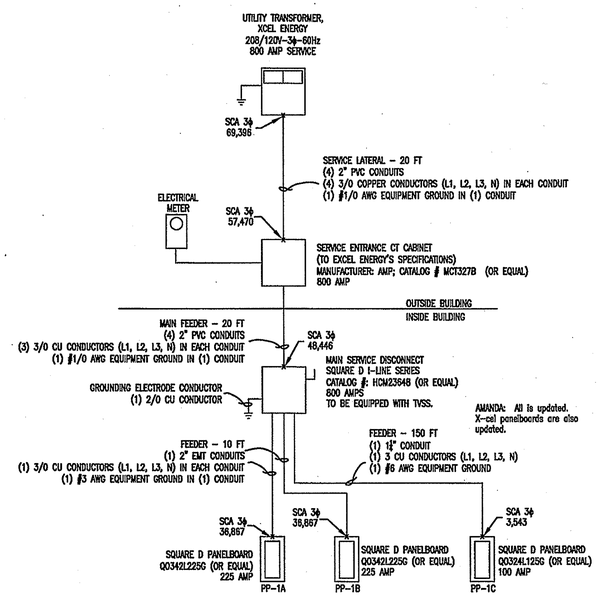


2 E6.1 POWER DISTRIBUTION ONE-LINE DIAGRAM

NO SCALE

Manufacturer: Square D	PP-1A								Mounted: Wall
Model #: QO342L225G	208/120V-3Φ-60Hz								Location: Storage (Room 108)
Panelboard Type: Main Power									AIC Rating: 65,000
RECEPT PER CIRCUIT	CIRCUIT NAME	VA	P.F.	WATTS	LUGS 225 AMPS			WATTS	P.F.	VA	CIRCUIT NAME	RECEPT PER CIRCUIT
	WH-2 Water Heater Unisex (Rm 115)	6000	1.00	6000	30A	1	2	20A	180	1.00	180	Telephone Board IG Receptacle (Rm 103)	1
6	Rooms 102,103 & 104 General Power	900	1.00	900	20A	3	4	20A	720	1.00	720	Multi Pur. (Rm 109).Rec. N Wall & Ceiling Projector	4
	Fireplace (Fireside Rm 121)	209	1.00	209	20A	5	6	20A	84	1.00	84	Menu Sign Coffee Bar	
	RTU Receptacles (Roof)	0	1.00	0	20A	7	8	20A	720	1.00	720	Fireside Rm (Rm 121) Receptacles	4
2	RTU Service Receptacle (Roof)	360	1.00	360	20A	9	10	20A	900	1.00	900	Gathering (Rm 101) Receptacles	5
3	Kitchen Small Appliance Ckt #1	1500	1.00	1500	20A	11	12	20A	540	1.00	540	Rooms 105,107 & 108 General Receptacles	3
	Exhaust Fan EF-1 3/4 HP	533	1.00	533	20A	13	14	20A	1800	1.00	1,800	Steam Valves Women/Men	10
2	Kitchen Small Appliance Ckt #2	1500	1.00	1500	20A	15	16	20A	720	1.00	720	Multi-Purpose stage (Rm 109) Receptacles	4
		0	1.00	0	20A	17	18	20A	720	1.00	720	Classroom (Rm 110) Receptacles	4
		0	1.00	0		19	20	20A	720	1.00	720	Classroom (Rm 111) Receptacles	4
6	Outdoor Receptacles	1080	1.00	1080	20A	21	22	20A	720	1.00	720	Prayer/Classroom (Rm 112) Receptacles	4
4	Multi Purpose (Rm 109) Receptacles	720	1.00	720	20A	23	24	20A	1800	1.00	1,800	Steam Valves/Faucets Unisex, Men, Women	10
		0	1.00	0		25	26		0	1.00	0		
4	Fireside Rm (Rm 121) Receptacles	720	1.00	720	20A	27	28	20A	180	1.00	180	Ice Machine Coffee Bar (Rm 101A)	1
4	Outdoor Receptacles (Patio)	720	1.00	720	20A	29	30	20A	360	1.00	360	Hall by Bathrooms/Drinking Fountain Receptacles	2
		0	1.00	0		31	32	20A	540	1.00	540	Coffee Bar Receptacles (Rm 101A)	3
1	Refrigerator #2	1500	1.00	1500	20A	33	34	20A	1800	1.00	1,800	Refrigerator #1	1
	Range #1	4000	1.00	4000	50A	35	36	20A	540	1.00	540	Prayer/Classroom (Rm 112) Receptacles	3
		4000	1.00	4000		37	38		0	1.00	0		
	Range #2	4000	1.00	4000	50A	39	40		0	1.00	0		
		4000	1.00	4000		41	42		0	1.00	0		
												Grand total number of receptacles	94

