

Eric Singley
Lighting / Electrical
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Natty Boh Building
Baltimore , Maryland



Technical Assignment #2 - Existing Electrical Conditions

Executive Summary

The following report details the electrical distribution and loads for the Natty Boh Building in Baltimore, Maryland. The electrical riser diagram, mechanical equipment schedule, lamp & ballast schedule, & transformer schedule are all included within. The distribution panels are also included with calculated loads for each panel. The main service could not be sized due to a sizable portion of the building being unoccupied or incomplete at the current time.

The calculated loads were checked against each distribution panels sizing, and all but one were sufficiently sized or oversized. Panel HLP appears to be significantly undersized. Whether this is due to my misinterpretation of the loads on that panel or some other factor warrants further investigation.



Electrical System Overview

System Type:

The Natty Boh building's electricity is supplied by Baltimore Gas and Electric by a simple radial 480Y / 277V, 3 Φ 4W system.

Emergency Power System:

In case of emergency a 480Y / 277V 3 Φ 4W, 250KVA Diesel Generator is located in a weather protected enclosure outside of the building. There are two automatic transfer switches located in the basement of the building rated at 70A and 150A.

Overcurrent Protection:

Circuit breakers are used to protect almost all the building equipment. The only exception was fused safety switches for the elevator power.

Equipment Location:

The switchboard, MDP, and automatic transfer switches are located in the main electrical room in the basement of the building. Additional secondary distribution panels are located on the 2nd, 3rd, 5th, 6th, and 9th floors. Emergency power distribution panels are located in the basement and on the 3rd floor.

Power Factor Correction:

No power factor correction was used in the building.

Shutoff Requirements:

A majority of the building is outfitted with ceiling mounted occupancy sensors. In addition there is a photocell mounted on the roof to control the exterior lighting.

Utility Rate:

The following two pages outline the utility rate information from Baltimore Gas and Electric that I believe applies to my building.

**GENERAL SERVICE LARGE -- ELECTRIC
SCHEDULE G L**

Availability: For use for all purposes, where the Customer has established a monthly demand of 60 kW or more. The applicable Market-Priced Standard Offer Service Type is determined as follows.

Type II Market-Priced Service: For non-residential customers not eligible for Type 1 SOS whose PJM capacity peak load contribution is less than 600kW, unless excluded by the Phase I Settlement Agreement in Case No. 8908.

Delivery Voltage: Service at Secondary Distribution Systems voltages, or at Primary Systems voltages where the Customer does not qualify for Schedule P.

Monthly Net Rates:

Delivery Service Customer Charge: \$110.00 per month,

Less: Competitive Billing (where applicable) \$ 0.47 per month, plus,
(see Section 7.7 for details)

Secondary Service Customers:

Demand Charges:	Summer	Non-Summer
Generation Market-Priced Service:	<u>per kW</u>	<u>per kW</u>
Type II	-	-
Transmission Charge for Market-Priced Service:		
Type II	\$1.05	\$1.05
Delivery Service	\$2.67	\$2.67
Energy Charges:	<u>Summer</u>	<u>Non-Summer</u>
Generation Market-Priced Service(¢/kWh):		
(Excludes Rider 8 – Energy Cost Adjustment)		
Type II		
Peak	9.319	5.534
Intermediate	8.802	5.406
Off-Peak	8.464	5.118

Competitive Transition Charge (¢ per kWh): See Rider 2 for details

Delivery Service Charge: 1.239 ¢/kWh

(Excludes Rider 10 – Administrative Cost Adjustment)

Minimum Charge: Net Delivery Service Customer Charge.

Billing Seasons: Summer rates are billed for usage from June 1 through September 30. Non-Summer rates are billed for usage from October 1 through May 31.

Rating Periods:

Summer

Peak-Between the hours of 10am and 8pm on weekdays, excluding the National holidays listed below.

Intermediate - Between the hours of 7 am and 10 am, and the hours of 8 pm and 11 pm on weekdays, excluding the National holidays listed below.

Off-Peak - All times other than those defined for the On-Peak and Intermediate-Peak rating periods.

(Continued on next page)

Schedule GL continued**Non-Summer**

Peak - Between the hours of 7 am and 11 am, and the hours of 5 pm and 9 pm on weekdays, excluding the National holidays listed below.

Intermediate - Between the hours of 11 am and 5 pm on weekdays, excluding the National holidays listed below.

Off-Peak - All times other than those defined for the On-Peak and Intermediate-Peak rating periods.

Holidays:

All hours on Saturdays and Sundays and the following National holidays are Off-Peak: New Year's Day, President's Day, Good Friday, Memorial Day, Independence Day, Labor Day, Thanksgiving, Christmas, and the Monday following such of these as fall on Sunday.

Average Price to Compare (includes Generation and Transmission): Type II 6.85¢/kWh

Billing Demand: The maximum 30-minute measured demand, adjusted to the nearest whole kW, in each applicable rating period for the month. Measured demand is the Customer's rate of use of electric energy as shown by or computed from readings of the Company's demand meter. Generation and Transmission Demand are billed for each kW of billing demand occurring during the Peak rating period. Delivery Service Demand is for each kW of Billing Demand recorded during any rating period.

Primary Service Customers: For Customers taking service at Primary Systems voltages, Type II Secondary Service rates apply for Generation and Transmission Services. The Delivery Service Demand and Energy Charge rates are as follows.

Delivery Service Demand Charge: \$ 2.56 per kW

Competitive Transition Charge: same as charges for Schedule GL –Secondary - see Rider 2 for details.

Delivery Service Energy Charge: 1.191 ¢/kWh

(Excludes Rider 10 – Administrative Cost Adjustments)

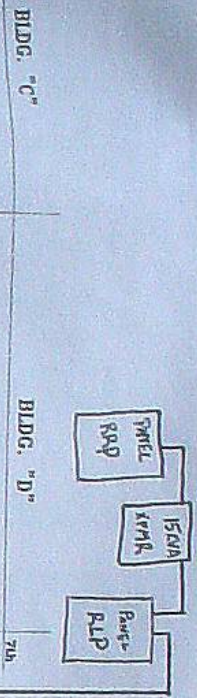
Late Payment Charge: Standard. (Sec. 7.4)

Payment Terms: Standard. (Sec. 7)

Term of Contract: The initial term of contract is 2 years where additional main facilities are required for supply. Otherwise, the term of contract is one year. After the initial term of contract, the contract may be terminated by at least 30 days' notice from the Customer.

