

**HVAC POWER PLAN**  
SCALE: 1/8" = 1'-0"

- KEY NOTES**
- 1 NEW PANEL, LPA.
  - 2 NEW PANEL, LPA.
  - 3 RELAYED ROOF 9FT RECEPTACLE ON ROOF.

**SMOKE DETECTOR NOTE**

SMOKE DETECTORS MOUNTED IN BERTHO DUCT, AUTOMATIC POWER SOURCE OF THE MECHANICAL UNIT UPON DETECTION OF SMOKE IN THE MAIN RETURN AIR DUCT. SMOKE ASSESSOR FOR SMOKE DETECTION SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURERS INSTALLATION INSTRUCTIONS. SUCH DEVICES SHALL BE COMPATIBLE WITH AND MOUNTED TO THE SYSTEM WHERE FIRE DETECTION OR ALARM SYSTEMS ARE PROVIDED FOR THE BUILDING. THE SMOKE DETECTOR SHALL BE SUPERVISED BY SUCH SYSTEM, SHALL BE PROVIDED AND WIRED BY ELECTRICAL AND INSTALLED BY MECHANICAL. INTERLOCK BY MECHANICAL. DUCT SMOKE DETECTORS SHALL BE PROVIDED WITH A REMOTE LED INDICATOR/RESET THRU THE CEILING LEVEL PER NFPA 72 5-8.3 AND 5-10.6.6. ACCESS DOORS AND PANELS SHALL BE PROVIDED FOR CLEANING PER NFPA 70A. THE LOCATION OF ALL DETECTORS IN AIR DUCT SYSTEMS SHALL BE PERMANENTLY AND CLEARLY IDENTIFIED AND RECORDED.

**FAULT CURRENT CALCULATIONS**

USED 858PMI 99TH ELECTRICAL PROTECTION HANDBOOK (OCTOBER 1986) SYSTEM ANALYSIS

AVAILABLE FAULT CURRENT AT SECONDARY TERMINALS OF POWER TRANSFORMER = 65000A

1. FAULT X<sub>1</sub> AT 95.5% = 65000A

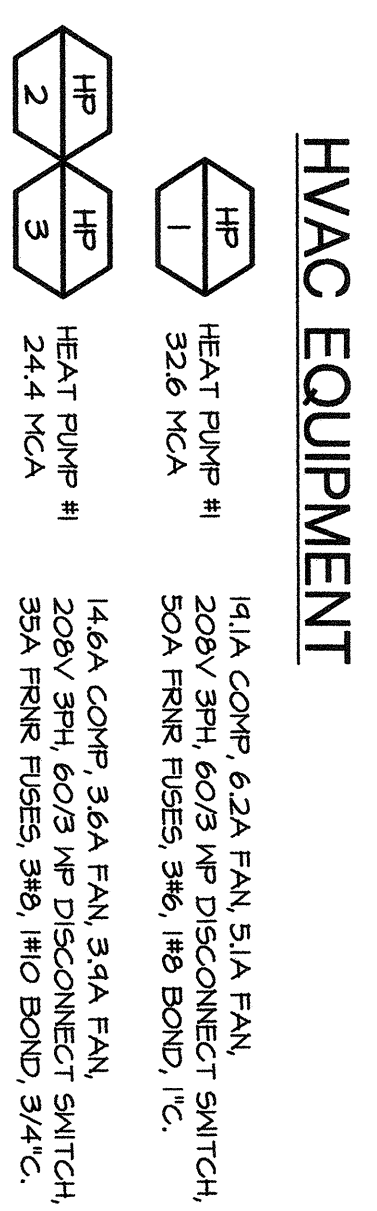
2. FAULT X<sub>2</sub> AT PANEL LPA/LPB/1 (20 FT. - 1 SET OF 20 CU)  $I = \frac{1793 \times 120 \times 65000}{1 \times 10795 \times 209} = 22970A$

