EQUIPMENT DESIGNATION CODE

1N-PL2

LEVEL
E - EXTERIOR GROUND
1 - LEVEL 1
P - PENTHOUSE

APPLICATION
N - NORMAL BRANCH
S - STANDBY BRANCH

PANEL
1
2
3
4
... ETC

VOLTAGE
M - 13,200V
H - 480V, 480Y/277V
L - 240V, 208Y/120V

EQUIPMENT
G - SWITCHGEAR
T - TRANSFORMER
D - DISTRIBUTION PANEL
P - BRANCH CIRCUIT PANELBOARD
A - AUTOMATIC TRANSFER SWITCH

SWITCHGEAR 1N-GH1 LOAD CALCULATION

DESCRIPTION	AREA (nasf)	LIGHTING		RECEPS & EQ.		MECH.	
Normal operation is with approximately one half of total load on each side of the double ended service. This calculation is for emergency operation with all load on one transformer.		W/SF	TOTAL KW	W/SF	TOTAL KW	W/SF	NORMAL KW
Total Building Maximum Buildout (Enhansement 2)		0.64 W/SF	39.9		803.0		812 KW
SUBTOTAL PROBABLE SERVICE CONNECTED LOAD	62274 SF	0.6 W/SF	40 KW	12.9 W/SF	803 KW	13.0 W/SF	812 KW
TOTAL PROBABLE SERVICE CONNECTED LOAD		26.6 W/SF	1655 KW				
SUBTOTAL PROBABLE SERVICE DEMAND LOAD		100%	40 KW	25%	201 KW	80%	649 KW
TOTAL PROBABLE DEMAND LOAD at maximum build out				14.3 W/SF	890 KW	@ 90 % PF	989 KVA
SPARE CAPACITY UNDER ONE TRANSFORMER SENERIO		1333kVA-989kVA/1333kVA= 26%					
Unit Substation sized at 100% redundancy	1000/1333 kVA	Transformer					

Estimated average demand for secondary feeder calc		Hrs at 100%	load kWH	Off hours % demand	load kWH
Lighting	40 KW	15	599	10%	36
Recept and Eq	201 KW	9	1807	30%	903
Mech	649 KW	15	9741	50%	2922
			12146		3861
Average 24 hr demand load	741 KVA	74%	of transformer non fan cooled rating		