Total Phase A VA	14,627.00	Panel P.F.	1.00	AF = Arc Fault Circuit Interruptor
Total Phase B VA	14,800.00	Power angle	-4.43	GF = Ground Fault Circuit Interruptor
Total Phase C VA	15,184.00	Total 3φ current	124.20	HA = HACR
Grand total VA	44,611.00			ST = Shunt Trip

Total Phase A watts	14,493.60	LOAD BALANCE SUMMARY	
Total Phase B watts	14,800.00	A-B	B-C	C-A
Total Phase C watts	15,184.00	-306.40	-304.00	690.40
Grand total watts	44,477.60	-2.11%	-2.05%	4.65%

Neutral Current
1.37

Manufacturer: Square D	PP-1C								Mounted: Wall
Model #: QO324L125G	208/120V-3Φ-60Hz								Location: Storage (Rm 117)
Panelboard Type: Lighting/Power									AIC Rating: 65,000
RECEPT PER CIRCUIT	CIRCUIT NAME	VA	P.F.	WATTS	LUGS 100 AMPS			WATTS	P.F.	VA	CIRCUIT NAME	RECEPT PER CIRCUIT
	Office (118), Office/Classrm (114) & Stor. (117) Lighting	840	1.00	840	20A	1	2	20A	720	1.00	720	Reception (Rm 120) Counter Power	4
	Office (113), Office/Classrm (116), Unisex (115) Lighting	917	1.00	917	20A	3	4	20A	720	1.00	720	Reception (Rm 120) Counter Power	4
	Office (119), Hallway & Reception Lighting	940	1.00	940	20A	5	6	20A	1080	1.00	1080	Office (Rm 119) IG Recept. South/East Wall	4
4	Office (Rm 119) IG Receptacles	720	1.00	720	20A	7	8	20A	1080	1.00	1080	Office/Classroom (Rm 116) IG Power	6
4	Office (Rm 119) IG Receptacles East Wall	720	1.00	720	20A	9	10	20A	1080	1.00	1080	Office/Classroom (Rm 114) IG Power	6
1	Unisex Bathroom (Rm 115) General Power	180	1.00	180	20A	11	12	20A	1080	1.00	1080	Office (Rm 118) IG Recept. South/West Wall	6
2	Office (Rm 118) IG Receptacles on North Wall	360	1.00	360	20A	13	14	20A	540	1.00	540	Reception (Rm 120) General Receptacles	3
5	Office (Rm 116) General Receptacles	900	1.00	900	20A	15	16	20A	0	1.00	0		
3	Office/Classroom (Rm 114) General Receptacles	540	1.00	540	20A	17	18	20A	360	1.00	360	Copier (Rm 118) Receptacles on half wall	2
2	Office (Rm 119) General Receptacles	360	1.00	360	20A	19	20	20A	0	1.00	0		
		0	1.00	0	15A	21	22	20A	0	1.00	0		
3	Office (Rm 116) Counter Receptacles	540	1.00	540	15A	23	24	20A	360	1.00	360	Hallway (Rm 113) General Receptacles	2
												Grand total number of receptacles	61

Total Phase A VA	4,720.00	Panel P.F.	1.00	AF = Arc Fault Circuit Interruptor
Total Phase B VA	4,537.00	Power angle	0.00	GF = Ground Fault Circuit Interruptor
Total Phase C VA	4,720.00	Total 3φ current	38.24	HA = HACR
Grand total VA	13,777.00			ST = Shunt Trip

Total Phase A watts	4,720.00	LOAD BALANCE SUMMARY	
Total Phase B watts	4,537.00	A-B	B-C	C-A
Total Phase C watts	4,720.00	383.00	-383.00	0.00
Grand total watts	13,777.00	8.11%	-8.03%	0.00%

