	EA	78.0	39,870	2,964	42,834	
1646005012	1500KVA	EA	85.0	49,140	3,230	52,370	
1646005014	2000KVA	EA	95.0	62,438	3,610	66,048	
1646005016	2500KVA	EA	100	71,730	3,800	75,530	
1646005018	3000KVA	EA	115	75,722	4,370	80,092	
1646005020	3750KVA	EA	120	86,400	4,560	90,960	
1646005060	Oil Filled Transformer, 3P 15KV Primary 277/480V Secondary, 150KVA	EA	30.0	13,815	1,140	14,955	
1646005062	225KVA	EA	36.0	16,740	1,368	18,108	
1646005064	300KVA	EA	44.0	20,070	1,672	21,742	
1646005066	500KVA	EA	50.0	26,055	1,900	27,955	
1646005068	750KVA	EA	53.0	33,210	2,014	35,224	
1646005070	1000KVA	EA	78.0	39,870	2,964	42,834	
1646005072	1500KVA	EA	85.0	49,140	3,230	52,370	
1646005074	2000KVA	EA	95.0	62,438	3,610	66,048	
1646005076	2500KVA	EA	100	71,730	3,800	75,530	
1646005078	3000KVA	EA	115	75,722	4,370	80,092	
1646005080	3750KVA	EA	120	86,355	4,560	90,915	
1646005200	Pole Mount Transformer, Dry Type 1P 480V Primary 120/240V Secondary, 5KVA	EA	7.00	648	266	914	
1646005205	10KVA	EA	11.0	1,004	418	1,422	
1646005210	15KVA	EA	14.0	1,300	532	1,832	
1646005215	25KVA	EA	17.0	1,575	646	2,221	
1646005220	37KVA	EA	21.0	2,183	798	2,981	
1646005225	50KVA	EA	24.0	3,150	912	4,062	



16460	Transformers					
SECTION	DESCRIPTION	UNIT	MAN HOURS	MAT'L	LABOR	TOTAL
1646005230	75KVA	EA	26.0	\$4,266	\$988	\$5,254
1646005235	100KVA	EA	28.0	5,513	1,064	6,577
1646005240	167KVA	EA	30.0	8,100	1,140	9,240
1646005500	Pole Mount Transformer, Dry Type 3P 480V Primary 120/240V Secondary, 30KVA	EA	21.0	2,916	798	3,714
1646005505	45KVA	EA	23.0	3,780	874	4,654
1646005510	75KVA	EA	27.0	5,600	1,026	6,626
1646005515	112KVA	EA	30.0	6,600	1,140	7,740
1646005520	150KVA	EA	32.0	8,213	1,216	9,429
1646005525	225KVA	EA	36.0	11,790	1,368	13,158
1646005530	300KVA	EA	42.0	14,400	1,596	15,996
1646005535	500KVA	EA	57.0	21,600	2,166	23,766
1646006000	Silicon Filled Transformer, 3P 5KV Primary 277/480V Secondary, 225KVA	EA	36.0	35,865	1,368	37,233
1646006002	300KVA	EA	44.0	39,870	1,672	41,542
1646006004	500KVA	EA	50.0	45,180	1,900	47,080
1646006006	750KVA	EA	53.0	58,500	2,014	60,514
1646006008	1000KVA	EA	78.0	69,075	2,964	72,039
1646006010	1500KVA	EA	85.0	89,010	3,230	92,240
1646006012	2000KVA	EA	95.0	108,900	3,610	112,510
1646006014	2500KVA	EA	100	124,875	3,800	128,675
1646006100	Silicon Filled Transformer, 3P 15KV Primary 277/480V Secondary, 225KVA	EA	36.0	35,865	1,368	37,233
1646006102	300KVA	EA	44.0	39,870	1,672	41,542
1646006104	500KVA	EA	50.0	45,180	1,900	47,080
1646006106	750KVA	EA	53.0	58,500	2,014	60,514
1646006108	1000KVA	EA	78.0	69,075	2,964	72,039
1646006110	1500KVA	EA	85.0	89,010	3,230	92,240
1646006112	2000KVA	EA	95.0	108,900	3,610	112,510
1646006114	2500KVA	EA	100	124,875	3,800	128,675
1646008000	Current Transformer, Split Core, 400:5A	EA	.500	311	19.00	330
1646008010	500:5A	EA	.500	311	19.00	330
1646008020	600:5A	EA	.500	311	19.00	330
1646008030	800:5A	EA	.500	270	19.00	289
1646008040	1000:5A	EA	.500	302	19.00	321
1646008050	1200:5A	EA	.600	302	22.80	325
1646008060	1500:5A	EA	.600	302	22.80	325
1646008070	1600:5A	EA	.600	302	22.80	325
1646008080	2000:5A	EA	.600	315	22.80	338
1646008090	2500:5A	EA	.700	315	26.60	342
1646008100	3000:5A	EA	.700	338	26.60	365
1646008110	4000:5A	EA	.700	360	26.60	387
1646008120	5000:5A	EA	.700	405	26.60	432
1646008500	Bell & Chime Transformer, 120V Primary 10V Secondary, 5 Watt, Handy Mount	EA	.340	13.50	12.92	26.42
1646008510	15 Watt, w/ 4" Plate	EA	.340	18.90	12.92	31.82
1646008520	15 Watt, Handy Mount	EA	.340	13.50	12.92	26.42