Subject to Riders applicable as listed below

- | | |
|--|--|
| 1. Standard Offer Service | 13. Change of Schedule |
| 2. Competitive Transition Charge | 17. Best Efforts Service |
| 3. Miscellaneous Taxes and Surcharges | 18. Net Energy Metering |
| 5. Controlled Air Conditioning Service | 19. Demonstration and Trial Installations |
| 7. Economic Development | 21. Billing in Event of Service Interruption |
| 8. Energy Cost Adjustment | 22. Minimum Charge for Short-Term Uses |
| 9. Customer Billing and Consumption
Data Requests | 23. Advanced Meter Services |
| 10. Administrative Cost Adjustment | 24. Load Response Program |
| 11. Measured Demand | |



FEEDER SCHEDULE

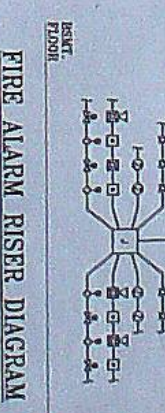
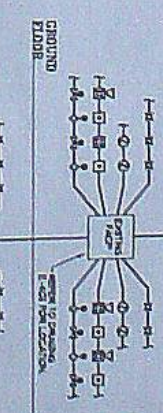
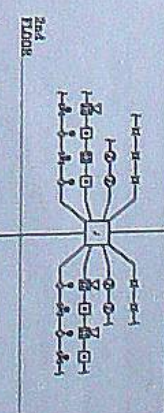
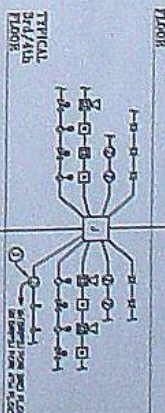
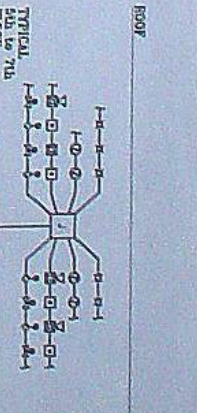
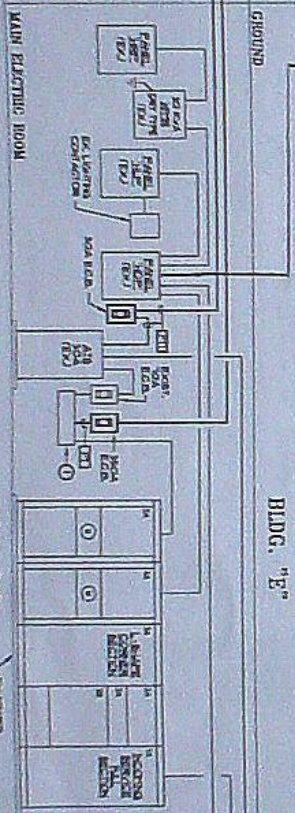
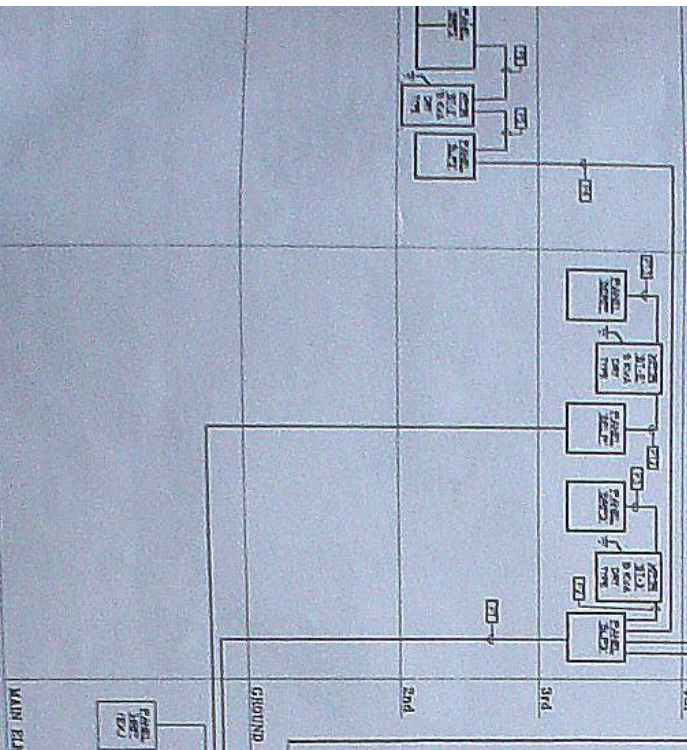
NOTES:

1. RATED CONDUCTING CAPACITY AND CIRCUIT BREAK IN THE FEEDER SCHEDULE ARE FOR THE FEEDER UNDER THE ASSUMED LOADS AND CONDITIONS. ALL CONDUCTORS ARE LISTED UNDER FEEDER WORK. THIS TABLE APPLIES TO CONDUCTORS RATED 600 VOLTS TO BE USED ON AIR-BREAK TERMINALS OF 15.25 KILOVOLTS OR LESS. ALL FEEDERS ARE TO BE INSTALLED IN CONDUIT UNLESS OTHERWISE NOTED. THE CONDUCTOR SHALL ADJUST CONDUCTOR AND CIRCUIT BREAK RATING AND CIRCUIT BREAK TO BE PROVIDED FOR THE CONDUCTOR OR FEEDER.

NUMBER	FEEDS	FEEDER CONDUCTORS	METHOD	GROUND	CIRCUIT	REMARKS
F1	1	3 #12 XHLS	1 #12	1 #12	5"	50A E.C.B. TO 50A
F2	1	3 #12	1 #12	1 #12	3/4"	50A TO 50A
F3	1	3 #12	1 #12	1 #12	3/4"	50A TO 50A
F4	1	3 #12	1 #12	1 #12	3/4"	50A TO 50A
F5	1	3 #12	1 #12	1 #12	3/4"	50A TO 50A
F6	1	3 #12	1 #12	1 #12	3/4"	50A TO 50A
F7	1	3 #12	1 #12	1 #12	3/4"	50A TO 50A
F8	1	3 #12	1 #12	1 #12	3/4"	50A TO 50A
F9	1	3 #12	1 #12	1 #12	3/4"	50A TO 50A
F10	1	3 #12	1 #12	1 #12	3/4"	50A TO 50A
F11	1	3 #12	1 #12	1 #12	3/4"	50A TO 50A
F12	1	3 #12	1 #12	1 #12	3/4"	50A TO 50A
F13	1	3 #12	1 #12	1 #12	3/4"	50A TO 50A
F14	1	3 #12	1 #12	1 #12	3/4"	50A TO 50A

DRAWING NOTES:

1. EXISTING WORK UNLESS OTHERWISE NOTED TO BE REMOVED.
2. PROVIDE CONNECTION TO POWER DISTRIBUTION FOR AUTOMATIC DOOR HOLD-OPEN.