$M = \frac{1}{1 + 6.04} = .1421$

1 S.C. = 65000 x .1421 = 9299A 97M

**SERIES RATED SYSTEM NOTES**

1. LIGHTING AND APPLIANCE BRANCH CIRCUIT BREAKERS AT PANELS OR WITH REMOTE BREAKERS IN ACCORDANCE WITH UL 484.
2. ALL RATING GIVEN AT PANEL BOARDS IS PROTECTIVE DEVICES, EACH DEVICE SHALL BE FULLY RATED OR SERIES RATED WITH FAULT CURRENT AS SHOWN ON THE ONE LINE DIAGRAM.
3. A TWO PER SERIES RATED SYSTEM IS SPECIFIED FOR 209V SYSTEMS.
4. MOTOR CONTRIBUTION TO THE FAULT CURRENT MEETS THE IN CRITERIA.
5. SWITCHBOARD COMPONENTS, INCLUDING OVERCURRENT PROTECTIVE DEVICES SHALL BE FULLY RATED FOR THE AVAILABLE AVAILABLE FAULT CURRENT.
6. PER NEC ARTICLE 110-22, PROVIDE IDENTIFICATION AT THE PANELBOARD ENCLOSED WHERE BREAKERS ARE APPLIED CAUTION: ALL AVAILABLE IDENTIFIED REPLACEMENT COMPONENTS REQUIRED.
7. PER NEC ARTICLE 110-22, PROVIDE IDENTIFICATION AT EACH DISCONNECTING MEANS FEEDING DOWNSTREAM DEVICES APPLIED IN SERIES COMBINATION. STATING ARE FED FROM THIS SOURCE HAVE ALL AVAILABLE IDENTIFIED REPLACEMENT COMPONENTS REQUIRED.
8. PER NEC ARTICLE 110-22, PROVIDE IDENTIFICATION AT EACH DISCONNECTING MEANS FEEDING DOWNSTREAM DEVICES APPLIED IN SERIES COMBINATION. STATING ARE FED FROM THIS SOURCE HAVE ALL AVAILABLE IDENTIFIED REPLACEMENT COMPONENTS REQUIRED.
9. NO DESIGN CHANGES MAY BE MADE TO THE SYSTEM WITHOUT THE PRIOR APPROVAL AND THE DESIGN ELECTRICAL ENGINEER AND THE CONTRACTOR'S ELECTRICAL INSPECTOR.