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ELECTRICAL ASSEMBLIES

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D5013

Switchboard Lineup, 120/240V 3Ø 4-Wire, Incl. Distribution Breakers

010

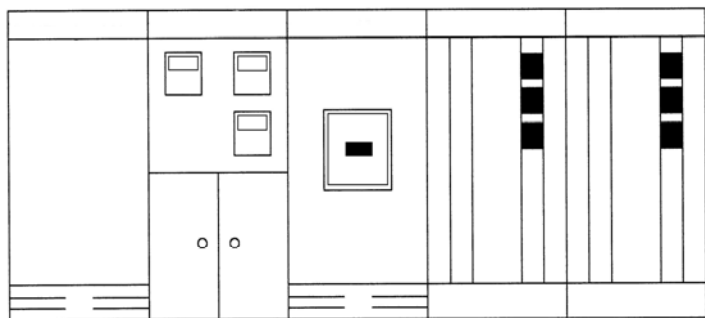
Assembly Logic:

All the assemblies below include an auxiliary pull section, metering and CT compartment, main breaker section (including the main breaker), one, two or three distribution sections with three (3) 250A frame breakers in each distribution section (panelboard), and a variety of measuring instruments.

The labor for each assembly includes moving equipment from the delivery point to the service entry location (up to 100 feet), assembling equipment and terminating wire on lugs or breakers.

Use feeders in assembly section *D5018 Service & Panelboard Feeders* to add to these assemblies.

For additional breakers in the distribution section, go to *Division 16400 Service & Distribution* in the unit cost section of this book.



SWITCHBOARD LINEUP, 120/240V 3Ø 4-WIRE		PRICE PER EACH (EA)					
MODEL COMPONENTS		QUAN	UNIT	MAN HOURS	MAT'L	LABOR	TOTAL
Switchboard, 120/240V 3Ø 4W w/(2) Distribution Section & (6) Breakers, 2000A							
Switchboard Auxiliary Section, Pull Type, 36" Wide, for 2000A		1	EA	11.0	\$1,580	\$418	1,998
Switchboard Utility Section, Metering & CT Compartment 240V 3P 4W, 2000A		1	EA	11.6	2,043	442	2,485
Switchboard Main Breaker Section, w/ Thermal Breaker 240V 3P, 65K 80%, 2000A		1	EA	22.0	9,930	836	10,766
Switchboard Distribution Section, 240V 3P 4W Nema1, CU Bus, 2000A		2	EA	44.0	9,124	1,672	10,796
Switchboard Distribution Section Breaker, 240V 3P, 65K AIC 225A		6	EA	9.36	8,693	356	9,049
Switchboard Instrument, Current Transformer (3) for 240V 4W, 2000A		1	EA	2.00	2,730	76.00	2,806
Switchboard Instrument, Potential Transformer, 240V 4W		1	EA	2.00	2,600	76.00	2,676
Switchboard Instrument, AC, Ammeter & Switch		1	EA	3.00	1,500	114	1,614
Switchboard Instrument, AC, Voltmeter Switch		1	EA	3.00	1,500	114	1,614
Switchboard Instrument, AC, Wattmeter		1	EA	3.00	2,600	114	2,714
TOTAL				111	\$42,300	\$4,218	\$46,518

010 SWITCHBOARD LINEUP, 120/240V 3Ø 4-WIRE		PRICE PER EACH (EA)				
ASSEMBLY NO.	DESCRIPTION	UNIT	MAN HOURS	MAT'L	LABOR	TOTAL
3010010	Switchboard, 120/240V 3Ø 4-Wire w/(1) Distribution Section(s) & (3) Branch Bkrs, 800A	EA	66.0	\$25,400	\$2,508	\$27,908
3010015	w/(2) Distribution Section(s) & (6) Branch Bkrs, 800A	EA	87.0	32,775	3,306	36,081
3010020	w/(3) Distribution Section(s) & (9) Branch Bkrs, 800A	EA	108	40,150	4,104	44,254
3010025	w/(1) Distribution Section(s) & (3) Branch Bkrs, 1200A	EA	72.0	28,975	2,736	31,711
3010030	w/(2) Distribution Section(s) & (6) Branch Bkrs, 1200A	EA	95.0	36,850	3,610	40,460
3010035	w/(3) Distribution Section(s) & (9) Branch Bkrs, 1200A	EA	118	44,750	4,484	49,234
3010040	w/(1) Distribution Section(s) & (3) Branch Bkrs, 1600A	EA	78.0	31,825	2,964	34,789
3010045	w/(2) Distribution Section(s) & (6) Branch Bkrs, 1600A	EA	103	40,250	3,914	44,164
3010050	w/(3) Distribution Section(s) & (9) Branch Bkrs, 1600A	EA	128	48,650	4,864	53,514
3010055	w/(1) Distribution Section(s) & (3) Branch Bkrs, 2000A	EA	84.0	33,400	3,192	36,592
3010060	Switchboard, 120/240V 3Ø 4-Wire w/(2) Distribution Section(s) & (6) Branch Bkrs, 2000A	EA	111	42,300	4,218	46,518
3010065	w/(3) Distribution Section(s) & (9) Branch Bkrs, 2000A	EA	138	51,200	5,244	56,444
3010070	w/(1) Distribution Section(s) & (3) Branch Bkrs, 2500A	EA	93.0	36,050	3,534	39,584
3010075	w/(2) Distribution Section(s) & (6) Branch Bkrs, 2500A	EA	121	45,725	4,598	50,323
3010080	w/(3) Distribution Section(s) & (9) Branch Bkrs, 2500A	EA	150	55,400	5,700	61,100
3010085	w/(1) Distribution Section(s) & (3) Branch Bkrs, 3000A	EA	101	55,475	3,838	59,313
3010090	w/(2) Distribution Section(s) & (6) Branch Bkrs, 3000A	EA	131	66,275	4,978	71,253
3010095	w/(3) Distribution Section(s) & (9) Branch Bkrs, 3000A	EA	162	77,075	6,156	83,231
3010100	w/(1) Distribution Section(s) & (3) Branch Bkrs, 4000A	EA	115	31,375	4,370	35,745
3010100	w/(2) Distribution Section(s) & (6) Branch Bkrs, 4000A	EA	147	83,550	5,586	89,136
3010105	w/(3) Distribution Section(s) & (9) Branch Bkrs, 4000A	EA	184	95,736	6,992	102,728