Neutral Current
1.06

Manufacturer: Square D	PP-1B								Mounted: Wall
Model #: QO342L225G	208/120V-3Φ-60Hz								Location: Storage Room 108
Panelboard Type: Lighting/Power									AIC Rating: 65,000
RECEPT PER CIRCUIT	CIRCUIT NAME	VA	P.F.	WATTS	LUGS 225 AMPS			WATTS	P.F.	VA	CIRCUIT NAME	RECEPT PER CIRCUIT
	Multi-purpose rm 109 lighting ckt #1	1624	1.00	1624	20A	1	2	20A	1625	1.00	1625	Gathering, Stor., Women's, Classroom (110), Coffee Bar Lighting	
	Multi-purpose rm 109 lighting ckt #2	1584	1.00	1584	20A	3	4	20A	1647	1.00	1647	Men, Kitchen, Pantry, Cust., Gathering, Unisex Lighting	
	Multi-purpose rm 109 lighting ckt #3	1584	1.00	1584	20A	5	6	20A	1764	1.00	1764	Fireside Rm, Prayr/Classrm, Classrm (111) Lighting	
		6260	1.00	6260	50A	7	8		0	1.00	0		
	RV Post Receptacle	6260	1.00	6260		9	10	20A	21	1.00	21	Outdoor Stair Lights on Pillars	
1	RV Post Receptacle	180	1.00	180	20A	11	12	50A	6482	1.00	6482	Future Commerical Dishwasher	
		0	1.00	0		13	14		6482	1.00	6482	Kitchen (Rm 106)	
	Outdoor Lighting (Roof Mounted Wall Wash Lights)	800	1.00	800	20A	15	16	70A	6143	1.00	6143	Future Booster for Dishwasher	
	Night Lights - Lighting Ckt	160	1.00	160	20A	17	18		6143	1.00	6143	Kitchen (Rm 106)	
		0	1.00	0		19	20		0	1.00	0		
	Outdoor Lighting (Wall Pack & Front Entry Lights)		1.00	0	20A	21	22		0	1.00	0		
	Outdoor Lighting (Wall Wash Lights)	800	1.00	800	20A	23	24		0	1.00	0		
		0	1.00	0		25	26		0	1.00	0		
		0	1.00	0		27	28		0	1.00	0		
		0	1.00	0		29	30		0	1.00	0		
		0	1.00	0		31	32		0	1.00	0		
		0	1.00	0		33	34		0	1.00	0		
		0	1.00	0		35	36		0	1.00	0		
		0	1.00	0		37	38		0	1.00	0		
		0	1.00	0		39	40		0	1.00	0		
		0	1.00	0		41	42		0	1.00	0		
												Grand total number of receptacles	1

Total Phase A VA	16,141.00	Panel P.F.	1.00	AF = Arc Fault Circuit Interruptor
Total Phase B VA	16,645.00	Power angle	0.00	GF = Ground Fault Circuit Interruptor
Total Phase C VA	16,113.00	Total 3φ current	132.95	HA = HACR
Grand total VA	47,899.00			ST = Shunt Trip

Total Phase A watts	16,141.00	LOAD BALANCE SUMMARY	
Total Phase B watts	16,645.00	A-B	B-C	C-A
Total Phase C watts	16,113.00	496.00	-408.00	-88.00
Grand total watts	47,899.00	3.07%	-2.59%	-0.17%

Neutral Current
1.24

GRAND TOTAL POWER SUMMARY

MAIN SERVICE DISCONNECT
800 AMPS

PHASE	LATERAL TO	VA	P.F.	WATTS	CB SIZE
1	PP-1A	14,627	1.00	14,583	200A
2		14,800	1.00	14,755	
3		15,184	1.00	15,139	
1	PP-1B	16,141	1.00	16,141	200A
2		15,645	1.00	15,645	
3		16,113	1.00	16,113	
1	PP-1C	4,720	0.80	3,776	100A
2		4,337	0.80	3,470	
3		4,720	0.80	3,776	
1	RTU-1	7,566	0.80	6,053	75A
2		7,566	0.80	6,053	
3		7,566	0.80	6,053	
1	RTU-2	7,566	0.80	6,053	75A
2		7,566	0.80	6,053	
3		7,566	0.80	6,053	
1	RTU-3	7,566	0.80	6,053	50A
2		7,566	0.80	6,053	
3		7,566	0.80	6,053	
1	RTU-4	4,671	0.80	3,737	60A
2		4,671	0.80	3,737	
3		4,671	0.80	3,737	
1	RTU-5	5,332	0.80	4,266	15A
2		5,332	0.80	4,266	
3		5,332	0.80	4,266	
1	MAU-1	997	1.00	997	60A
2		997	1.00	997	
3		997	1.00	997	
1	SURGE PROTECTION	60	1.00	60	60A
2		60	1.00	60	
3		60	1.00	60	

