

CKT #	DESCRIPTION	NOTE	BREAKER POLE	AMP.	LOAD (KW)			LOAD (KVA)	BREAKER AMP.	POLE	NOTE	DESCRIPTION	CKT. #	
					A	B	C							
1	SALES AREA LTC/ CEILING FAN		1	20	0.84	1.1		0.84	20	1		RESTROOM/OFFICE/STAGING LTS/EF1/EF2	2	
2	SALES AREA LTC		1	20	0.76		0.9	0.76	20	1	6	REC FLOOR BOX	4	
3	STOCK ROOM LIGHTING		4	1	20	1.28		1.5	18	20	1	6	REC FLOOR BOX	6
7	STOCK ROOM LIGHTING		4	1	20	1.28	1.9		0.60	20	1	1	REC COLOR SELECTOR	8
9	EXTERIOR BUILDING LIGHTING		1	20	0.74		0.8	0.54	20	1		REC SALE FLOOR	10	
11	SIGNAGE		3	1	20	1.20		1.6	0.36	20	1	1	REC HI/LOW T-WALL	12
13	SIGNAGE		3	1	20	1.20	2.0		0.84	20	1	1	REC SAT OFFICE	14
15	LIGHTING CONTROLS		1	20	0.50		1.0	0.34	20	1	1	REC OFFICE	16	
17	SITE LIGHTING		4	1	20	0.33		0.5	0.15	20	1	1	REC- STAGING	18
19	SITE LIGHTING		4	1	20	0.33	0.5		0.15	20	1	1	REC- STAGING	20
21	PRIME SIGN		7	1	20	1.20		1.6	0.36	20	1	1	REC- STAGING	22
23	HAND DRYER		2	1	20	1.50		1.7	0.18	20	1	1	REC- STAGING	24
25	HAND DRYER		2	1	20	1.50	1.7		0.18	20	1	1	REC- STAGING	26
27	REC TOILET		1	1	20	0.36	0.5		0.18	20	1	1	REC- STAGING	28
29	WATER COOLER		1	1	20	0.30		0.7	0.18	20	1	1	REC- STAGING	30
31	BATTERY CHARGER		1	1	20	0.48	0.4		0.18	20	1	1	REC- STAGING	32
33	STOCK ROOM		1	20	0.72		1.4	0.72	20	1	1	REC- STAGING	34	
35	STOCK ROOM		1	20	0.72		2.2	2.2	1.50	20	2	2	WATER HEATER	36
37	TTTB		1	20	0.36	1.9		1.50						38
39	AUTO DGDR FRONT		2	1	20	1.20	1.5		0.25	20	1	1	LV TRANSFORMER (REAR DOOR BELL)	40
41	RTU-1 FLA: 75 MCA: 76		5	3	80	9.00		9.4	0.36	20	1	1	GENERAL PURPOSE REC SALE	42
43	393, #6 G. 1n (1) 1-1/4" C. EA					9.00	9.2		0.18	20	1	6	REC FLOOR BOX	44
45						9.00	10.7		0.18	20	1	2,3	EF-3	46
47	HOOD RECEPTACLE		1	20	0.28		0.5	0.30	20	1	1	1	CONTROLLED RECEPTACLES	48
49	UN-2 FLA: 112.5 MCA: 112.5		5	3	150	13.50	27.0		13.50	150	3	5	UN-1 FLA: 112.5 MCA: 112.5	50
51	391/0, #6 G. 1n (1) 1-1/2" C. EA					13.50	27.0		13.50				#3/0, #6 G. 1n (1) 1-1/2" C. EA	52
53						13.50	27.0		13.50					54
55	SPACE		1			0.0				1			SPACE	56
57	SPACE		1			0.0				1			SPACE	58
59	SPACE		1			0.0				1			SPACE	60
61	SHOW RECEPTACLE		1	20	0.36	0.7		0.36	20	1	1	1	REC SALES FLOOR	62
63	SHOW RECEPTACLE		1	20	1.05		1.1		20	1	1	1	SPARE	64
65	SHOW RECEPTACLE		1	20	0.90		0.9		20	1	1	1	SPARE	66
67	SPACE		1			0.0				1			SPACE	62
68	SPACE		1			0.0				1			SPACE	66
69	SPACE		1			0.0				1			SPACE	64

VOLTAGE 208Y/120V  
 PHASE 3  
 WIRE 4  
 MAINS 400 MCB  
 RATING 400 (AMPS)  
 WITH I. G. BAR NO

MODEL EATON PRL3A  
 MOUNTING SURFACE  
 FEEDER SEE RISER  
 MIN AIC 18K

46.7 46.5 45.9 TOTAL KVA PER PHASE  
 130 129 127 AMPS PER PHASE

NOTES:  
 1) PROVIDE GFCI BREAKER.  
 2) PROVIDE LOCKABLE BREAKER AS PER NEC 422.31.  
 3) PROVIDE LOCKABLE BREAKER AS PER NEC 600.6.  
 4) PROVIDE TYPE "C" BREAKER.  
 5) PROVIDE HACR TYPE BREAKER.  
 6) 2, 6, & 44 SHARE (1) 1" C. DERATE CONDUCTORS ((6)#10, (3) #10G. IN 1" C.)  
 7) PROVIDE (2)#10, #10G. IN 1" C.