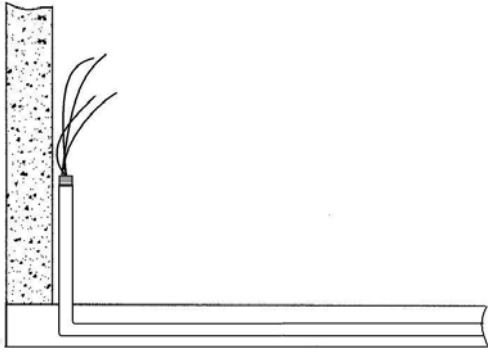
D5018

Feeders by Amps, 3Ø 4-Wire, EMT in Slab

075

Assembly Logic:

Feeders in this section range from 15 to 4,000 amps using EMT conduit and THHN wire installed in a concrete slab. The model assembly below illustrates the level of detail that is contained in each of the assemblies in this section although the materials and labor vary significantly.



The assembly description includes the amperage value for each feeder along with the number of conduits required for that amperage rating and the number of each type of wire in the conduit. For instance, the 4,000 Amp feeder requires ten 4" conduits each containing four #600MCM phase wires and one #500MCM ground wire totaling forty #600 MCM phase wires and ten #500MCM ground wires. The totals are shown in parentheses within the conduit and wire description.

All costs are based on the material and labor required to complete a 100' run with 5% added to wire length for leads. The conduit run changes direction twice using field bends or manufactured sweeps.

THREE PHASE THREE (4) WIRE + Ground		PRICE PER 100 LINEAR FEET (CLF)					
MODEL COMPONENTS		QUAN	UNIT	MAN HOURS	MAT'L	LABOR	TOTAL
250A, 3-Phase 4-Wire, (1) 3" EMT, w/ (4) # 250MCM & (1) # 4G							
Conduit, EMT in Slab or Trench, Add Couplings & Support, 3"		100	LF	9.00	\$374	\$342	\$716
Conduit Coupling, Steel Compression for EMT, Material Only, 3"		10	EA		663		663
Conduit Elbow, EMT Manufactured, 3"		2	EA	1.68	143	63.71	207
Conduit Connector, Steel Compression for EMT, 3"		2	EA	.590	119	22.42	141
Conduit Support, Plastic Tie, Standard 9" Long		10	EA		8.00		8.00
Wire, Copper THHN, 600V, Stranded, #4		105	LF	1.18	62.00	44.71	107
Wire, Copper THHN, 600V, Stranded, #250MCM		420	LF	12.6	1,390	478	1,868
		PER C.L.F.		25.0	\$2,759	\$951	\$3,710
		PER L.F.		.250	\$27.59	\$9.51	\$37.10