FIRE ALARM RISER DIAGRAM
NOT TO SCALE

300 TO 500 C.A.
APPLICABLE TO ALL
ELECTRICAL WORK
INCLUDING E.C.B.

POWER RISER DIAGRAM
NOT TO SCALE



Transformers:

Transformer Schedule						
Transformer	Primary Voltage	Secondary Voltage	Phase	Size	Primary Feeder	Secondary Feeder
TE - 1	480Y / 277	208V / 120	3	15KVA	(4) #10 + (1) #10G in 3/4" C	(4) #8 + (1) #10G in 3/4" C
TM - 1	480Y / 277	208V / 120	3	30KVA	(4) #2 + (1) #6G in 1 1/4" C	(4) #4/0 + (1) #4G in 2 1/2" C
TR - 1	480Y / 277	208V / 120	3	15KVA	(4) #10 + (1) #10G in 3/4" C	(4) #8 + (1) #10G in 3/4" C
ST - 2	480Y / 277	208V / 120	3	75KVA	(3) #2 + (1) #6G in 1 1/4" C	(4) #4/0 + (1) #4G in 2 1/2" C
ST - 3	480Y / 277	208V / 120	3	15KVA	(3) #10 + (1) #10G in 3/4" C	(4) #8 + (1) #10G in 3/4" C
ST - 5	480V / 277	208V / 120	3	30KVA	(3) #8 + (1) #10G in 3/4" C	(4) #3 + (1) #8G in 1 1/4" C
ST - 6	480V / 277	208V / 120	3	30KVA	(3) #8 + (1) #10G in 3/4" C	(4) #2 + (1) #6G in 1 1/4" C
ST - E	480V / 277	208V / 120	3	9KVA	(3) #12 + (1) #12G in 3/4" C	(4) #8 + (1) #10G in 3/4" C

Lighting Systems:

The typical lighting system in the Natty Boh building is simple F32/T8 downlighting. Exceptions to this include some of the more public areas such as lobbies, reception areas, and the office/reception/sales room for the self storage space. These areas contain a lot of accent lighting and metal halide fixtures.



Lamps:

Lamp Schedule						
Lamp	Ballast	Lamps / Ballast	Input Watts	Voltage	Current (A)	Power Factor
Phillips F17T8 TL735 24 ALTO 1LP	Advanced ICN-2M32-MC@120V	2.0	31	120	0.26	0.98
Phillips F17T8 TL735 24 ALTO 1LP	Advanced ICN-2M32-MC@277V	2.0	32	277	0.11	0.98
Phillips F25T8 TL735 36 ALTO 1LP	Advanced ICN-1P32-SC@277V	1.0	26	277	0.1	0.98
Phillips F32T8 TL735 48 ALTO	Advanced ICN-2M32-MC@120V	2.0	59	120	0.5	0.98
Phillips F32T8 TL735 48 ALTO	Advanced ICN-2M32-MC@277V	2.0	59	277	0.21	0.98
Sylvania FBO31830XPECO 15/CS 1/SKU	-	2.0	~62	277	-	-
Sylvania CF13DTE830 50/CS 1/SKU	Sylvania QTP12X13CFUNVBS	2.0	29	277	0.11	0.98
Sylvania CFTR18W/GX24Q/830	Sylvania QTP12X18CFUNVQS	2.0	38	120	0.32	0.98
Sylvania CFTR18W/GX24Q/830	Sylvania QTP12X18CFUNVQS	2.0	38	277	0.14	0.98
Sylvania CFTR26W/GX24Q/830	Sylvania QTP2X26CFUNVBS	2.0	54	277	0.22	0.98
Phillips MasterColor CDM-T 70W/830 G12 T6 1CT	Advanced 71A5237BP	1.0	85	277	-	1.0
Phillips MasterColor CDM 100W/830 Med ED17P CL ALTO+FB	Advanced 71A5337BP	1.0	115	277	-	1.0
Phillips Pulse Start MH Std 175W/635 Mog ED28 CL	Advanced 71A5534	1.0	220	277	-	1.0
Phillips Long Life EXZ 50W GU5.3 12V MR16 24D CL 1CT	-	1.0	50	277	-	1.0
Phillips PL-T 42W/835 GX24q-4 /4P ALTO 1CT	-	1	~50	277	-	-



Mechanical Equipment:

Equipment Schedule I			
Equipment Designation	Equipment Type	Volts / Phase	KVA
AC - B, G, 2, 3W, 3E, 4W, 4E, 5W, 5E, 6, 7	Air Conditioning Unit	120V / 1Φ	1.8
AC - OFF	Air Conditioning Unit	120V / 1Φ	1.8
AC - APT	Air Conditioning Unit	120V / 1Φ	0.9
AC - LOB	Air Conditioning Unit	120V / 1Φ	0.9
CU - B, G, 2, 3W, 3E, 4W, 4E, 5W, 5E, 6, 7	Condensing Unit	480V / 3Φ	7.2
CU - APT	Condensing Unit	208V / 1Φ	7.2
CU - OFF	Condensing Unit	208V / 1Φ	3.4
CU - LOB	Condensing Unit	120V / 1Φ	1.2
WH - 2K	Wall Heater	208V / 1Φ	2
WH - 3K	Wall Heater	208V / 1Φ	3
CH - 5K	Cabinet Heater	480V / 3Φ	9.9