FEEDER SCHEDULE

LEGEND OF CONDUIT AND WIRE SIZES — Rev 0.7 12/15/2006

Nominal Ampere Rating	Reference Tag	Conductors (SUBSCRIPT A) 3W,+G	Conductors (SUBSCRIPT B) 4W,+G 100%N	Conductors (SUBSCRIPT C) 4W,+G 200%N	Conductors (SUBSCRIPT CT) 4W,+G 200%N
15	1	3#12,1#12G-3/4"C	4#12,1#12G-3/4"C	3#12,1#10N,1#12G-3/4"C	
20	2	3#12,1#12G-3/4"C	4#12,1#12G-3/4"C	3#12,1#8N,1#12G-3/4"C	
25	3	3#10,1#10G-3/4"C	4#10,1#10G-3/4"C	3#10,1#6N,1#10G-3/4"C	
30	4	3#10,1#10G-3/4"C	4#10,1#10G-3/4"C	3#10,1#6N,1#10G-3/4"C	
35	5	3#8,1#10G-3/4"C	4#8,1#10G-3/4"C	3#8,1#4N,1#10G-1"C	
40	6	3#8,1#10G-3/4"C	4#8,1#10G-3/4"C	3#8,1#3N,1#10G-1"C	
45	7	3#6,1#10G-3/4"C	4#6,1#10G-3/4"C	3#6,1#2N,1#10G-1"C	
50	8	3#6,1#10G-3/4"C	4#6,1#10G-3/4"C	3#6,1#2N,1#10G-1"C	
60	9	3#4,1#10G-1"C	4#4,1#10G-1 1/4"C	3#4,1#1N,1#10G-1 1/4"C	
70	10	3#4,1#8G-1"C	4#4,1#8G-1 1/4"C	3#4,1#2/0N,1#8G-1 1/4"C	
80	11	3#3,1#8G-1 1/4"C	4#3,1#8G-1 1/4"C	3#3,1#3/0N,1#8G-1 1/2"C	
90	12	3#2,1#8G-1 1/4"C	4#2,1#8G-1 1/4"C	3#2,1#3/0N,1#8G-1 1/2"C	
100	13	3#1,1#8G-1 1/4"C	4#1,1#8G-1 1/2"C	3#1,1#4/0N,1#8G-2"C	3#1,2#1N,1#6SBJ-1/2"C
110	14	3#1,1#6G-1 1/4"C	4#1,1#6G-1 1/2"C	3#1,1#250N,1#6G-2"C	
125	15	3#1,1#6G-1 1/4"C	4#1/0,1#4G-2"C	3#1/0,1#300N,1#4G-2"C	
150	16	3#1/0,1#6G-1 1/2"C	4#2/0,1#4G-2"C	3#2/0,2#2/0N,1#4G-2"C	3#2/0,2#3/0N,1#4SBJ-2-1/2"C
175	17	3#2/0,1#6G-1 1/2"C	4#3/0,1#4G-2"C	3#3/0,2#3/0N,1#4G-2 1/2"C	
200	18	3#3/0,1#6G-2"C	4#4/0,1#4G-2 1/2"C	3#4/0,2#4/0N,1#4G-2 1/2"C	
225	19	3#4/0,1#4G-2"C	4#250,1#3G-2 1/2"C	3#250,2#250N,1#3G-3"C	
250	20	3#250,1#4G-2"C	4#300,1#3G-3"C	3#300,2#300N,1#3G-3"C	
300	21	3#350,1#4G-2 1/2"C	4#400,1#3G-3"C	3#400,2#400N,1#3G-3 1/2"C	
350	22	3#500,1#3G-3"C	(2 SETS) 4#3/0,1#3G-2"C	(2 SETS) 3#3/0,2#3/0N,1#3G-2 1/2"C	