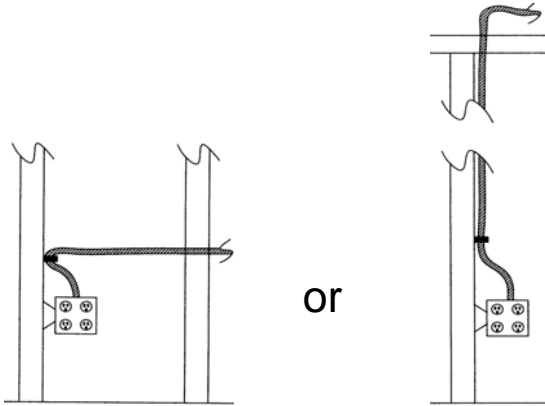
075		THREE PHASE THREE (4) WIRE + Ground		PRICE PER 100 LINEAR FEET (CLF)				
ASSEMBLY NO.	DESCRIPTION	UNIT	MAN HOURS	MAT'L	LABOR	TOTAL		
1001000	15A, 3-Phase 4-Wire, (1) 1/2" EMT, w/ (4) # 14 & (1) # 14G	CLF	4.62	\$85	\$175	\$260		
1001005	20A, 3-Phase 4-Wire, (1) 1/2" EMT, w/ (4) # 12 & (1) # 12G	CLF	5.68	100	216	316		
1001010	25A, 3-Phase 4-Wire, (1) 1/2" EMT, w/ (4) # 10 & (1) # 10G	CLF	5.97	125	227	352		
1001015	30A, 3-Phase 4-Wire, (1) 1/2" EMT, w/ (4) # 10 & (1) # 10G	CLF	5.97	125	227	352		
1001020	35A, 3-Phase 4-Wire, (1) 3/4" EMT, w/ (4) # 8 & (1) # 10G	CLF	7.06	195	268	463		
1001025	40A, 3-Phase 4-Wire, (1) 3/4" EMT, w/ (4) # 8 & (1) # 10G	CLF	7.06	195	268	463		
1001030	45A, 3-Phase 4-Wire, (1) 1" EMT, w/ (4) # 6 & (1) # 10G	CLF	8.59	310	326	636		
1001035	50A, 3-Phase 4-Wire, (1) 1" EMT, w/ (4) # 6 & (1) # 10G	CLF	8.59	310	326	636		
1001040	60A, 3-Phase 4-Wire, (1) 1" EMT, w/ (4) # 6 & (1) # 10G	CLF	8.59	310	326	636		
1001045	70A, 3-Phase 4-Wire, (1) 1-1/4" EMT, w/ (4) # 4 & (1) # 8G	CLF	10.4	515	395	910		
1001050	80A, 3-Phase 4-Wire, (1) 1-1/4" EMT, w/ (4) # 3 & (1) # 8G	CLF	10.8	580	411	991		
1001055	90A, 3-Phase 4-Wire, (1) 1-1/4" EMT, w/ (4) # 3 & (1) # 8G	CLF	10.8	580	411	991		
1001060	100A, 3-Phase 4-Wire, (1) 1-1/2" EMT, w/ (4) # 1 & (1) # 6G	CLF	12.9	860	488	1,348		
1001065	110A, 3-Phase 4-Wire, (1) 1-1/2" EMT, w/ (4) # 1 & (1) # 6G	CLF	12.9	860	488	1,348		
1001070	125A, 3-Phase 4-Wire, (1) 1-1/2" EMT, w/ (4) # 1 & (1) # 6G	CLF	12.9	860	488	1,348		
1001075	150A, 3-Phase 4-Wire, (1) 2" EMT, w/ (4) # 1/0 & (1) # 6G	CLF	15.1	1,050	576	1,626		
1001080	175A, 3-Phase 4-Wire, (1) 2" EMT, w/ (4) # 2/0 & (1) # 6G	CLF	16.4	1,200	621	1,821		
1001085	200A, 3-Phase 4-Wire, (1) 2" EMT, w/ (4) # 3/0 & (1) # 6G	CLF	17.6	1,400	669	2,069		
1001090	225A, 3-Phase 4-Wire, (1) 2-1/2" EMT, w/ (4) # 4/0 & (1) # 6G	CLF	21.0	2,200	798	2,998		
1001095	250A, 3-Phase 4-Wire, (1) 3" EMT, w/ (4) #250 & (1) # 4G	CLF	25.0	2,759	951	3,710		
1001100	300A, 3-Phase 4-Wire, (1) 3" EMT, w/ (4) #350 & (1) # 4G	CLF	26.3	3,325	999	4,324		
1001105	350A, 3-Phase 4-Wire, (1) 4" EMT, w/ (4) #500 & (1) # 3G	CLF	32.5	4,800	1,234	6,034		

D5018		Feeders in Amps, 3Ø 4-Wire, EMT in Slab					
075		THREE PHASE THREE (4) WIRE + Ground			PRICE PER 100 LINEAR FEET (CLF)		
ASSEMBLY NO.	DESCRIPTION		UNIT	MAN HOURS	MAT'L	LABOR	TOTAL
1001105	400A, 3-Phase 4-Wire, (1)	4" EMT, w/ (4) #500 & (1) # 3G	CLF	32.5	\$4,800	\$1,234	\$6,034
1001110	450A, 3-Phase 4-Wire, (2)	3" EMT, w/ (8) # 4/0 & (2) # 2G	CLF	48.0	5,175	1,823	6,998
1001115	500A, 3-Phase 4-Wire, (2)	3" EMT, w/ (8) #250 & (2) # 2G	CLF	50.5	5,600	1,919	7,519
1001120	600A, 3-Phase 4-Wire, (2)	3" EMT, w/ (8) #350 & (2) # 1G	CLF	53.4	6,750	2,027	8,777
1001125	700A, 3-Phase 4-Wire, (2)	4" EMT, w/ (8) #500 & (2) # 1/0G	CLF	66.3	9,750	2,518	12,268
1001130	800A, 3-Phase 4-Wire, (2)	4" EMT, w/ (8) #600 & (2) # 1/0G	CLF	73.2	10,850	2,781	13,631
1001135	900A, 3-Phase 4-Wire, (3)	3"EMT, w/ (12) #600 & (3) #2/0G	CLF	81.9	10,350	3,113	13,463
1001140	1000A, 3-Phase 4-Wire, (3)	3-1/2"EMT, w/ (12) #500 & (3) #2/0G	CLF	94.6	14,300	3,593	17,893
1001145	1200A, 3-Phase 4-Wire, (3)	4"EMT, w/ (12) #600 & (3) #3/0G	CLF	97.2	14,100	3,694	17,794
1001150	1600A, 3-Phase 4-Wire, (4)	4"EMT, w/ (16) #600 & (4) #3/0G	CLF	149	22,000	5,655	27,655
1001155	2000A, 3-Phase 4-Wire, (5)	4"EMT, w/ (20) #600 & (5) #3/0G	CLF	186	27,500	7,069	34,569
1001160	2500A, 3-Phase 4-Wire, (6)	4"EMT, w/ (24) #600 & (6) #3/0G	CLF	221	32,750	8,387	41,137
1001165	3000A, 3-Phase 4-Wire, (8)	4"EMT, w/ (32) #500 & (8) #500G	CLF	281	43,175	10,688	53,863
1001170	3200A, 3-Phase 4-Wire, (8)	4"EMT, w/ (32) #600 & (8) #500G	CLF	309	47,500	11,741	59,241
1001175	4000A, 3-Phase 4-Wire, (10)	4"EMT, w/ (40) #600 & (10)#500G	CLF	385	59,100	14,612	73,712
Additional Notes							

D5025

Commercial Receptacle, Duplex 20A, Recessed, HCF-90 Cable

150



Assembly Logic:

The assemblies below offer a 10' or 20' branch option. The 10' branch is used when you do not intend to measure the horizontal branch between each receptacle and is used as a vertical drop. This option can also be used when the distance between receptacles is determined to be closer than normal and the branch is run horizontally through metal or wood studs.