**HVAC EQUIPMENT**

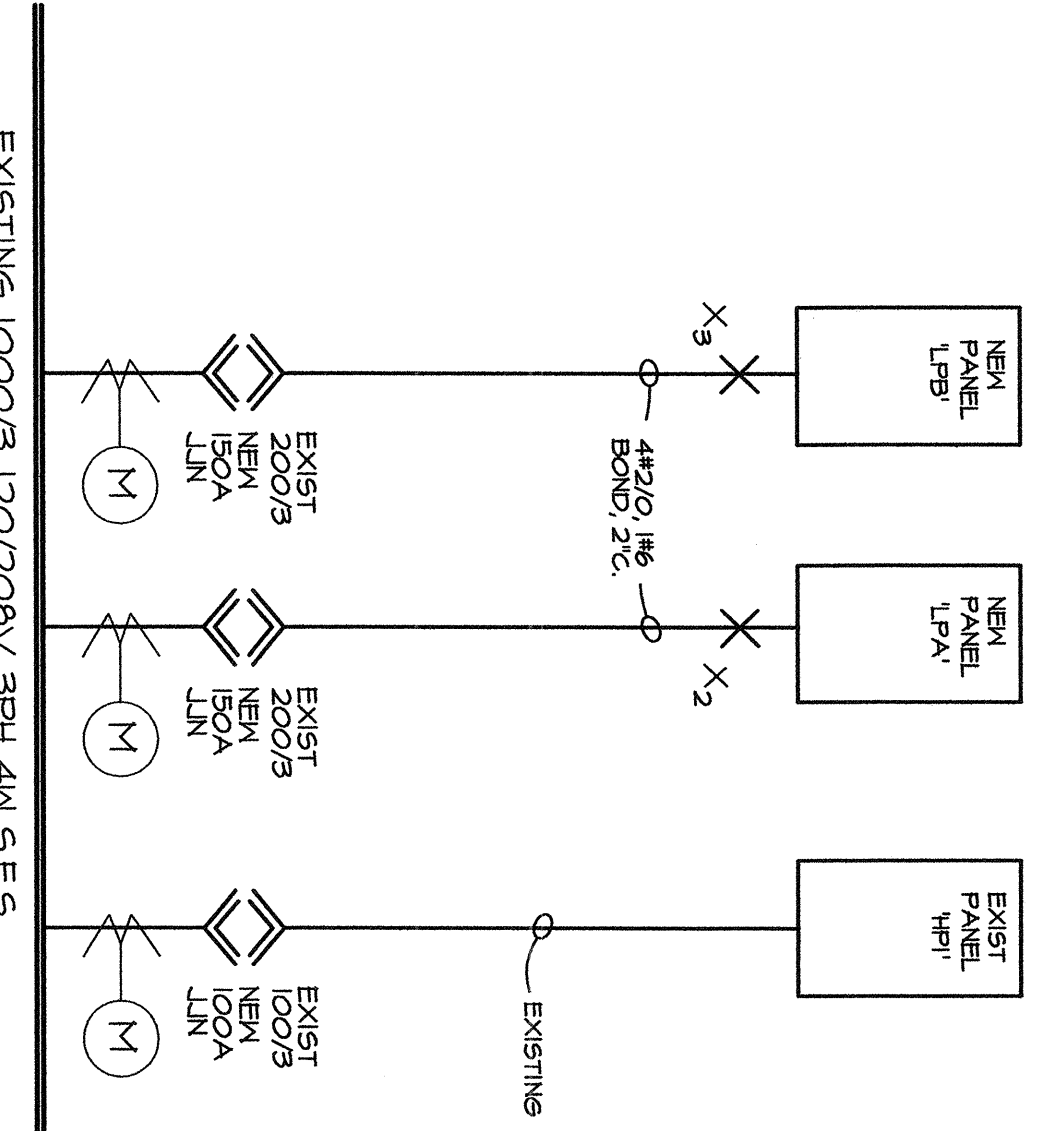
- HEAT PUMP I: 141A COMP 6.2A FAN 51A FAN, 209V 3PH, 60/3 W/ DISCONNECT SWITCH, 32.6 KVA
- HEAT PUMP II: 144A COMP 8.6A FAN 9.9A FAN, 209V 3PH, 60/3 W/ DISCONNECT SWITCH, 50A FANR FUSES, 3W, 1W BOND, 1'C.
- HEAT PUMP III: 144A COMP 8.6A FAN 9.9A FAN, 209V 3PH, 60/3 W/ DISCONNECT SWITCH, 35A FANR FUSES, 3W, 1W BOND, 3/4'C.

**LOAD CALCULATIONS**

EXISTING: 6.81KVA X 102% = 6.95KVA  
NEW MISC: 4.61KVA X 102% = 4.70KVA  
NEW MOTORS: 6.81KVA X 102% = 6.95KVA  
NEW MOTORS: 20.0KVA X 102% = 20.4KVA  
86.0 KVA = 299A

# FROM 1-25-05 SHELL BUILDING DRAWINGS

**ONE LINE DIAGRAM**



650K SERIES RATED WITH CLASS T FUSES AT SES.