400	23	(2 SETS) 3#3/0,1#3G-2"C	(2 SETS) 4#4/0,1#2G-2 1/2"C	(2 SETS) 3#4/0,2#4/0N,1#2G-2 1/2"C	(2 SETS) 3#4/0,2#4/0N,1#1/0SBJ-2 1/2"C
450	24	(2 SETS) 3#4/0,1#2G-2"C	(2 SETS) 4#250,1#1G-2 1/2"C	(2 SETS) 3#250,2#250N,1#1G-3"C	
500	25	(2 SETS) 3#250,1#2G-2"C	(2 SETS) 4#300,1#1G-3"C	(2 SETS) 3#300,2#300N,1#1G-3"C	(2 SETS) 3#300,2#300N,1#2/0 SBJ-3"C
600	26	(2 SETS) 3#350,1#1G-2 1/2"C	(2 SETS) 4#400,1#1/0G-3"C	(2 SETS) 3#400,2#400N,1#1/0G-3 1/2"C	
700	27	(2 SETS) 3#500,1#1/0G-3"C	(3 SETS) 4#300,1#1/0G-3"C	(3 SETS) 3#300,2#300N,1#1/0G-3"C	
750	28	(2 SETS) 3#500,1#1/0G-3"C	(3 SETS) 4#300,1#1/0G-3"C	(3 SETS) 3#300,2#300N,1#1/0G-3"C	
800	29	(3 SETS) 3#300,1#1/0G-2 1/2"C	(3 SETS) 4#350,1#2/0G-3"C	(3 SETS) 3#350,2#350N,1#2/0G-3"C	(3 SETS) 3#350,2#4/0N,1#2/0SBJ-3"C
900	30	(3 SETS) 3#350,1#2/0G-2 1/2"C	(3 SETS) 4#400,1#3/0G-3"C	(3 SETS) 3#400,2#400N1#3/0G-3 1/2"C	
1000	31	(3 SETS) 3#400,1#2/0G-3"C	(3 SETS) 4#500,1#3/0G-3 1/2"C	(3 SETS) 3#500,2#500N,1#3/0G-3 1/2"C	(3 SETS) 3#500,2#300N,1#4/0SBJ-3 1/2"C
1200	32	(4 SETS) 3#350,1#3/0G-2 1/2"C	(4 SETS) 4#400,1#4/0G-3"C	(4 SETS) 3#400,2#400N,1#4/0G-3 1/2"C	
1600	33	(5 SETS) 3#400,1#4/0G-3"C	(5 SETS) 4#500,1#300G-3 1/2"C	(5 SETS) 3#500,2#500N,1#300G-4"C	
2000	34	(6 SETS) 3#400,1#250G-3"C	(6 SETS) 4#500,1#350G-3 1/2"C	(6 SETS) 3#500,2#500N,1#350G-4"C	
2500	35	(7 SETS) 3#500,1#350G-3"C	(8 SETS) 4#500,1#400G-3 1/2"C	(8 SETS) 3#500,2#500N,1#400G-4"C	
3000	36	(8 SETS) 3#500,1#400G-3"C	(9 SETS) 4#500,1#500G-3 1/2"C	(9 SETS) 3#500,2#500N,1#500G-4"C	
4000	37	(11 SETS) 3#500,1#500G-3"C	(12 SETS) 4#500,2#300G-3 1/2"C	(12 SETS) 3#500,2#500N,2#300G-4"C	
5000	38	(14 SETS) 3#500,2#350G-3 1/2"C	(15 SETS) 4#500,2#400G-4"C	(15 SETS) 3#500,2#500N,2#400G-4"C	
MV	40	3#2 15kV & 1#8 G - 4" C			