Use the 20' branch option when running cable horizontally through wood or metal studs and no vertical drop is required.

A two or three wire branch cable is offered. The three cable option is used on split neutral circuits where one of the wires is used to carry through to a second circuit or when the receptacle is switched.

RECEPTACLE, COMMERCIAL GRADE NEMA 5-20R & HCF-90		PRICE PER EACH (EA)				
MODEL COMPONENTS	QUAN	UNIT	MAN HOURS	MAT'L	LABOR	TOTAL
Duplex, 125V 3-W NEMA 5-20R, (2) Standard, 2-Gang, w/ 20' Branch, #12/3						
Receptacle, Duplex 20A 125V 3W, NEMA 5-20R, Ivory, Side Wire w/ Grnd Term.	2	EA	.500	\$13.13	\$19.00	\$32.13
Receptacle Plate, Stainless for Duplex, Type 302, 2-Gang	1	EA	.100	2.90	3.80	6.70
Outlet Box, Steel Square, 4" x 2-1/8" Deep, for MC, w/ Mounting Bracket	1	EA	.300	8.33	11.40	19.73
Outlet Box Plaster Ring, Steel Square, 4", Square to 2-gang, 5/8" Deep	1	EA	.140	2.35	5.32	7.67
Armored Cable, Copper Type HCF-90 Hospital Grade, 3-Conductor, #12-3	20	LF	.643	21.17	24.43	45.60
Armored Cable Tie, Nylon, for BX, MC & HCF-90, Standard 4"	2	EA	.050	.74	1.90	2.64
Cable Termination, Wire Nut Spring Type, 74B Large - Yellow	4	EA	.040	.44	1.52	1.96
Fastener, Sheet Metal Screw, Pan Head, 12 x 1"	2	EA	.200	.08	7.60	7.68
	TOTAL		1.97	\$49.14	\$74.97	\$124

150	RECEPTACLE, COMMERCIAL GRADE NEMA 5-20R & HCF-90	PRICE PER EACH (EA)				
ASSEMBLY NO.	DESCRIPTION	UNIT	MAN HOURS	MAT'L	LABOR	TOTAL
2010010	Duplex Receptacle, 125V 3-W, NEMA 5-20R, (1) Standard, 1-Gang, w/ 10' Branch, #12/2	EA	1.27	\$26.00	\$48.26	\$74.26
2010015	(1) Standard, 1-Gang, w/ 20' Branch, #12/2	EA	1.56	33.40	59.28	92.68
2010020	(2) Standard, 2-Gang, w/ 10' Branch, #12/2	EA	1.59	35.15	60.42	95.57
2010025	(2) Standard, 2-Gang, w/ 20' Branch, #12/2	EA	1.87	42.50	71.06	114
2010030	(1) Standard, 1-Gang, w/ 10' Branch, #12/3	EA	1.32	29.50	50.16	79.66
2010035	(1) Standard, 1-Gang, w/ 20' Branch, #12/3	EA	1.65	40.00	62.70	103
2010040	(2) Standard, 2-Gang, w/ 10' Branch, #12/3	EA	1.64	38.75	62.32	101
2010045	Duplex Receptacle, 125V 3-W, NEMA 5-20R, (2) Standard, 2-Gang, w/ 20' Branch, #12/3	EA	1.97	49.25	74.97	124
2010050	Duplex Receptacle, 125V 3-W, NEMA 5-20R, (1) GFCI, 1-Gang, w/ 10' Branch, #12/2	EA	1.32	52.60	50.16	103
2010055	(1) GFCI, 1-Gang, w/ 20' Branch, #12/2	EA	1.61	60.00	61.18	121
2010060	(2) GFCI, 2-Gang, w/ 10' Branch, #12/2	EA	1.69	88.25	64.22	152
2010065	(2) GFCI, 2-Gang, w/ 20' Branch, #12/2	EA	1.97	95.50	74.86	170
2010070	(1) GFCI, 1-Gang, w/ 10' Branch, #12/3	EA	1.37	56.00	52.06	108
2010075	(1) GFCI, 1-Gang, w/ 20' Branch, #12/3	EA	1.70	66.50	64.60	131
2010080	(2) GFCI, 2-Gang, w/ 10' Branch, #12/3	EA	1.74	91.75	66.12	158
2010085	(2) GFCI, 2-Gang, w/ 20' Branch, #12/3	EA	2.07	102	78.66	181
2010090	Duplex Receptacle, 125V 3-W, NEMA5-20R, (1) TVSS, 1-Gang, w/ 10' Branch, #12/2	EA	1.27	54.00	48.26	102
2010095	(1) TVSS, 1-Gang, w/ 20' Branch, #12/2	EA	1.56	61.25	59.28	121
2010100	(2) TVSS, 2-Gang, w/ 10' Branch, #12/2	EA	1.59	91.00	60.42	151
2010105	(2) TVSS, 2-Gang, w/ 20' Branch, #12/2	EA	1.87	98.25	71.06	169
2010110	(1) TVSS, 1-Gang, w/ 10' Branch, #12/3	EA	1.32	57.50	50.16	108
2010115	(1) TVSS, 1-Gang, w/ 20' Branch, #12/3	EA	1.65	67.85	62.70	131

