

(OVERALL BUILDING SERVICE) ELECTRICAL DESIGN LOAD SUMMARY			
LOAD SERVED	CONNECTED LOAD (KVA)	DEMAND LOAD (KVA)	DEMAND LOAD (KVA)
LIGHTING:	64.4	125%	80.5
RECEPTACLES:	120.6	51.74	62.4
COMPUTERS:	194.2	65%	126.2
HVAC EQUIPMENT:	928.7	100%	928.7
25% LARGEST MOTOR (20HP):	5.3	100%	5.3
EXHAUST FANS:	13.7	100%	13.7
ELEVATOR (1) @ 7.5HP:	8.7	100%	8.7
KITCHEN EQUIPMENT:	115.4	65%	75.1
WATER HEATERS:	18.0	100%	18.0
MISCELLANEOUS:	10.8	65%	.7
<b>TOTALS</b>	<b>1479.8 KVA</b>		<b>1319.3 KVA</b>

1 SERVICE =  $\frac{1319.3 \text{ KVA}}{480 \text{ V} \times \sqrt{3}} = 1587.6 \text{ AMPS}$

THEREFORE PROVIDE A 1600 AMP, 480/277 VOLT, 3-PHASE, 4-WIRE SOLIDLY GROUNDING ELECTRICAL SERVICE.

EMERGENCY GENERATOR LOAD SUMMARY			
LOAD SERVED	CONNECTED LOAD (KVA)	DEMAND LOAD (KVA)	DEMAND LOAD (KVA)
LIGHTING:	44.6	125%	55.7
RECEPTACLES:	78.3	51.74	40.5
COMPUTERS:	63.0	65%	40.9
HVAC EQUIPMENT:	516.9	100%	516.9
25% LARGEST MOTOR (20HP):	5.3	100%	5.3
KITCHEN EQUIPMENT:	115.4	65%	75.1
MISCELLANEOUS:	7.5	65%	4.8
<b>TOTALS</b>	<b>831.0 KVA</b>		<b>739.2 KVA</b>

## KEYED NOTES

- DIGITAL METER.
- 750 KW DIESEL GENERATOR PER ELECTRICAL SPECIFICATIONS.
- PROVIDE WITH EQUIPMENT GROUND BUS ISOLATED GROUND BUS, 200% #N AND TVSS UNIT.
- 1000A/3P OUTPUT BREAKER PROVIDED WITH GENERATOR.
- PROVIDE A MINIMUM OF 3-100AF SPACES.
- PROVIDE A MINIMUM OF 1-400 AF AND 2-225 AF SPACES.
- FIRE PUMP CONTROLLER FURNISHED WITH THE FIRE PUMP.
- PRIMARY FEEDER BY LOCAL ELECTRIC COMPANY.
- PAD MOUNTED TRANSFORMER BY LOCAL ELECTRICAL COMPANY. PAD BY GENERAL CONTRACTOR PER DETAIL.
- 15A/3P ENCLOSED CIRCUIT BREAKER WITH SHUNT TRIP COIL. INTERLOCK WITH FACP AND SPRINKLER SYSTEM PER ANSI 17.1. PROVIDE 2-N.O. AND 2- N.C. AUXILIARY CONTACTS.
- PROVIDE A CONCRETE ENCASED GROUNDING ELECTRODE AS PER THE NEC AND LOCAL CODES.

