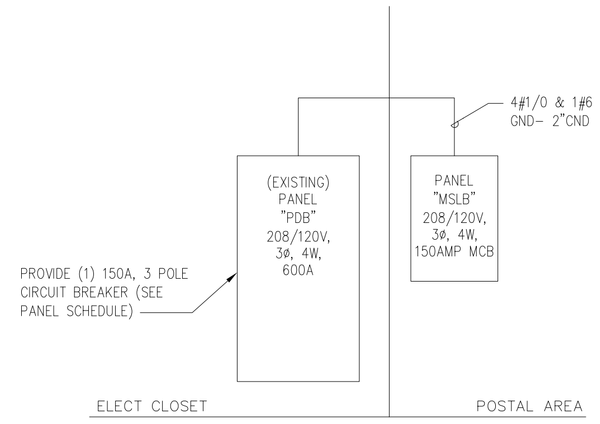
Electrical Legend

SYMBOL	DESCRIPTION
A	2'x4' FLUORESCENT LIGHT FIXTURE, PENDANTMOUNTED AT 10'-0" AFF. INDICATES FIXTURE TYPE (SEE FIXTURE SCHEDULE)
B	2' FLUORESCENT LIGHT FIXTURE, WALL MOUNTED OVER SINK INDICATES FIXTURE TYPE (SEE FIXTURE SCHEDULE)
E	EMERGENCY LIGHTING UNIT, 2-HEAD BATTERY BACK-UP, WALL MOUNTED INDICATES FIXTURE TYPE (SEE FIXTURE SCHEDULE)
X	EXIT SIGN, SINGLE FACE, WALL, CEILING OR END MOUNTED INDICATES FIXTURE TYPE (SEE FIXTURE SCHEDULE)
	(EXISTING) HID FIXTURE, PENDANT MOUNTED
S3	BI-LEVEL SWITCH, 120/277 VAC, 20A, 2 IN-BOARD LAMPS SWITCHED FROM LEFT SWITCH, 2 OUT-BOARD LAMPS SWITCHED FROM RIGHT SWITCH
	RECEPTACLE, DUPLEX, 120 VAC, 20A, MOUNTED 18" AFF UNLESS OTHERWISE NOTED
	RECEPTACLE, QUADREPLEX, 120 VAC, 20A, MOUNTED 18" AFF UNLESS OTHERWISE NOTED
	CONDUIT, HOME RUN TO PANEL BOARD
J	JUNCTION BOX
PP	POWER POLE, HUBBEL CAT.# HPS12A OR EQUAL, 12'-2" EXTRUDED ALUMINUM SERVICE POLE, 2-CHANNELS WITH CEILING TRIM, IVORY POWDER-PAINT, MULTI-SERVICE, TWO-CHANNEL POLE WITH (4) STYLELINE KNOCKOUTS, (2) 20AMP RECEPTACLES. ADJUSTABLE T-BAR ASSEMBLY FOR MOUNTING POLES IN MIDDLE OF CEILING OF CEILING. UL LISTED. POWER POLE SHOWN ON PLAN SHALL HAVE PROVISIONS FOR (2) DATA DROPS AND (1) TELEPHONE DROP.
1V/1D	COMBINATION VOICE/DATA OUTLET, MOUNTED 18" AFF UNLESS OTHERWISE NOTED. PROVIDE 1" CONDUIT TO ABOVE CEILING W/PULL STRING. TERMINATE CONDUIT WITH NYLON BUSHING. #V = NUMBER OF VOICE DROPS ON FACE PLATE / #D = NUMBER OF DATA DROPS ON FACE PLATE
FACP	FIRE ALARM HORN/STROBE, WALL MOUNTED AT 80" AFF
S	SMOKE DETECTOR
	PANEL BOARD, 208/120VAC, 3 PHASE, 4-WIRE, SURFACE MOUNTED, SIZE AS INDICATED ON PANEL SCHEDULE
	HATCHING INDICATES ITEMS TO BE REMOVED.
CND	CONDUIT
GND	GROUND
AFF	ABOVE FINISHED FLOOR