ITEMS	CON.	%	DEM.
RECEPTACLES	75.9	code	43.0
KITCHEN	0.0	65%	0.0
HVAC	42.2	100%	42.2
LIGHTS (INT)	4.8	125%	6.0
LIGHTS (EXT)	0.9	125%	1.1
MISC.	15.4	100%	15.4
TOTAL KVA	139.1		107.6
TOTAL AMPS	386		299

**VOLTAGE DROP CALCULATIONS - PANEL 'A'**

Circuit #	Load (kW)	Load (A)	Load Type	Sets of Wires	Length	Voltage	Wire Size	Wire Type	Conduit Type	Z (Ω/ft)	% Voltage Drop
A-1	0.84	7.00	Lighting	1	100 ft	120/1	#12	Cu	Metallic	2.000	2.3
A-3	0.76	6.33	Lighting	1	95 ft	120/1	#12	Cu	Metallic	2.000	2.0
A-5	1.28	10.67	Lighting	1	96 ft	120/1	#12	Cu	Metallic	2.000	2.0
A-7	1.28	10.67	Lighting	1	60 ft	120/1	#12	Cu	Metallic	2.000	2.1
A-9	0.24	1.96	Lighting	1	80 ft	120/1	#12	Cu	Metallic	2.000	0.5
A-11	1.20	10.00	Misc	1	85 ft	120/1	#12	Cu	Metallic	2.000	2.8
A-13	1.20	10.00	Misc	1	85 ft	120/1	#12	Cu	Metallic	2.000	2.8
A-15	0.50	4.17	Misc	1	5 ft	120/1	#12	Cu	Metallic	2.000	0.1
A-17	0.33	2.77	Lighting	1	64 ft	120/1	#12	Cu	Metallic	2.000	0.6
A-19	0.33	2.77	Lighting	1	100 ft	120/1	#12	Cu	Metallic	2.000	0.9
A-21	1.20	10.00	Misc	1	115 ft	120/1	#10	Cu	Metallic	1.200	2.3
A-23	1.50	12.50	Misc	1	70 ft	120/1	#12	Cu	Metallic	2.000	2.9
A-25	1.50	12.50	Misc	1	72 ft	120/1	#12	Cu	Metallic	2.000	3.0
A-27	0.36	3.00	Receptac	1	70 ft	120/1	#12	Cu	Metallic	2.000	0.7
A-28	0.50	4.17	Misc	1	75 ft	120/1	#12	Cu	Metallic	2.000	1.0
A-31	0.18	1.50	Receptac	1	70 ft	120/1	#12	Cu	Metallic	2.000	0.4
A-33	0.72	6.00	Receptac	1	45 ft	120/1	#12	Cu	Metallic	2.000	0.9
A-35	0.72	6.00	Receptac	1	64 ft	120/1	#12	Cu	Metallic	2.000	1.3
A-37	0.36	3.00	Misc	1	5 ft	120/1	#12	Cu	Metallic	2.000	0.1
A-39	1.20	10.00	Misc	1	85 ft	120/1	#12	Cu	Metallic	2.000	2.8
A-41	9.00	74.94	HVAC	1	60 ft	208/3	#3	Cu	Metallic	0.250	0.9
A-43	9.00	74.94	HVAC	1	60 ft	208/3	#3	Cu	Metallic	0.250	0.9
A-45	9.00	74.94	HVAC	1	60 ft	208/3	#3	Cu	Metallic	0.250	0.9
A-47	0.18	1.50	Receptac	1	60 ft	120/1	#12	Cu	Metallic	2.000	0.3
A-49	13.50	112.41	HVAC	1	62 ft	208/3	#10	Cu	Metallic	0.120	0.7
A-51	13.50	112.41	HVAC	1	62 ft	208/3	#10	Cu	Metallic	0.120	0.7