Equipment Schedule II					
Equipment Designation	Equipment Type	Volts / Phase	hp	KW	A
ACU - 1	Air Conditioning Unit	208V / 1Φ	1 1/2		
ACU - 2	Air Conditioning Unit	208V / 1Φ	1 1/2		
ACU - 3	Air Conditioning Unit	208V / 1Φ	1 1/2		
ACU - 4	Air Conditioning Unit	120V / 1Φ			
CU - 1	Condensing Unit	480V / 3Φ	1/3		
CU - 2	Condensing Unit	480V / 3Φ	1/3		
CU - 3	Condensing Unit	208V / 1Φ	1/4		
CU - 4	Condensing Unit	208V / 1Φ			
UH - 1	Unit Heater	480V / 3Φ			9
UH - 2	Unit Heater	208V / 1Φ			12
CUH - 2	Cabinet Unit Heater	480V / 3Φ			15
CUH - 3	Cabinet Unit Heater	480V / 3Φ			20.7
EDH - 1	Electric Duct Heater	480V / 3Φ		22	
EDH - 2	Electric Duct Heater	480V / 3Φ		21	
EF - 1	Exhaust Fan	480V / 3Φ	1		
EF - 2	Exhaust Fan	120V / 1Φ	1/3		
EF - 3	Exhaust Fan	120V / 1Φ	1/6		

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Equipment Schedule II (cont.)					
Equipment Designation	Equipment Type	Volts / Phase	hp	KW	A
FP #1	Fire Pump	480V / 3Φ	40		
JP #2	Jockey Pump	480V / 3Φ	3/4		
DWB #1	Domestic Water Booster	480V / 3Φ	30		
DHWH #1	Domestic Hot Water Heater	480V / 3Φ		9	
DHWH #2	Domestic Hot Water Heater	480V / 3Φ		12	
DHWH #3	Domestic Hot Water Heater	480V / 3Φ		12	

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Electrical Loads:

-Demand Factors-

Lighting: 1.25
 Receptacle: 1.00 (first 10KVA), 0.5 (>10KVA)
 Motor: 1.00, 1.25 (largest)
 Equipment: 1.00

Voltage:		480Y / 277V							1200		Feeder (4) #500KCMIL + (1) #3G in 3" C			
													(#, size wire & conduit)	
Description	LOAD (KVA)			Brk. Trip (A)	Poles	HDP		LOAD (KVA)			Brk. Trip (A)	Poles	Description	
	A	B	C			Ckt. #	A	B	C					
ATS	31.7			150	3	1	2	91.1			300	3	PANEL "HLP"	
		29.6				3	4		89.1					
			27.2			5	6			86.4				
30 KVA XFMR	6.4			50	3	7	8	4.5			50	3	PANEL "RLP"	
		6.7				9	10		3.8					
			2.2			11	12			3.3				
SPARE				20	1	13	14				20	1	SPARE	
SPARE				20	1	15	16				20	1	SPARE	
SPARE				20	1	17	18				20	1	SPARE	
SPARE				20	1	19	20				20	1	SPARE	
SPARE				20	1	21	22				20	1	SPARE	
SPARE				20	1	23	24				20	1	SPARE	
	38.1	36.3	29.4					95.6	92.9	89.7				
Total Load on Phase A:		133.7		KVA										
Total Load on Phase B:		129.2		KVA		Total Load on Panel:		382		kVA Demand				
Total Load on Phase C:		119.1		KVA				459.7		A				

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Voltage: 208Y / 120V						300		Feeder (4) #1/0 + (1) #6G in 2" C (#, size wire & conduit)					
Description	LOAD (KVA)			Brk. Trip (A)	Poles	HLP		LOAD (KVA)			Brk. Trip (A)	Poles	Description
	A	B	C			Ckt. #	A	B	C				
UH - 1	2.5			20	3	1	2	2.5			20	3	UH - 1
-		2.5		-	-	3	4		2.5		-	-	-
-			2.5	-	-	5	6			2.5	-	-	-
UH - 1	2.5			20	3	7	8	2.5			20	3	UH - 1
-		2.5		-	-	9	10		2.5		-	-	-
-			2.5	-	-	11	12			2.5	-	-	-
UH - 1	2.5			20	3	13	14	3.3			20	3	CUH - 1
-		2.5		-	-	15	16		3.3		-	-	-
-			2.5	-	-	17	18			3.3	-	-	-
CUH - 2	3.3			20	3	19	20	2.3			20	1	LTG. - EXTERIOR
-		3.3		-	-	21	22		3.3		20	3	CUH - 1
-			3.3	-	-	23	24			3.3	-	-	-
CUH - 3	4.7			30	3	25	26	3.3			-	-	-
-		4.7		-	-	27	28		4.7		30	3	CUH - 3
-			4.7	-	-	29	30			4.7	-	-	-
EDH - 1	7.3			40	3	31	32	4.7			-	-	-
-		7.3		-	-	33	34		2.5		20	3	UH - 1 ELEC. ROOM
-			7.3	-	-	35	36			2.5	-	-	-
UH - 1	2.5			20	3	37	38	2.5			-	-	-
-		2.5		-	-	39	40		2.5		20	3	UH - 1
-			2.5	-	-	41	42			2.5	-	-	-
EDH - 2	7.0			40	3	43	44	2.5			-	-	-
-		7.0		-	-	45	46		4.7		30	3	EDH - 3
-			7.0	-	-	47	48			4.7	-	-	-
EF - 1	0.6			15	3	49	50	4.7			-	-	-
-		0.6		-	-	51	52		2.8		20	3	CU - 1
-			0.6	-	-	53	54			2.8	-	-	-
CU - 2	2.8			20	3	55	56	2.8			-	-	-
-		2.8		-	-	57	58		3.3		20	3	CUH - 2
-			2.8	-	-	59	60			3.3	-	-	-

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LTG. - 2ND FLOOR	2.4			20	1	61	62	3.3			-	-	-
LTG. - 1ST FLOOR		1.6		20	1	63	64		11.6		50	3	DOMESTIC WATER
DHWH - 1			3.0	20	3	65	66			11.6	-	-	-
-	3.0			-	-	67	68	11.6			-	-	-
-		3.0		-	-	69	70		1.1		20	1	LTG. - BASEMENT
DHWH - 2			4.0	20	3	71	72				20	1	SPARE
-	4.0			-	-	73	74				20	1	SPARE
-		4.0		-	-	75	76				20	1	SPARE
SPARE				20	1	77	78				20	1	SPARE
SPARE				20	1	79	80				20	1	SPARE
SPARE				20	1	81	82				20	1	SPARE
SPARE				20	1	83	84				20	1	SPARE
	45.1	44.3	42.7					46	44.8	43.7			
Total Load on Phase A:		91.1											
Total Load on Phase B:		89.1						Total Load on Panel:	277.2				kVA Demand
Total Load on Phase C:		86.4							769.9		A		