PANEL	TYPE	GE-AG	MOUNTING	FUSE	VOLTAGE	120/209V 3PH 4W
BRANCH BRKRS	10200AIC				225A	MAIN LUGS
1	BRANCH CIRCUIT	C/B	A/B	C/B	C/B	BRANCH CIRCUIT
2	RECEPT-SERV	20/1	100	20/1	168T5	
3	RECEPT-SERV	20/1	100	20/1	168T5	
4	RECEPT-SERV	20/1	100	20/1	168T5	
5	RECEPT-SERV	20/1	100	20/1	168T5	
6	SPACE	20/1	300	20/1	RECEPT-ILC, REFR	
7	RECEPT-TB	20/1	300	20/1	RECEPT-LAB	
8	SPACE	20/1	300	20/1	RECEPT-LAB	
9	RECEPT-OFFICE	20/1	300	20/1	RECEPT-LAB	
10	RECEPT-OFFICE	20/1	300	20/1	RECEPT-LAB	
11	RECEPT-OFFICE	20/1	300	20/1	RECEPT-LAB	
12	RECEPT-OFFICE	20/1	300	20/1	RECEPT-LAB	
13	RECEPT-OFFICE	20/1	300	20/1	RECEPT-LAB	
14	RECEPT-OFFICE	20/1	300	20/1	RECEPT-LAB	
15	RECEPT-OFFICE	20/1	300	20/1	RECEPT-LAB	
16	RECEPT-OFFICE	20/1	300	20/1	RECEPT-LAB	
17	RECEPT-OFFICE	20/1	300	20/1	RECEPT-LAB	
18	RECEPT-OFFICE	20/1	300	20/1	RECEPT-LAB	
19	RECEPT-OFFICE	20/1	300	20/1	RECEPT-LAB	
20	RECEPT-OFFICE	20/1	300	20/1	RECEPT-LAB	
21	RECEPT-OFFICE	20/1	300	20/1	RECEPT-LAB	
22	RECEPT-OFFICE	20/1	300	20/1	RECEPT-LAB	
23	RECEPT-OFFICE	20/1	300	20/1	RECEPT-LAB	
24	RECEPT-OFFICE	20/1	300	20/1	RECEPT-LAB	
25	RECEPT-OFFICE	20/1	300	20/1	RECEPT-LAB	
26	RECEPT-OFFICE	20/1	300	20/1	RECEPT-LAB	
27	RECEPT-OFFICE	20/1	300	20/1	RECEPT-LAB	
28	RECEPT-OFFICE	20/1	300	20/1	RECEPT-LAB	
29	RECEPT-OFFICE	20/1	300	20/1	RECEPT-LAB	
30	RECEPT-OFFICE	20/1	300	20/1	RECEPT-LAB	
31	RECEPT-OFFICE	20/1	300	20/1	RECEPT-LAB	
32	RECEPT-OFFICE	20/1	300	20/1	RECEPT-LAB	
33	RECEPT-OFFICE	20/1	300	20/1	RECEPT-LAB	
34	RECEPT-OFFICE	20/1	300	20/1	RECEPT-LAB	
35	RECEPT-OFFICE	20/1	300	20/1	RECEPT-LAB	
36	RECEPT-OFFICE	20/1	300	20/1	RECEPT-LAB	
37	RECEPT-OFFICE	20/1	300	20/1	RECEPT-LAB	
38	RECEPT-OFFICE	20/1	300	20/1	RECEPT-LAB	
39	RECEPT-OFFICE	20/1	300	20/1	RECEPT-LAB	
40	RECEPT-OFFICE	20/1	300	20/1	RECEPT-LAB	
41	SPACE	20/1	2652	35/3	HEAT PUMP #3	
42	SPACE	20/1	2652	35/3	HEAT PUMP #3	
TOTAL LOAD PER PHASE					TOTAL	11834
TOTAL LOAD PER PHASE					TOTAL	12963

Lighting - 6.4KVA X 125% = 8.0KVA  
MISC. - 21.8KVA X 100% = 21.8KVA  
RECEPTS - 21.1KVA X 100% = 21.1KVA  
MOTOR - 53.1KVA X 125% = 66.4KVA

41.1KVA = 114 AMPS

650K SERIES RATED WITH CLASS T FUSES AT SES.