D5025 Commercial Receptacles, Duplex 20A, Recessed, HCF-90 Cable

150	RECEPTACLE, COMMERCIAL GRADE NEMA 5-20R & HCF-90	PRICE PER EACH (EA)				
ASSEMBLY NO.	DESCRIPTION	UNIT	MAN HOURS	MAT'L	LABOR	TOTAL
2010120	Duplex Receptacle, 125V 3-W, NEMA 5-20R, (2) TVSS, 2-Gang, w/ 10' Branch, #12/3	EA	1.64	\$94.50	\$62.32	\$157
2010125	↓ (2) TVSS, 2-Gang, w/ 20' Branch, #12/3	EA	1.97	105	74.86	180
2010130	Duplex Receptacle, 125V 3-W, NEMA 5-20R, (1) Hospital Grade, 1-Gang, 10' Branch, #12/2	EA	1.27	32.75	48.26	81.01
2010135	↓ (1) Hospital Grade, 1-Gang, 20' Branch, #12/2	EA	1.56	40.00	59.28	99.28
2010140	↓ (2) Hospital Grade, 2-Gang, 10' Branch, #12/2	EA	1.59	48.50	60.42	109
2010145	↓ (2) Hospital Grade, 2-Gang, 20' Branch, #12/2	EA	1.87	55.85	71.06	127
2010150	↓ (1) Hospital Grade, 1-Gang, 10' Branch, #12/3	EA	1.32	36.25	50.16	86.41
2010155	↓ (1) Hospital Grade, 1-Gang, 20' Branch, #12/3	EA	1.65	46.75	62.70	109
2010160	↓ (2) Hospital Grade, 2-Gang, 10' Branch, #12/3	EA	1.64	52.00	62.32	114
2010165	↓ (2) Hospital Grade, 2-Gang, 20' Branch, #12/3	EA	1.97	62.50	74.86	137
2010170	Duplex Receptacle, 125V 3-W, NEMA 5-20R, (1) Isolated Ground, 1-Gang, 10' Branch, #12/2	EA	1.27	37.00	48.26	85.26
2010175	↓ (1) Isolated Ground, 1-Gang, 20' Branch, #12/2	EA	1.56	44.50	59.28	104
2010180	↓ (2) Isolated Ground, 2-Gang, 10' Branch, #12/2	EA	1.59	57.00	60.42	117
2010185	↓ (2) Isolated Ground, 2-Gang, 20' Branch, #12/2	EA	1.87	64.50	71.06	136
2010190	↓ (1) Isolated Ground, 1-Gang, 10' Branch, #12/3	EA	1.32	40.50	50.16	90.66
2010195	↓ (1) Isolated Ground, 1-Gang, 20' Branch, #12/3	EA	1.65	51.00	62.70	114
2010200	↓ (2) Isolated Ground, 2-Gang, 10' Branch, #12/3	EA	1.64	60.75	62.32	123
2010205	↓ (2) Isolated Ground, 2-Gang, 20' Branch, #12/3	EA	1.97	71.00	74.86	146
2010210	Duplex Receptacle, 125V 3-W, NEMA 5-20R, (1) Child Safe, 1-Gang, w/ 10' Branch, #12/2	EA	1.27	37.35	48.26	85.61
2010215	↓ (1) Child Safe, 1-Gang, w/ 20' Branch, #12/2	EA	1.56	44.75	59.28	104
2010220	↓ (2) Child Safe, 2-Gang, w/ 10' Branch, #12/2	EA	1.59	57.75	60.42	118
2010225	↓ (2) Child Safe, 2-Gang, w/ 20' Branch, #12/2	EA	1.87	65.00	71.06	136
2010230	↓ (1) Child Safe, 1-Gang, w/ 10' Branch, #12/3	EA	1.32	40.75	50.16	90.91
2010235	↓ (1) Child Safe, 1-Gang, w/ 20' Branch, #12/3	EA	1.65	51.25	62.70	114
2010240	↓ (2) Child Safe, 2-Gang, w/ 10' Branch, #12/3	EA	1.64	61.35	62.32	124
2010245	↓ (2) Child Safe, 2-Gang, w/ 20' Branch, #12/3	EA	1.97	71.75	74.86	147

Additional Notes

Note 1: The feed or home run from the panelboard is not included in the assembly calculation.

Note 2: All labor is based on \$38.00 per MH.