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Voltage: 208Y / 120V						100		Feeder (4) #4/0 + (1) #4G in 2 1/2" C						
								(#, size wire & conduit)						
Description	LOAD (KVA)			Brk. Trip (A)	Poles	HRP		LOAD (KVA)			Brk. Trip (A)	Poles	Description	
	A	B	C			Ckt. #	A	B	C					
RECEPT. - LOBBY 1S5	1.0			20	1	1	2	0.4			20	1	RECEPT. - LOBBY 2ND	
RECEPT. - JC. FA		0.4		20	1	3	4		0.6		20	1	RECEPT. - LOBBY 2ND	
SPARE				20	1	5	6				20	1	SPARE	
RECEPT. - MECH ROOM	0.6			20	1	7	8	0.3			20	1	ELEV. PIT	
RECEPT. - MAIN ELEC. RM.		0.4		20	1	9	10		1.2		20	1	RECEPT. - MECH RM.	
ACU - 1			0.7	20	3	11	12			0.4	20	1	RECEPT. - LOCKER	
-	0.7			-	-	13	14	2.3			20	2	CU - 3	
-		0.7		-	-	15	16		2.3		-	-	-	
ACU - 1			0.7	20	3	17	18			0.4	20	3	ACU - 3	
-	0.7			-	-	19	20	0.4			-	-	-	
-		0.7		-	-	21	22		0.4		-	-	-	
SPARE				20	1	23	24				20	1	SPARE	
SPARE				20	1	25	26				20	1	SPARE	
SPARE				20	1	27	28				20	1	SPARE	
SPARE				20	1	29	30				20	1	SPARE	
	3	2.2	1.4					3.4	4.5	0.8				
Total Load on Phase A:			6.4	KVA										
Total Load on Phase B:			6.7	KVA		Total Load on Panel:			16.5	kVA Demand				
Total Load on Phase C:			2.2	KVA					45.7	A				

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Voltage: 480Y / 277V						150		Feeder (4) #4/0 + (1) #4G in 2 1/2" C (#, size wire & conduit)					
Description	LOAD (KVA)			Brk. Trip (A)	Poles	ELP		LOAD (KVA)			Brk. Trip (A)	Poles	Description
	A	B	C			Ckt. #	A	B	C				
15 KVA XFMR	5.0			25	3	1	2	1.3			20	1	LTG. - STAIRWELL
-		4.0		-	-	3	4		1.2		20	1	LTG. - STAIRWELL
-			3.0	-	-	5	6			9.4	80	3	ELEV - 3
LTG. - EXTERIOR	1.1			20	1	7	8	9.4			-	-	-
LTG. - 2ND FLOOR		0.6		20	1	9	10		9.4		-	-	-
FIRE PUMP			14	300	3	11	12			0.4	20	1	LTG. - 1ST FLOOR
-	14			-	-	13	14	0.5			20	1	LTG. - BASEMENT
-		14		-	-	15	16				20	1	SPARE
SPARE				20	1	17	18				20	1	SPARE
SPARE				20	1	19	20				20	1	SPARE
SPARE				20	1	21	22				20	1	SPARE
SPARE				20	1	23	24				20	1	SPARE
SPARE				20	1	25	26				20	1	SPARE
SPARE				20	1	27	28				20	1	SPARE
SPARE				20	1	29	30				20	1	SPARE
	20.5	19	17.4					11.2	10.6	9.8			
Total Load on Phase A:		31.7		KVA									
Total Load on Phase B:		29.6		KVA		Total Load on Panel:		100.6		kVA Demand			
Total Load on Phase C:		27.2		KVA				121.0		A			

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Voltage: 280Y / 120V					50		Feeder (4) #8 + (1) #10G in 3/4" C (#, size wire & conduit)						
Description	LOAD (KVA)			Brk. Trip (A)	Poles	ERP		LOAD (KVA)			Brk. Trip (A)	Poles	Description
	A	B	C			Ckt. #	A	B	C				
FACP	1.0			20	1	1	2	2.3			20	2	CU - 4
ACU - 4		1.7		15	2	3	4		2.3		-	-	-
-			1.7	-	-	5	6			1.3	20	2	GEN. BLOCK WARMER
GEN. BATT. CHARGER	0.4			20	1	7	8	1.3			-	-	-
SPARE				20	1	9	10				20	1	SPARE
SPARE				20	1	11	12				20	1	SPARE
SPARE				20	1	13	14				20	1	SPARE
SPARE				20	1	15	16				20	1	SPARE
SPARE				20	1	17	18				20	1	SPARE
SPARE				20	1	19	20				20	1	SPARE
SPARE				20	1	21	22				20	1	SPARE
SPARE				20	1	23	24				20	1	SPARE
	1.4	1.7	1.7					3.6	2.3	1.3			
Total Load on Phase A:			5.0	KVA									
Total Load on Phase B:			4.0	KVA	Total Load on Panel:			13.2	kVA Demand				
Total Load on Phase C:			3.0	KVA				36.5	A				

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Voltage: 480Y / 277V						150		Feeder (4) # 1/0 + (1) #6G in 2" C (#, size wire & conduit)					
Description	LOAD (KVA)			Brk. Trip (A)	Poles	RLP		LOAD (KVA)			Brk. Trip (A)	Poles	Description
	A	B	C			Ckt. #	A	B	C				
15 KVA XFRM	1.1			25	3	1	2	0.1			20	1	LTG. - ELEV. MACH.
-		0.5		-	-	3	4		3.3		20	3	CUH - 1
-			0	-	-	5	6			3.3	-	-	-
SPARE				20	1	7	8	3.3			-	-	-
SPARE				20	1	9	10				20	1	SPARE
SPARE				20	1	11	12				20	1	SPARE
SPARE				20	1	13	14				20	1	SPARE
SPARE				20	1	15	16				20	1	SPARE
SPARE				20	1	17	18				20	1	SPARE
SPARE				20	1	19	20				20	1	SPARE
SPARE				20	1	21	22				20	1	SPARE
SPARE				20	1	23	24				20	1	SPARE
	1.1	0.5	0					3.4	3.3	3.3			
Total Load on Phase A:		4.5		KVA									
Total Load on Phase B:		3.8		KVA		Total Load on Panel:		14.1		kVA Demand			
Total Load on Phase C:		3.3		KVA				39.2		A			