PANEL	TYPE	GE-AG	MOUNTING	FUSE	VOLTAGE	120/209V 3PH 4W
BRANCH BRKRS	10200AIC				225A	MAIN LUGS
1	BRANCH CIRCUIT	C/B	A/B	C/B	C/B	BRANCH CIRCUIT
2	SPACE	20/1	300	20/1	RECEPT-LAB	
3	SPACE	20/1	300	20/1	RECEPT-LAB	
4	SPACE	20/1	300	20/1	RECEPT-LAB	
5	SPACE	20/1	300	20/1	RECEPT-LAB	
6	SPACE	20/1	300	20/1	RECEPT-LAB	
7	SPACE	20/1	300	20/1	RECEPT-LAB	
8	SPACE	20/1	300	20/1	RECEPT-LAB	
9	SPACE	20/1	300	20/1	RECEPT-LAB	
10	SPACE	20/1	300	20/1	RECEPT-LAB	
11	SPACE	20/1	300	20/1	RECEPT-LAB	
12	SPACE	20/1	300	20/1	RECEPT-LAB	
13	SPACE	20/1	300	20/1	RECEPT-LAB	
14	SPACE	20/1	300	20/1	RECEPT-LAB	
15	SPACE	20/1	300	20/1	RECEPT-LAB	
16	SPACE	20/1	300	20/1	RECEPT-LAB	
17	SPACE	20/1	300	20/1	RECEPT-LAB	
18	SPACE	20/1	300	20/1	RECEPT-LAB	
19	SPACE	20/1	300	20/1	RECEPT-LAB	
20	SPACE	20/1	300	20/1	RECEPT-LAB	
21	SPACE	20/1	300	20/1	RECEPT-LAB	
22	SPACE	20/1	300	20/1	RECEPT-LAB	
23	SPACE	20/1	300	20/1	RECEPT-LAB	
24	SPACE	20/1	300	20/1	RECEPT-LAB	
25	SPACE	20/1	300	20/1	RECEPT-LAB	
26	SPACE	20/1	300	20/1	RECEPT-LAB	
27	SPACE	20/1	300	20/1	RECEPT-LAB	
28	SPACE	20/1	300	20/1	RECEPT-LAB	
29	SPACE	20/1	300	20/1	RECEPT-LAB	
30	SPACE	20/1	300	20/1	RECEPT-LAB	
31	SPACE	20/1	300	20/1	RECEPT-LAB	
32	SPACE	20/1	300	20/1	RECEPT-LAB	
33	SPACE	20/1	300	20/1	RECEPT-LAB	
34	SPACE	20/1	300	20/1	RECEPT-LAB	
35	SPACE	20/1	300	20/1	RECEPT-LAB	
36	SPACE	20/1	300	20/1	RECEPT-LAB	
37	SPACE	20/1	300	20/1	RECEPT-LAB	
38	SPACE	20/1	300	20/1	RECEPT-LAB	
39	SPACE	20/1	300	20/1	RECEPT-LAB	
40	SPACE	20/1	300	20/1	RECEPT-LAB	
41	SPACE	20/1	2652	35/3	HEAT PUMP #2	
42	SPACE	20/1	2652	35/3	HEAT PUMP #2	
TOTAL LOAD PER PHASE					TOTAL	10300
TOTAL LOAD PER PHASE					TOTAL	12963

Lighting - 6.4KVA X 125% = 8.0KVA  
MISC. - 18.8KVA X 100% = 18.8KVA  
RECEPTS - 12.0KVA X 100% = 12.0KVA  
MOTOR - 6.4KVA X 125% = 8.0KVA

34.4KVA = 107 AMPS

ALL DESIGNS, PLANS, DRAWINGS, AND SPECIFICATIONS ARE THE PROPERTY OF HP+E INC. AS INSTRUMENTS OF SERVICE AND MAY NOT BE USED OR REPRODUCED FOR ANY PURPOSE WITHOUT THE WRITTEN CONSENT OF HP+E, INC. CONSULTING ENGINEERS

HP+E Consulting Engineers  
300 West University  
Tempe, AZ 85281

Susan Hill  
4400 West 25th  
Scottsdale, AZ 85262

**HEALTH'S ESSENCE, INC.**  
BUILDING 1, SUITE 110  
9017 N. 95TH STREET  
SCOTTSDALE, ARIZONA 85258

DATE: 12-01-2005  
JOB NO.:  
DRAWN BY:  
CHECKED BY:  
SCALE:  
SHEET NUMBER:  
SHEETS

REVISIONS

FILE NAME:

Calvis Wyatt Luxury Homes hereby expressly reserves its common law copyright and other property rights in these construction documents. These const. documents are an instrument of service for Calvis Wyatt Luxury Homes and shall not be changed, copied or reproduced in any form or manner whatsoever nor are they to be assigned to any third party without first obtaining the express written permission and consent of Calvis Wyatt Luxury Homes.