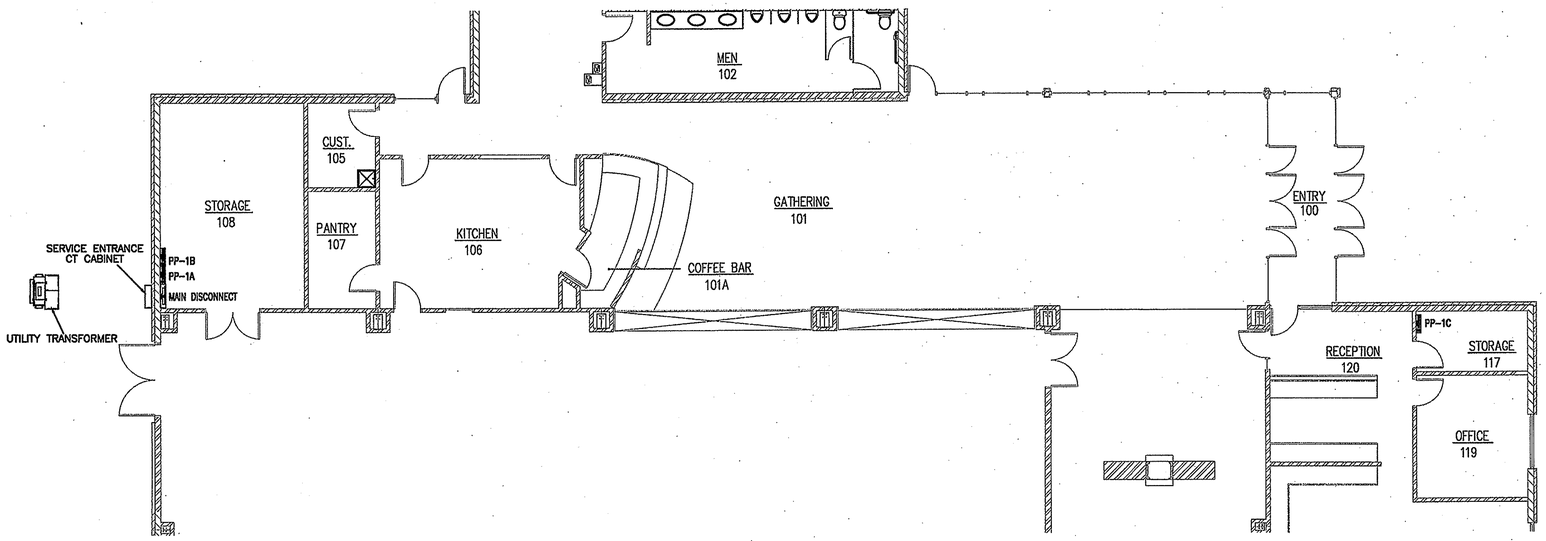
POWER STATISTICS

Total Phase A VA	69,186
Total Phase B VA	68,460
Total Phase C VA	69,715
Grand total VA	207,361
Total Phase A watts	61,858
Total Phase B watts	61,028
Total Phase C watts	62,195
Grand total watts	184,872
Panel P.F.	0.89
Power angle	26.94
Total 3φ current	645
Neutral Current	3.34

LOAD BALANCE SUMMARY		
A-B	B-C	C-A
630	-1,157	527
1.02%	-1.90%	0.85%

Note: Shaded areas are calculated automatically or calculated from other sheets

3 E6.1 PANELBOARD SCHEDULES



1 E6.1 POWER DISTRIBUTION LAYOUT

SCALE: 1/8" = 1'-0"

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REVISION	DATE

I hereby certify that this plan, specification or report was prepared by me or under my direct supervision and that I am a duly Licensed Engineer under the laws of the state of Minnesota.

R. Scott Jones

R. Scott Jones, P.E.

02/09/2007 (Date) 25389 (License No.)

POWER DISTRIBUTION & PANELBOARD SCHEDULES

PROJECT NO.:	08752
SCALE:	AS NOTED
DATE:	02/09/2007
DRAWN BY:	ALR
CHECKED BY:	RSJ

DESIGN DEVELOPMENT

E6.1

Duffy Project File: 08752