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Voltage: 208Y / 120V						50		Feeder (4) #8 + (1) #10G in 3/4" C (#, size wire & conduit)					
Description	LOAD (KVA)			Brk. Trip (A)	Poles	RRP		LOAD (KVA)			Brk. Trip (A)	Poles	Description
	A	B	C			Ckt. #	A	B	C				
RECEPT. - ELEV. MACHINE	0.2			20	1	1	2	0.9			20	1	EF - 2
EF - 3		0.5		20	1	3	4				20	1	SPARE
SPARE				20	1	5	6				20	1	SPARE
SPARE				20	1	7	8				20	1	SPARE
SPARE				20	1	9	10				20	1	SPARE
SPARE				20	1	11	12				20	1	SPARE
SPARE				20	1	13	14				20	1	SPARE
SPARE				20	1	15	16				20	1	SPARE
SPARE				20	1	17	18				20	1	SPARE
SPARE				20	1	19	20				20	1	SPARE
SPARE				20	1	21	22				20	1	SPARE
SPARE				20	1	23	24				20	1	SPARE
	0.2	0.5	0					0.9	0	0			
Total Load on Phase A:		1.1		KVA									
Total Load on Phase B:		0.5		KVA		Total Load on Panel:		1.6		kVA Demand			
Total Load on Phase C:		0		KVA				4.4		A			

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Voltage: 480Y / 277V						150		Feeder (3) #2 + (1) #2 in 1 1/4" C (#, size wire & conduit)						
Description	LOAD (KVA)			Brk. Trip (A)	Poles	SLP2		LOAD (KVA)			Brk. Trip (A)	Poles	Description	
	A	B	C			Ckt. #	A	B	C					
XFMR 'ST - 2'	25.2			110	3	1	2	1.1			20	1	LTG. - BASMENT	
-		20.5		-	-	3	4		1.4		20	1	LTG. - GROUND	
-			26.3	-	-	5	6			1.1	20	1	LTG. - 2ND FLOOR	
DHWH - 1	4			20	3	7	8	0.5			20	1	LTG. - APARTMENT	
-		4		-	-	9	10		2.8		20	1	LTG. - OFFICE	
-			4	-	-	11	12			3.3	20	3	CH - 5K	
LTG. - BLDG. PERIMETER	1.5			20	1	13	14	3.3			-	-	-	
SPARE				20	1	15	16		3.3		-	-	-	
SPARE				20	1	17	18				20	1	SPARE	
SPACE				-	-	19	20				-	-	SPACE	
						21	22							
						23	24							
	30.7	24.5	30.3					4.9	7.5	4.4				
Total Load on Phase A:	35.6			KVA										
Total Load on Phase B:	32.0			KVA		Total Load on Panel:			107.4	kVA Demand				
Total Load on Phase C:	34.7			KVA					129.2	A				

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Voltage: 208Y / 120V						225		Feeder (3) #4/0 + (1) #4/0G in 2 1/2" C (#, size wire & conduit)					
Description	LOAD (KVA)			Brk. Trip (A)	Poles	SRP2		LOAD (KVA)			Brk. Trip (A)	Poles	Description
	A	B	C			Ckt. #	A	B	C				
WH - 2K	1.0			20	2	1	2	1.5			20	2	WH - 3K
-		1.0		-	-	3	4		1.5		-	-	-
RECEPT. - BSMT.			0.6	20	1	5	6			1.8	20	1	AC - B
RECEPT. - OFFICE	1.2			20	1	7	8	0.3			20	1	LTG. BATHROOMS
AC - G		1.8		20	1	9	10		0.6		20	1	RECEPT. - GROUND
WH - 3K			1.5	20	2	11	12			1.5	20	2	WH - 3K
-	1.5			-	-	13	14	1.5			-	-	-
ELEV - 1 PIT		0.2		20	1	15	16		0.8		20	1	RECEPT. - OFFICE
AUTOMATIC DOOR			1.2	20	1	17	18			1.0	20	2	WH - 2K
WH - 3K	1.5			20	2	19	20	1.0			-	-	-
-		1.5		-	-	21	22		0.6		20	1	RECEPT. - 2ND FLOOR
AC - 2			1.8	20	1	23	24			0.4	20	1	RECEPT. - BREAK ROOM
LTG. TOILET ROOMS	0.2			20	1	25	26	0.4			20	1	RECEPT. - TOILET ROOMS
ELEV - 1 CAB POWER		1.0		20	1	27	28		0.8		20	1	RECEPT. - APT.
RECEPT. - OFFICE			1.0	20	1	29	30			0.8	20	1	RECEPT. - APT.
RECEPT. - APARTMENT	0.8			20	1	31	32	0.6			20	1	RECEPT. - APT.
RECEPT. - APARTMENT		0.2		20	1	33	34		0.2		20	1	RECEPT. - APT.
WASHER			1.2	20	1	35	36			3.1	40	2	DRYER
RANGE	4.0			50	2	37	38	3.1			-	-	-
-		4.0		-	-	39	40		0.6		20	1	REFRIGERATOR
MICROWAVE			1.0	20	1	41	42			1.2	20	1	DISHWASHER
GARBAGE DISPOSAL	0.9			20	1	43	44	0.8			20	1	APPLIANCE RECEPT.
APPLIANCE RECEPT.		0.8		20	1	45	46		0.6		20	1	SWITCHED RECEPT.
RECEPT. - SYS. FURNITURE			0.8	20	1	47	48			1.8	20	1	AC - OFF
RECEPT. - SYS. FURNITURE	0.8			20	1	49	50	1.0			20	2	WH - 2K
RECEPT. - SYS. FURNITURE		0.8		20	1	51	52		1.0		-	-	-