Load Summary

Largest Motor Approx. Amps	20 Amps
Largest Motor Approx. Amps x .25	5 Amps
EQUIPMENT	
MF Power Supply	6999 VA
Duplex Pumps	4800 VA
Water Conditioner	4140 VA
Temperature Control	14898 VA
GC Table	2200 VA
Rotary Pump	3528 VA
ACQ Processor	1500 VA
Sub-Total Equipment Demand	38,065 VA
Sub-Total Equipment Demand	106 Amps
Add for Largest Motor	5 Amps
Total Equipment Demand	111 Amps
Receptacles	1,440 VA
Total Demand for Receptacle/Power Panels	1,440 VA
Total Demand for Receptacle/Power Panels	4 Amps
Total Demand Building Amps @ 208VAC	115 Amps
Total Demand Building Load	41,297 VA
Total Building Connected Load	39,505 VA



1 - Riser Diagram
NOT TO SCALE

General Notes:

1. THE CONTRACTOR SHALL FURNISH ALL MATERIALS AND LABOR NECESSARY TO PROVIDE A COMPLETE AND PROPERLY FUNCTIONING ELECTRICAL SYSTEM AND SHALL GUARANTEE ALL ELECTRICAL WORK FOR A PERIOD OF ONE YEAR AFTER OWNER'S ACCEPTANCE.

2. CONSTRUCTION SHALL CONFORM TO ANSI / IEEE C2 (NATIONAL ELECTRICAL SAFETY CODE), ANSI / NFPA 70 (NATIONAL ELECTRICAL CODE), NECA STANDARD OF INSTALLATION, THE SBCCI STANDARD BUILDING CODE AND ALL LOCAL CODES.

3. ALL MATERIAL, EQUIPMENT AND DEVICES SHALL, AS A MINIMUM, MEET THE REQUIREMENTS OF NFPA 70.

4. ALL MATERIAL, EQUIPMENT AND DEVICES SHALL BE NEW UNLESS INDICATED OTHERWISE.

5. ALL MATERIAL, EQUIPMENT AND DEVICES SHALL BE CURRENT PRODUCTS OF MANUFACTURERS REGULARLY ENGAGED IN THE PRODUCTION OF SUCH PRODUCTS.

6. EQUIPMENT SHALL BE SUITABLE FOR ITS APPLICATION (E.G. WHEN INSTALLED OUTDOORS, IT SHALL BE WEATHERPROOF, ETC.)

7. PROVIDE A LAMINATED PLASTIC NAMEPLATE FOR EACH MAJOR ITEM OF ELECTRICAL EQUIPMENT. ATTACH WITH SCREWS OR BOLTS OR RIVETS.

8. COORDINATE LOCATION OF ELECTRICAL DEVICES AND ELECTRICAL WORK WITH OTHER TRADES TO AVOID CONFLICTS AND INTERFERENCES.

9. BEFORE COMMENCING WORK OR ORDERING MATERIAL, THE ELECTRICAL CONTRACTOR SHALL VERIFY THE NAMEPLATE RATINGS OF ALL EQUIPMENT AND ADJUST THE BREAKERS, DISCONNECT SWITCHES, PLUG, RECEPTACLES, MOTOR STARTERS, AND CONDUCTORS AS APPROPRIATE TO SERVE THIS EQUIPMENT.

10. PRIOR TO INSTALLATION AND ELECTRICAL ROUGH-IN, COORDINATE THE EXACT LOCATION, SIZE AND TYPE OF ELECTRICAL CONNECTION TO THE MECHANICAL EQUIPMENT WITH THE MECHANICAL PLANS AND EQUIPMENT PROVIDED. MAKE CONNECTIONS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

11. ALL WIRING SHALL BE COPPER, 600 VOLT, WITH THHN OR THWN INSULATION UNLESS NOTED OTHERWISE. MINIMUM CONDUCTOR SIZE SHALL BE #12 AWG FOR LIGHTING AND POWER CIRCUITS. WHERE 277 VOLT CIRCUITS AND 120 VOLT CIRCUITS EXCEED 50 FEET TO THE FIRST OUTLET, BRANCH CIRCUIT CONDUCTORS FROM THE PANEL TO THE FIRST OUTLET SHALL NOT BE SMALLER THAN #10 AWG.