NOTES:

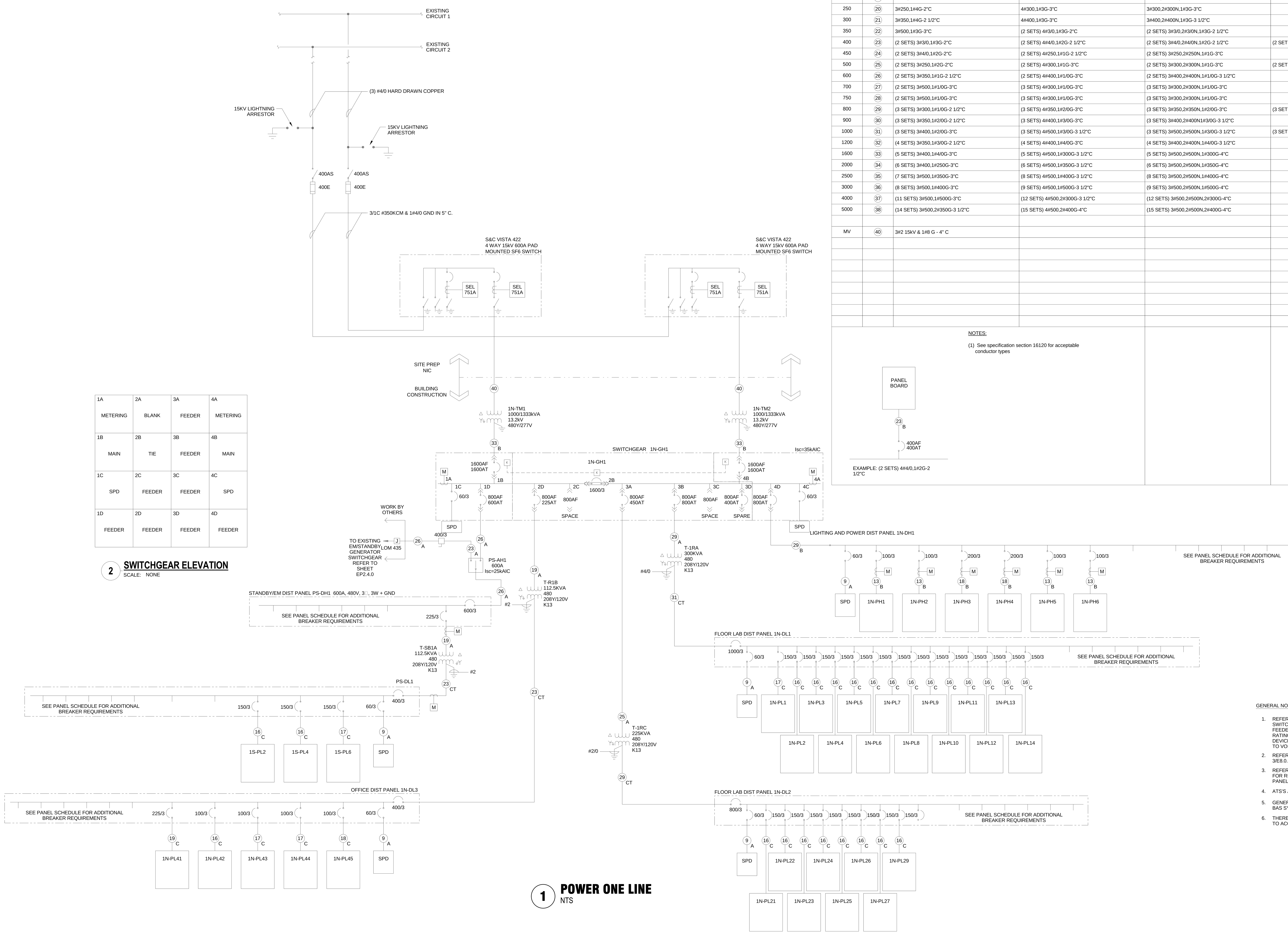
(1) See specification section 16120 for acceptable conductor types

PANEL BOARD — 23 B — 400AF 400AT

EXAMPLE: (2 SETS) 4#4/0,1#2G-2 1/2"C

1A METERING	2A BLANK	3A FEEDER	4A METERING
1B MAIN	2B TIE	3B FEEDER	4B MAIN
1C SPD	2C FEEDER	3C FEEDER	4C SPD
1D FEEDER	2D FEEDER	3D FEEDER	4D FEEDER

2 SWITCHGEAR ELEVATION
SCALE: NONE



1 POWER ONE LINE
NTS

GENERAL NOTES

1. REFER TO FEEDER SCHEDULE ON THIS SHEET FOR SWITCHBOARD, PANELBOARD AND TRANSFORMER FEEDER SIZES. WHERE TAG NOMINAL AMPERE RATING DOES NOT CORRESPOND TO FEED OCP DEVICE RATING, FEEDER HAS BEEN INCREASED DUE TO VOLTAGE DROP.
2. REFER TO TRANSFORMER GROUNDING DETAIL ON 3/E8.0.3.
3. REFER TO PANEL SCHEDULES SERIES DRAWINGS FOR REQUIRED SHORT CIRCUIT RATINGS FOR PANELSBOARDS AND DISTRIBUTION PANELS.
4. ATS'S ARE MONITORED VIA THE BAS SYSTEM.
5. GENERATOR RUN STATUS IS MONITORED BY THE BAS SYSTEM
6. THERE ARE NO REVISIONS TO THE BASE ONE LINE TO ACCOMMODATE THE SCOPE REDUCTION.

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Argonne NATIONAL LABORATORY

FMS
Facilities Management Services

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DRAWING TITLE: POWER ONE LINE

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