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EXHAUST FAN			1.2	15	1	53	54			1.2	20	1	AUTOMATIC DOOR
AC - APT.	0.9			15	1	55	56	0.6			20	1	RECEPT. - OFFICE
LTG. - EXT. SIGNAGE		0.8		20	1	57	58		0.4		20	1	LTG. - OFFICE TRACK
LTG. - EXT. SIGNAGE			0.8	20	1	59	60			0.8	20	1	LTG. - EXT. SIGNAGE
LTG. - EXT. SIGNAGE	0.8			20	1	61	62	0.8			20	1	LTG. - EXT. SIGNAGE
LTG. - EXT. SIGNAGE		0.8		20	1	63	64		0.8		20	1	LTG. - EXT. SIGNAGE
RECEPT. - EXT.			0.8	20	1	65	66			0.8	20	1	LTG. - EXT. SIGNAGE
SPARE				20	1	67	68				20	1	SPARE
SPARE				20	1	69	70				20	1	SPARE
SPARE				20	1	71	72				20	1	SPARE
SPARE				20	1	73	74				20	1	SPARE
SPARE				20	1	75	76				20	1	SPARE
SPARE				20	1	77	78				20	1	SPARE
SPARE				20	1	79	80				20	1	SPARE
SPARE				20	1	81	82				20	1	SPARE
SPACE				-	-	83	84				-	-	SPACE
	13.6	12.9	11.9					11.6	7.9	14.4			
Total Load on Phase A:		25.2	KVA										
Total Load on Phase B:		20.8	KVA					Total Load on Panel:	72.1	kVA Demand			
Total Load on Phase C:		26.3	KVA						200.2	A			

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Voltage: 480Y / 277V						350		Feeder (3) #500KCMIL + (1) #5000 KCMILG in 3" C (#, size wire & conduit)					
Description	LOAD (KVA)			Brk. Trip (A)	Poles	SLP3		LOAD (KVA)			Brk. Trip (A)	Poles	Description
	A	B	C			Ckt. #	A	B	C				
PANEL 'SLP2'	35.6			150	3	1	2	3.1			20	1	LTG. - 3RD FLOOR
-		32.3		-	-	3	4		3.2		20	1	LTG. - 4TH FLOOR
-			34.7	-	-	5	6			3.5	20	1	LTG. - 5TH FLOOR
XFMR 'ST - 3'	5.3			25	3	7	8	2.2			20	1	LTG. - 6TH FLOOR
-		7.0		-	-	9	10		2.2		20	1	LTG. - 7TH FLOOR
-			6.8	-	-	11	12			36.5	175	3	PANEL 'SLP5'
XFMR 'ST - 6'	6.9			50	3	13	14	37.6			-	-	-
-		3.0		-	-	15	16		35.9		-	-	-
-			4.5	-	-	17	18			0.5	100	3	LTG. - LOBBY 1
ELEV - 1	21.3			150	3	19	20				-	-	-
-		21.3		-	-	21	22				-	-	-
-			21.3	-	-	23	24				20	1	SPARE
SPARE				20	1	25	26				20	1	SPARE
SPACE				-	-	27	28				-	-	SPACE
						29	30						
	69.1	63.6	67.3					42.9	41.3	40.5			
Total Load on Phase A:	112.0			KVA									
Total Load on Phase B:	104.9			KVA		Total Load on Panel:		328.4		kVA Demand			
Total Load on Phase C:	107.8			KVA				395.2		A			

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Voltage: 208Y / 120V						50		Feeder (3) #8 + (1) #8G in 3/4" C						
								(#, size wire & conduit)						
Description	LOAD (KVA)			Brk. Trip (A)	Poles	SRP3		LOAD (KVA)			Brk. Trip (A)	Poles	Description	
	A	B	C			Ckt. #	A	B	C					
RECEPT. - 3RD FLOOR	0.4			20	1	1	2	1.0			20	2	WH - 2K	
AC - 3E		1.8		20	1	3	4		1.0		-	-	-	
AC - 4E			1.8	20	1	5	6			1.0	20	2	WH - 2K	
RECEPT. - 4TH FLOOR	0.4			20	1	7	8	1.0			-	-	-	
RECEPT. - ELEC. CLOSET		0.2		20	1	9	10		1.5		20	2	WH - 3K	
AC - LOB			0.9	20	1	11	12			1.5	-	-	-	
CU - LOB	0.6			20	2	13	14	0.4			20	1	RECEPT. - LOBBY 1	
-		0.6		-	-	15	16		0.4		20	1	HOLD OPEN BOOSTER	
AUTOMATIC DOOR			1.2	20	1	17	18			0.4	20	1	HOLD OPEN BOOSTER	
WH - 3K	1.5			20	2	19	20				20	1	SPARE	
-		1.5		-	-	21	22				20	1	SPARE	
SPARE				20	1	23	24				20	1	SPARE	
	2.9	4.1	3.9					2.4	2.9	2.9				
Total Load on Phase A:			5.3	KVA										
Total Load on Phase B:			7.0	KVA		Total Load on Panel:			19.9	kVA Demand				
Total Load on Phase C:			6.8	KVA					55.1	A				

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Voltage: 480Y / 277V						175		Feeder (3) #2/0 in 2" C (#, size wire & conduit)					
Description	LOAD (KVA)			Brk. Trip (A)	Poles	SLP5		LOAD (KVA)			Brk. Trip (A)	Poles	Description
	A	B	C			Ckt. #	A	B	C				
XFMR 'ST - 5'	7.7			50	3	1	2	2.4			20	3	CU - 4E
-		8.8		-	-	3	4		2.4		-	-	-
-			7.1	-	-	5	6			2.4	-	-	-
CU - B	2.4			20	3	7	8	2.4			20	3	CU - 5W
-		2.4		-	-	9	10		2.4		-	-	-
-			2.4	-	-	11	12			2.4	-	-	-
CU - G	2.4			20	3	13	14	2.4			20	3	CU - 5E
-		2.4		-	-	15	16		2.4		-	-	-
-			2.4	-	-	17	18			2.4	-	-	-
CU - 2	2.4			20	3	19	20	2.4			20	3	CU - 6
-		2.4		-	-	21	22		2.4		-	-	-
-			2.4	-	-	23	24			2.4	-	-	-
CU - 3W	2.4			20	3	25	26	2.4			20	3	CU - 7
-		2.4		-	-	27	28		2.4		-	-	-
-			2.4	-	-	29	30			2.4	-	-	-
CU - 3E	2.4			20	3	31	32	2.4			20	3	CU - APT
-		2.4		-	-	33	34		2.4		-	-	-
-			2.4	-	-	35	36			2.4	-	-	-
CU - 4W	2.4			20	3	37	38				20	1	SPARE
-		2.4		-	-	39	40				-	-	-
-			2.4	-	-	41	42				-	-	-
	22.1	23.2	19.1					14.4	14.4	14.4			
Total Load on Phase A:			36.5	KVA									
Total Load on Phase B:			37.6	KVA		Total Load on Panel:			111.8	kVA Demand			
Total Load on Phase C:			33.5	KVA					134.5	A			