A-53	13.50	112.41	HVAC	1	62 ft	208/3	#10	Cu	Metallic	0.120	0.7
A-61	0.36	3.00	Receptac	1	90 ft	120/1	#12	Cu	Metallic	2.000	0.9
A-63	1.08	9.00	Receptac	1	100 ft	120/1	#12	Cu	Metallic	2.000	2.7
A-65	0.90	7.50	Receptac	1	110 ft	120/1	#12	Cu	Metallic	2.000	2.8
A-2	0.64	5.34	Lighting	1	85 ft	120/1	#12	Cu	Metallic	2.000	1.2
A-4	0.18	1.50	Receptac	1	55 ft	120/1	#10	Cu	Metallic	1.200	0.2
A-6	0.18	1.50	Receptac	1	55 ft	120/1	#10	Cu	Metallic	1.200	0.2
A-8	0.60	5.00	Misc	1	85 ft	120/1	#12	Cu	Metallic	2.000	2.0
A-10	0.54	4.50	Receptac	1	75 ft	120/1	#12	Cu	Metallic	2.000	1.1
A-12	0.36	3.00	Receptac	1	60 ft	120/1	#12	Cu	Metallic	2.000	0.6
A-14	0.84	7.00	Receptac	1	40 ft	120/1	#12	Cu	Metallic	2.000	0.9
A-16	0.54	4.50	Receptac	1	45 ft	120/1	#12	Cu	Metallic	2.000	0.7
A-18	0.18	1.50	Receptac	1	45 ft	120/1	#12	Cu	Metallic	2.000	0.2
A-20	0.18	1.50	Receptac	1	45 ft	120/1	#12	Cu	Metallic	2.000	0.2
A-22	0.36	3.00	Receptac	1	60 ft	120/1	#12	Cu	Metallic	2.000	0.5
A-24	0.18	1.50	Receptac	1	54 ft	120/1	#12	Cu	Metallic	2.000	0.3
A-26	0.18	1.50	Receptac	1	57 ft	120/1	#12	Cu	Metallic	2.000	0.3
A-28	0.18	1.50	Receptac	1	57 ft	120/1	#12	Cu	Metallic	2.000	0.3
A-30	0.18	1.50	Receptac	1	61 ft	120/1	#12	Cu	Metallic	2.000	0.3
A-32	0.18	1.50	Receptac	1	66 ft	120/1	#12	Cu	Metallic	2.000	0.3
A-34	0.18	1.50	Receptac	1	69 ft	120/1	#12	Cu	Metallic	2.000	1.4
A-36	0.18	1.50	Misc	1	80 ft	208/1	#10	Cu	Metallic	1.200	2.7
A-38	1.50	14.00	Misc	1	80 ft	208/1	#10	Cu	Metallic	1.200	2.7
A-40	0.25	2.08	Misc	1	60 ft	120/1	#12	Cu	Metallic	2.000	0.4
A-42	0.36	3.00	Receptac	1	50 ft	120/1	#12	Cu	Metallic	2.000	0.5
A-44	0.18	1.50	Receptac	1	55 ft	120/1	#10	Cu	Metallic	1.200	0.2
A-46	1.08	13.80	HVAC	1	15 ft	120/1	#12	Cu	Metallic	2.000	0.7
A-48	0.36	3.00	Receptac	1	50 ft	120/1	#12	Cu	Metallic	2.000	0.5
A-50	13.50	112.41	HVAC	1	80 ft	208/3	#10	Cu	Metallic	0.120	0.9
A-52	13.50	112.41	HVAC	1	80 ft	208/3	#10	Cu	Metallic	0.120	0.9
A-54	13.50	112.41	HVAC	1	80 ft	208/3	#10	Cu	Metallic	0.120	0.9
A-56	0.36	3.00	Receptac	1	90 ft	120/1	#12	Cu	Metallic	2.000	0.9