APPENDIX: TABLES & CHARTS

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METRIC CONVERSION CHART

Conductors & Conduit

Conductors			Conduit	
MCM/AWG	MM ² Equiv.	Std. MM ²	Inches	MM
500	253.35	300	6"	155
400	202.71	240	5"	129
350	177	185	4"	103
300	152	150	3-1/2"	91
250	126.64	150	3"	78
4/0	107.2	120	2-1/2"	63
3/0	85.03	95	2"	53
2/0	67.43	70	1-1/2"	41
1/0	53.48	70	1-1/4"	35
1	42.42	50	1"	27
2	33.63	35	3/4"	21
4	21.15	25	1/2"	16
6	13.3	16		
8	8.37	10		
10	5.26	6		
12	3.31	4		
14	2.08	2.5		
16	1.31	1.5		
18	0.82	1		

Metric Length Equivalents

1 inch (in)		=2.54 cm	1 centimeter	=.3937 in
1 foot (ft)	=12 in	=.3048 m	1 decimeter	=3.937 in
1 yard (yd)	=3 ft	=.9144 m	1 decimeter	=.328 ft
1 mile	=5280 ft	=1.6093 km	1 meter	=39.37 in
1 mile	=1760 yd	=1.6093 km	1 meter	=3.281 ft
1 nautical mile	=6083 ft	=1.853 km	1 meter	=1.0936 yds
1 nautical mile	=2028 yd	=1.853 km	1 kilometer	=.62137 mi

COMPARISON OF DRAWING SCALES

Metric Scales Vs Customary Ratios & Scales

Metric Scales	Customary Ratio	Customary Scales
1:5 1:10 1:20	1:4 1:8 1:12 1:16	3"=1'0" 1-1/2"=1'0" 1"=1'0" 3/4"=1'0"
1:50 1:100 1:200	1:24 1:48 1:96 1:192	1/2"=1'0" 1/4"=1'0" 1/8"=1'0" 1/16"=1'0"
1:500 1:1000	1:384 1:480 1:600 1:960	1/32"=1'0" 1"=40'0" 1"=50'0" 1"=80'0"
1:2000 1:5000	1:1200 1:2400 1:4800 1:6000	1"=100'0" 1"=200'0" 1"=400'0" 1"=500'0"
1:10000 1:25000	1:10560 1:12000 1:21120 1:24000	6"=1mi 1"=1000'0" 3"=1mi 1"=2000'0"
1:50000 1:100000	1:63360 1:126720	1"=1mi 1/2"=1mi

NEMA STARTER SIZES

Single & Three Phase AC Induction Type
Squirrel Cage & Wound Rotor Motors

NEMA SIZE	Maximum Horsepower Single Phase Motors Full Voltage Starting		Maximum Horsepower Three Phase Motors Full Voltage Starting			Maximum Horsepower Three Phase Motors Auto Transformer Starting		
	115V	230V(240)	200V(208)	230V(240)	460V(480)	200V(208)	230V(240)	460V(480)
00	1/3	1	1-1/2	1-1/2	2	1-1/2	1-1/2	2
0	1	2	3	3	5	3	3	5
1	2	3	7-1/2	7-1/2	10	7-1/2	7-1/2	10
2	3	5	10	15	25	10	15	25
3		7-1/2	25	30	50	25	30	50
4		15	40	50	100	40	50	100
5			75	100	200	75	100	200
6			150	200	400	150	200	400
7				300	600		300	600
8				450	900		450	900
9				800	1600		800	1600

NEMA STARTER ENCLOSURES

NEMA TYPE	NEMA Enclosure Description	Indoor and/or Outdoor
1	General Purpose	Indoor
2	Drip-proof	Indoor
3	Dust-tight, Rain-tight, Sleet-tight	Outdoor
3R	Rainproof, Sleet Resistant	Outdoor
3S	Dust-tight, Raintight, Sleetproof	Outdoor
4	Watertight, Dust-tight, Sleet Resistant	Indoor/Outdoor
4X	Watertight, Dust-tight, Sleet Resistant & Corrosion Resistant	Indoor/Outdoor
5	Dust-tight	Indoor
6	Submersible, Watertight, Dust-tight, Sleet Resistant	Indoor/Outdoor
7	Class I, Group A, B, C or D Hazardous Locations, Air-Break	Indoor
8	Class I, Group A, B, C or D Hazardous Locations, Oil Immersed	Indoor
9	Class II, Group E, F or G Hazardous Locations, Air-Break	Indoor
10	Bureau of Mines	Indoor/Outdoor
11	Corrosion Resistant and Dripproof, Oil-Immersed	Indoor
12	Industrial Use, Dust-tight and Driptight	Indoor
13	Oil and Dust-tight	Indoor

GENERATOR RATING GUIDE

**Use Chart to Choose Transfer Switch Size
1 Phase Amperes at 100% Power Factor**

Ampere Rating by Voltage

Generator KW Size	Generator KVA	120V Amps	208V Amps	220V Amps	240V Amps	277V Amps	440V Amps	460V Amps	480V Amps
5	5	42	24	23	21	18	11	11	10
8	8	67	38	36	33	29	18	17	17
10	10	83	48	45	42	36	23	22	21
15	15	125	72	68	63	54	34	33	31
20	20	167	96	91	83	72	45	43	42
25	25	208	120	114	104	90	57	54	52
27	27	225	130	123	113	97	61	59	56
30	30	250	144	136	125	108	68	65	63
35	35	292	168	159	146	126	80	76	73
40	40	333	192	182	167	144	91	87	83
45	45	375	216	205	188	162	102	98	94
50	50	417	240	227	208	181	114	109	104
60	60	500	288	273	250	217	136	130	125
65	65	542	313	295	271	235	148	141	135
75	75	625	361	341	313	271	170	163	156
80	80	667	385	364	333	289	182	174	167
100	100	833	481	455	417	361	227	217	208
125	125	1,042	601	568	521	451	284	272	260
150	150	1,250	721	682	625	542	341	326	313
175	175	1,458	841	795	729	632	398	380	365
200	200	1,667	962	909	833	722	455	435	417
225	225	1,875	1,082	1023	938	812	511	489	469
230	230	1,917	1,106	1045	958	830	523	500	479
260	260	2,167	1,250	1182	1,083	939	591	565	542
275	275	2,292	1,322	1250	1,146	993	625	598	573
300	300	2,500	1,442	1364	1,250	1,083	682	652	625
350	350	2,917	1,683	1591	1,458	1,264	795	761	729
400	400	3,333	1,923	1818	1,667	1,444	909	870	833
425	425	3,542	2,043	1932	1,771	1,534	966	924	885
450	450	3,750	2,163	2045	1,875	1,625	1,023	978	938
500	500	4,167	2,404	2273	2,083	1,805	1,136	1,087	1,042