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Voltage: 208Y / 120V					100		Feeder (3) #3 + (1) #3G in 1 1/4" C (#, size wire & conduit)						
Description	LOAD (KVA)			Brk. Trip (A)	Poles	SRP5		LOAD (KVA)			Brk. Trip (A)	Poles	Description
	A	B	C			Ckt. #	A	B	C				
RECEPT. - 3RD FLOOR	0.4			20	1	1	2	1.0			20	2	WH - 2K
AC - 3W		1.8		20	1	3	4		1.0		-	-	-
WH - 2K			1.0	20	2	5	6			1.5	20	2	WH - 3K
-	1.0			-	-	7	8	1.5			-	-	-
AC - 4W		1.8		20	1	9	10		1.0		20	2	WH - 2K
RECEPT. - 4TH FLOOR			0.4	20	1	11	12			1.0	-	-	-
RECEPT. - 5TH FLOOR	0.4			20	1	13	14	1.5			20	2	WH - 3K
CU - OFF		1.7		30	2	15	16		1.5		-	-	-
-			1.7	-	-	17	18			1.5	20	2	WH - 3K
RECEPT. - ROOF	0.4			20	1	19	20	1.5			-	-	-
SPARE				20	1	21	22				20	1	SPARE
SPARE				20	1	23	24				20	1	SPARE
SPARE				20	1	25	26				-	-	SPACE
SPACE				-	-	27	28						
						29	30						
	2.2	5.3	3.1					5.5	3.5	4.0			
Total Load on Phase A:	7.7			KVA									
Total Load on Phase B:	8.8			KVA		Total Load on Panel:			24.5	kVA Demand			
Total Load on Phase C:	7.1			KVA					67.9	A			

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Voltage:		208Y / 120V				100		Feeder (3) #2 + (1) #2G in 1 1/4" C					
								(#, size wire & conduit)					
Description	LOAD (KVA)			Brk. Trip (A)	Poles	SRP6		LOAD (KVA)			Brk. Trip (A)	Poles	Description
	A	B	C			Ckt. #	A	B	C				
WH - 2K	1.0			20	2	1	2	0.6			20	1	RECEPT. - 7TH FLOOR
-		1.0		-	-	3	4		0.4		20	1	RECEPT. - 5TH FLOOR
RECEPT. ELEV. MACH. RM.			0.2	20	1	5	6			1.8	20	1	AC - 7
AC - 6	1.8			20	1	7	8	1.0			20	2	WH - 2K
RECEPT. - 6 TH FLOOR		0.6		20	1	9	10		1.0		-	-	-
WH - 3K			1.5	20	2	11	12			1.0	20	2	WH - 2K
-	1.5			-	-	13	14	1.0			-	-	-
SPARE				20	1	15	16				20	1	SPARE
SPARE				20	1	17	18				20	1	SPARE
SPACE				-	-	19	20				-	-	SPACE
						21	22						
						23	24						
	4.3	1.6	1.7					2.6	1.4	2.8			
Total Load on Phase A:		6.9		KVA									
Total Load on Phase B:		3.0		KVA		Total Load on Panel:		15.2		kVA Demand			
Total Load on Phase C:		4.5		KVA				42.1		A			

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Voltage: 480Y / 277V						30		Feeder (3) #10 + (1) #10G in 3/4" C (#, size wire & conduit)					
Description	LOAD (KVA)			Brk. Trip (A)	Poles	SELP		LOAD (KVA)			Brk. Trip (A)	Poles	Description
	A	B	C			Ckt. #	A	B	C				
LTG. - BASEMENT	0.4			20	1	1	2	0.6			20	1	LTG. - STAIRWELL 1
LTG. - GROUND		0.4		20	1	3	4		0.6		20	1	LTG. - STAIRWELL 2
LTG. - 2ND FLOOR			0.5	20	1	5	6			2.0	20	3	XFMR 'ST - E'
LTG. - 3ND FLOOR	1.3			20	1	7	8				-	-	-
LTG. - 4TH FLOOR		1.2		20	1	9	10				-	-	-
LTG. - 5TH FLOOR			1.2	20	1	11	12			0.1	20	1	LTG. - LOBBY
LTG. - 6TH FLOOR	0.9			20	1	13	14	0.2			20	1	LTG. - EXT. STAIR
LTG. - 7TH FLOOR		0.9		20	1	15	16		0.5		20	1	LTG. DISCHARGE
SPARE				20	1	17	18				20	1	SPARE
SPARE				20	1	19	20				20	1	SPARE
SPACE				-	-	21	22				-	-	SPACE
						23	24						
	2.6	2.5	1.7					0.8	1.1	2.1			
Total Load on Phase A:			3.4	KVA	Total Load on Panel:			15	kVA Demand				
Total Load on Phase B:			3.6	KVA				15.6	A				
Total Load on Phase C:			3.8	KVA									

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Voltage: 208Y / 120V						40		Feeder (3) #8 + (1) #8G in 3/4" C					
								(#, size wire & conduit)					
Description	LOAD (KVA)			Brk. Trip (A)	Poles	SERP		LOAD (KVA)			Brk. Trip (A)	Poles	Description
	A	B	C			Ckt. #	A	B	C				
SECURITY PANEL	1.0			20	1	1	2	1.0			20	1	SECURITY PANEL
SPARE				20	1	3	4				20	1	SPARE
SPARE				20	1	5	6				20	1	SPARE
SPARE				20	1	7	8				20	1	SPARE
SPACE				-	-	9	10				-	-	SPACE
						11	12						
						13	14						
						15	16						
						17	18						
						19	20						
						21	22						
						23	24						
	1.0	0	0					1.0	0	0			
Total Load on Phase A:		2.0		KVA									
Total Load on Phase B:		0		KVA		Total Load on Panel:		2.0		kVA Demand			
Total Load on Phase C:		0		KVA				5.6		A			