## FEEDER SCHEDULE

AMPERE RATING	CONDUIT	3-WIRE WITH GROUND	CONDUIT	4-WIRE WITH GROUND	CONDUIT	4-WIRE WITH GROUND, 200% NEUTRAL
30A	H30	3-#10, #10 GND. IN 3/4".	L30	4-#10, #10 GND. IN 3/4".	LT30	3-#10, #6 NET, #10 GND. IN 1".
40A	H40	3-#8, #8 GND. IN 3/4".	L40	4-#8, #10 GND. IN 3/4".	LT40	3-#8, #4 NET, #10 GND. IN 1".
60A	H60	3-#6, #10 GND. IN 3/4".	L60	4-#6, #10 GND. IN 1".	LT60	3-#6, #3 NET, #10 GND. IN 1".
70A	H70	3-#4, #8 GND. IN 1".	L70	4-#4, #8 GND. IN 1".	LT70	3-#4, #1 NET, #8 GND. IN 1 1/4".
80A	H80	3-#3, #8 GND. IN 1 1/4".	L80	4-#3, #8 GND. IN 1 1/4".	LT80	3-#3, #1/0 NET, #8 GND. IN 1 1/2".
100A	H100	3-#2, #8 GND. IN 1 1/4".	L100	4-#2, #8 GND. IN 1 1/2".	LT100	3-#2, #2/0 NET, #8 GND. IN 1 1/2".
125A	H125	3-#1, #6 GND. IN 1 1/2".	L125	4-#1, #6 GND. IN 1 1/2".	LT125	3-#1, #3/0 NET, #6 GND. IN 1 1/2".
150A	H150	3-#1/0, #6 GND. IN 1 1/2".	L150	4-#1/0, #6 GND. IN 2".	LT150	3-#1/0, #4/0 NET, #6 GND. IN 2".
175A	H175	3-#2/0, #6 GND. IN 2".	L175	4-#2/0, #6 GND. IN 2".	LT175	3-#2/0, #250KCMIL NET, #6 GND. IN 2".
200A	H200	3-#3/0, #6 GND. IN 2".	L200	4-#3/0, #6 GND. IN 2".	LT200	3-#3/0, #300KCMIL NET, #6 GND. IN 2 1/2".
225A	H225	3-#4/0, #4 GND. IN 2 1/2".	L225	4-#4/0, #4 GND. IN 2 1/2".	LT225	3-#4/0, #400KCMIL NET, #4 GND. IN 2 1/2".
250A	H250	3-250KCMIL, #4 GND. IN 2 1/2".	L250	4-250KCMIL, #4 GND. IN 3".	LT250	3-#250KCMIL, 2-#250KCMIL, #4 GND. IN 2 1/2".
300A	H300	2 SETS: 3-#1/0, #4 GND. EACH IN 1 1/2".	L300	2 SETS: 4-#1/0, #4 GND. EACH IN 2".	LT300	2 SETS: 3-#1/0, 2-#1/0 NET, #3 GND. EACH IN 2 1/2".
350A	H350	2 SETS: 3-#2/0, #3 GND. EACH IN 2".	L350	2 SETS: 4-#2/0, #3 GND. EACH IN 2".	LT350	2 SETS: 3-#2/0, 2-#2/0 NET, #3 GND. EACH IN 2 1/2".
400A	H400	2 SETS: 3-#3/0, #3 GND. EACH IN 2".	L400	2 SETS: 4-#3/0, #3 GND. EACH IN 2".	LT400	2 SETS: 3-#3/0, 2-#3/0 NET, #2 GND. EACH IN 3".
500A	H500	2 SETS: 3-#250KCMIL, #2 GND. EACH IN 2 1/2".	L500	2 SETS: 4-#250KCMIL, #2 GND. EACH IN 3".	LT500	2 SETS: 3-#250KCMIL, 2-#250KCMIL NET, #2 GND. EACH IN 3".
600A	H600	2 SETS: 3-#350KCMIL, #1 GND. EACH IN 3".	L600	2 SETS: 4-#350KCMIL, #1 GND. EACH IN 3".	LT600	2 SETS: 3-#350KCMIL, 2-#350KCMIL NET, #1 GND. EACH IN 3".
700A	H700	2 SETS: 3-#500KCMIL, #1/0 GND. EACH IN 4".	L700	2 SETS: 4-#500KCMIL, #1/0 GND. EACH IN 4".	LT700	2 SETS: 3-#500KCMIL, 2-#500KCMIL NET, #1/0 GND. EACH IN 4".
800A	H800	3 SETS: 3-#300KCMIL, #1/0 GND. EACH IN 2 1/2".	L800	3 SETS: 4-#300KCMIL, #1/0 GND. EACH IN 3".	LT800	3 SETS: 3-#300KCMIL, 2-#300KCMIL NET, #1/0 GND. EACH IN 3".
1000A	H1000	3 SETS: 3-#400KCMIL, #3/0 GND. EACH IN 3".	L1000	3 SETS: 4-#400KCMIL, #2/0 GND. EACH IN 3 1/2".	LT1000	3 SETS: 4-#400KCMIL, 2-#350KCMIL NET, #2/0 GND. EACH IN 3".
1200A	H1200	4 SETS: 3-#350KCMIL, #3/0 GND. EACH IN 3".	L1200	4 SETS: 4-#350KCMIL, #3/0 GND. EACH IN 3 1/2".	LT1200	4 SETS: 3-#350KCMIL, 2-#350KCMIL NET, #3/0 GND. EACH IN 3 1/2".
1600A	H1600	5 SETS: 3-#400KCMIL, #4/0 GND. EACH IN 3".	L1600	5 SETS: 4-#400KCMIL, #4/0 GND. EACH IN 3 1/2".	LT1600	5 SETS: 3-#400KCMIL, 2-#350KCMIL NET, #4/0 GND. EACH IN 3 1/2".
2000A	H2000	5 SETS: 3-#500KCMIL, #250KCMIL GND. EACH IN 4".	L2000	6 SETS: 4-#500KCMIL, #250KCMIL GND. EACH IN 4".	LT2000	6 SETS: 3-#500KCMIL, 2-#500KCMIL NET, #250KCMIL GND. EACH IN 4".

\* REFER TO POINT BY POINT ON ELECTRICAL RISER DIAGRAM

## SHORT CIRCUIT CALCULATION

### NORMAL SERVICE

POINT	LENGTH	KVA	EL-L	Z	C	Mult.	f	M	I FLA	I SCA	EQUIPMENT/CONDUCTOR
XA		1000	480	3		33.33			1,202.88	40,094.94	TRANSFORMER
XB	148		480		38.230	0.56008	0.64099		25,700.49		PANEL MSB
XC	12		480		18.100	0.06148	0.94208		24,211.89		PANEL HVAC2
XD	160		480		18.100	0.77228	0.56424		13,661.41		PANEL EH/VAC1
XE	140		480		12.300	0.56108	0.64058		8,751.25		PANEL EK/H

### NOTE:

- THIS POINT BY POINT CALCULATION IS BASED ON THE (4) LARGEST PANELBOARDS THAT ARE LOCATED THE CLOSEST TO THE MAIN SWITCHBOARD "MSB". ALL OTHER 480/277 VOLT PANELBOARDS WILL NOT EXCEED 24 KAIC. THE RATINGS ON THE PANELBOARD SCHEDULES SPECIFIED ARE ABOVE FAULT LEVELS.
- ALL 120/208 VOLT PANELBOARDS SHALL HAVE A MINIMUM 14 KAIC RATING. THESE PANELBOARDS CAN NOT POSSIBLY EXCEED THE POINT BY POINT VALUE FOR "XD" WHICH IS 480 VOLT PANEL. THEREFORE ALL 120/208 PANELBOARDS HAVE A FAULT RATING THAN REQUIRED.