GENERATOR RATING GUIDE

**Use Chart to Choose Transfer Switch Size
3 Phase Amperes at 80% Power Factor**

Ampere Rating by Voltage

Generator KW Size	Generator KVA	120V Amps	208V Amps	220V Amps	240V Amps	277V Amps	440V Amps	460V Amps	480V Amps
4	5	24	14	13	12	10	7	6	6
5	6	30	17	16	15	13	8	8	8
7	9	42	24	23	21	18	11	11	11
9	11	54	31	30	27	23	15	14	14
10	13	60	35	33	30	26	16	16	15
12	15	72	42	39	36	31	20	19	18
15	19	90	52	49	45	39	25	24	23
20	25	120	69	66	60	52	33	31	30
25	31	151	87	82	75	65	41	39	38
27	34	163	94	89	81	70	44	42	41
30	38	181	104	99	90	78	49	47	45
35	44	211	122	115	105	91	57	55	53
36	45	217	125	118	108	94	59	57	54
40	50	241	139	131	120	104	66	63	60
45	56	271	156	148	135	117	74	71	68
50	63	301	174	164	151	130	82	79	75
55	69	331	191	181	166	143	90	86	83
60	75	361	208	197	181	157	99	94	90
65	81	391	226	213	196	170	107	102	98
70	88	421	243	230	211	183	115	110	105
75	94	452	261	246	226	196	123	118	113
80	100	482	278	263	241	209	131	126	120
85	106	512	295	279	256	222	140	134	128
90	113	542	313	296	271	235	148	141	135
100	125	602	347	328	301	261	164	157	151
110	138	662	382	361	331	287	181	173	166
115	144	692	399	378	346	300	189	181	173
125	156	753	434	411	376	326	205	196	188
140	175	843	486	460	421	365	230	220	211
150	188	903	521	493	452	391	246	236	226
155	194	933	538	509	467	404	255	243	233
165	206	993	573	542	497	430	271	259	248
170	213	1024	591	558	512	443	279	267	256
175	219	1054	608	575	527	456	287	275	263
190	238	1144	660	624	572	496	312	298	286
200	250	1204	695	657	602	522	328	314	301
230	288	1385	799	755	692	600	378	361	346
250	313	1505	868	821	753	652	411	393	376
300	375	1806	1,042	985	903	783	493	471	452
350	438	2107	1,216	1,150	1,054	913	575	550	527
400	500	2408	1,390	1,314	1,204	1,043	657	628	602
450	563	2710	1,563	1,478	1,355	1,174	739	707	677
500	625	3011	1,737	1,642	1,505	1,304	821	785	753
600	750	3613	2,084	1,971	1,806	1,565	985	942	903
650	813	3914	2,258	2,135	1,957	1,695	1,067	1,021	978
750	938	4516	2,605	2,463	2,258	1,956	1,232	1,178	1,129

GENERATOR RATING GUIDE

**Use Chart to Choose Transfer Switch Size
3 Phase Amperes at 80% Power Factor**

Ampere Rating by Voltage

Generator KW Size	Generator KVA	120V Amps	208V Amps	220V Amps	240V Amps	277V Amps	440V Amps	460V Amps	480V Amps
800	1000	4817	2,779	2,627	2,408	2,087	1,314	1,257	1,204
850	1063	5118	2,953	2,792	2,559	2,217	1,396	1,335	1,280
900	1125	5419	3,126	2,956	2,710	2,348	1,478	1,414	1,355
950	1188	5720	3,300	3,120	2,860	2,478	1,560	1,492	1,430
1000	1250	6021	3,474	3,284	3,011	2,608	1,642	1,571	1,505
1100	1375	6623	3,821	3,613	3,312	2,869	1,806	1,728	1,656
1200	1500	7225	4,169	3,941	3,613	3,130	1,971	1,885	1,806
1300	1625	7828	4,516	4,270	3,914	3,391	2,135	2,042	1,957
1400	1750	8430	4,863	4,598	4,215	3,652	2,299	2,199	2,107
1500	1875	9032	5,211	4,926	4,516	3,913	2,463	2,356	2,258
1600	2000	9634	5,558	5,255	4,817	4,174	2,627	2,513	2,408
1700	2125	10236	5,905	5,583	5,118	4,434	2,792	2,670	2,559
1800	2250	10838	6,253	5,912	5,419	4,695	2,956	2,827	2,710
1900	2375	11440	6,600	6,240	5,720	4,956	3,120	2,984	2,860
2000	2500	12042	6,948	6,569	6,021	5,217	3,284	3,141	3,011
2500	3125	15053	8,684	8,211	7,526	6,521	4,105	3,927	3,763