**FAULT CURRENT CALCULATIONS**

Basic Assumptions: Transformer Utility Xtnr Rating 150 KVA Secondary 208 V Impedance 2.0% SCA-end 20,819 A

Short circuit current through each cable segment:

From	To	Parallel	Length	Voltage	Wire Size	Wire Type	Conduit	C'	SCA-beg	SCA-end
Utility Xtnr	CT CABINET	2 Sets	50 ft	208 V	#3/0	Cu	NonMetallic	13023	20,819 A	15,877 A
CT CABINET	PANEL A	2 Sets	5 ft	208 V	#3/0	Cu	Metallic	12844	16,877 A	15,478 A

\* Constant is calculated as: 1 divided by square root of impedance times 1,000 (impedance values from IEEE Std 241-1990 page 420)

FAULT CURRENT CALCULATION NOTES:  
 EC SHALL PROVIDE A TESTED SERIES RATED DISTRIBUTION SYSTEM CAPABLE OF WITHSTANDING THE ACTUAL AVAILABLE FAULT CURRENT. AT THE TIME OF DESIGN THE TRANSFORMER SPECIFICATIONS AND LOCATION WERE NOT KNOWN. THESE CALCULATIONS REPRESENT A WORST CASE ESTIMATE BASED ON AN INFINITE BUS DESIGN. EC SHALL ONLY USE THESE CALCULATIONS AS A GUIDELINE FOR THE PROPER SELECTION AND COORDINATION OF BREAKERS. ACTUAL VALUES WILL VARY ACCORDING TO NUMEROUS VARIABLES. VALUES ARE VALID ONLY FOR A 150KVA TRANSFORMER WITH AN IMPEDANCE OF 2.00% OR GREATER AND SERVICE LATERALS NOT LESS THAN 55 FEET IN TOTAL LENGTH. EC SHALL FIELD VERIFY TRANSFORMER RATINGS AND LOCATION AND ALL CONDUCTOR VARIABLES PRIOR TO PURCHASING BREAKERS. ADJUST AS REQUIRED. CONSULT DESIGN ENGINEER AS NEEDED.

**GENERAL NOTES**

- ELECTRICAL CONTRACTOR SHALL PROVIDE A TYPED DIRECTORY TO IDENTIFY CIRCUITS WITH TRANSPARENT PROTECTOR FOR EACH PANEL.
- ANY DEVIATIONS FROM THE DESIGN PLANS SHALL ONLY BE PERFORMED IF APPROVED BY THE OWNER'S REPRESENTATIVE, THE DESIGN ENGINEER, AND THE LOCAL INSPECTOR. ALL WORK SHALL MEET OR EXCEED THE MINIMUM REQUIREMENTS OF ALL APPLICABLE CODES AND STANDARDS. HOWEVER, ANY DEVIATION FROM THE DESIGN PLANS IMPLIED BY LOCAL CODES THAT SUGGESTS INSTALLATION OF LESS THAN THE REQUIREMENTS SPECIFIED IN THE DESIGN PLANS SHALL NOT BE ALLOWED WITHOUT APPROVAL BY THE OWNER'S REPRESENTATIVE OR THE DESIGN ENGINEER. ANY UNAPPROVED DEVIATION FROM THE DESIGN PLANS SHALL BE CORRECTED AT THE CONTRACTOR'S EXPENSE. ALL WORK SHALL BE PERFORMED BY A LICENSED CONTRACTOR. CONTRACTOR SHALL INSTALL COMPLETE AND WORKING SYSTEMS, EQUIPMENT AND COMPONENTS IN ACCORDANCE WITH MINIMUM REQUIREMENTS SHOWN IN THESE PLANS.
- E.C. SHALL VERIFY ELECTRICAL REQUIREMENTS OF ALL EQUIPMENT W/ NAMEPLATE DATA PRIOR TO INSTALLATION. MATCH RECEPTACLES, PLUGS AND CORD EXTENSIONS AS REQUIRED. PROVIDE DISCONNECT TO MATCH EQUIPMENT WHERE REQUIRED.
- ALL CIRCUIT BREAKERS IN PANEL SHALL BE SERIES RATED WITH MAIN BREAKER OR FULLY RATED FOR THE SYSTEM. E.C. TO PROVIDE AND INSTALL PLACARDS ON EACH PANEL INDICATING PANEL'S SOURCE, INCLUDING PANEL NAME AND FEEDER CIRCUIT NUMBER AND THE AVAILABLE FAULT CURRENT AND THE DATED CALCULATION. E.C. TO PROVIDE AND INSTALL PANEL MAP.
- E.C. SHALL RE-LABEL ALL ELECTRICAL PANELS CORRECTLY TO CORRESPOND WITH THE CHANGES TO THE ELECTRICAL SYSTEM, AS REQUIRED, PER IFC 605.3.1.
- E.C. SHALL COORDINATE WITH OWNER TO ACHIEVE REQUIRED CLEAR AND WORKING SPACE AROUND ELECTRICAL PANELS PER NEC 110.26
- E.C. SHALL PROVIDE ALL ELECTRICAL PANELS WITH ARC-FLASH WARNING LABELS PER NEC 110.16
- E.C. SHALL PROVIDE AND INSTALL PLACARDS ON EACH PANEL INDICATING PANEL'S SOURCE, INCLUDING PANEL NAME AND FEEDER CIRCUIT NUMBER.
- CIRCUIT BREAKERS FOR MULTI-CONDUCTOR CIRCUITS SHALL HAVE A COMMON TRIP FOR ALL CONDUCTORS.
- PANEL PLACARDS ARE TO BE MADE FROM LAMINATED PLASTIC PROVIDING A BLACK BACKGROUND TO WHITE ENGRAVED LETTERING.
- E.C. SHALL PROVIDE PERMANENT LABEL ON FRONT EXTERIOR OF PANEL STATING MAXIMUM AVAILABLE FAULT CURRENT AND DATE CALCULATED USING VALUE OBTAINED FROM LOCAL UTILITY COMPANY, PER NEC 110.24(A).
- E.C. SHALL PROVID