12. UNLESS DIMENSIONED, DEVICES ARE SHOWN IN APPROXIMATE LOCATIONS. ADJUST EXACT LOCATIONS AS REQUIRED TO SERVE INTENDED PURPOSE AND TO AVOID CONFLICTS AND INTERFERENCES WITH OTHER TRADES.

13. INSTALL DEVICES AND ASSEMBLIES PLUMB AND SECURE. INSTALL WALL PLATES WHEN PAINTING IS COMPLETE. EXCEPT AS OTHERWISE INDICATED.

14. ALL EQUIPMENT AND TERMINATIONS SHALL BE RATED FOR MINIMUM 75 DEG. C.

System No. W-L-1249
December 07, 2001
F Ratings – 1 and 2 Hr (See Items 1 and 3)
T Rating – 1/2 Hr

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1. Wall Assembly – The 1 or 2 hr fire-rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner described in the individual U400 Series Wall or Partition Design in the UL Fire Resistance Directory and shall include the following construction features.
   A. Studs – Steel studs 3-1/2 in. deep, fabricated from 25 MSG galv steel, spaced max 24 in. OC.
   B. Gypsum Boards* – The gypsum board type, number of layers, fastener type and sheet orientation shall be as specified in the individual Wall and Partition Design. Max area of opening is 360 sq in. with max dimension of 30 in.
   The hourly F Rating of the firestop system is equal to the hourly fire rating of the wall assembly in which it is installed.
2. Through Penetrants – One or more nom 2 in. diam (or smaller) rigid steel conduit or electrical metallic tubing (EMT) to be installed within the opening. The annular space between conduits or tubing shall be min 0 in. (point contact) to max 3-3/8 in. The annular space between conduits or tubing and periphery of opening shall be min 0 in. (point contact) to max 3 in. Conduit or tubing to be rigidly supported on both sides of wall assembly.
3. Fill Void or Cavity Material – Foam* – Fill material applied within annulus flush with both surfaces of the wall. Min fill material thickness for 1 Hr F Rating is 4-3/4 in. Min fill material thickness for 2 Hr F Rating is 6 in.
   HILTI CONSTRUCTION CHEMICALS, DIV OF
   HILTI INC – CP 620 Fire Foam

*Bearing the UL Classification Mark

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RECORD DRAWING
This drawing is revised to show construction conditions in place based on mark-up drawings provided by the Contractor utilizing methods of reasonable practice and care. Field verification by the Engineer was not provided.
Dated:_____
By:_____

WAL & GRC ARCHIT
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UNC-Wilmington

601 South College Rd.
Wilmington, NC 28403

Dobo Hall
Chemistry Lab 121
Renovation

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Revisions

No.	Date

Project Number 0414
Date 3/21/2005
Drawn HGH
Checked WAC
Scale As Noted
Drawing Title
Electrical Legend, Notes, Schedules & Details
Sheet Number 1 or 4
Drawing Number E-001

Panel Schedule: "PDB" (EXISTING)

LOCATION: BOILER ROOM
TYPE: BOLT-ON
208 / 120 V, FLUSH, TOP, 3 XX XX PH, SURFACE BOTTOM 4 WIRE
PROVIDE IF CHECKED: XX GUTTER TAPS XX SUB-FEED LUGS XX NEUTRAL BUS
EQUIPMENT GROUND BUS

LOAD SERVED	LOAD VA	WIRE SIZE	COND SIZE	CKT BKR	CKT #	LOAD VA A	LOAD VA B	LOAD VA C	CKT #	CKT BKR	COND SIZE	WIRE SIZE	LOAD VA	LOAD SERVED
					1				2					
					3				4					
					5				6					
PANEL "LPF" (EXISTING)				100/3	7				8	100/3				PANEL "LPJ" (EXISTING)
/ /					9				10	/ /				/ /
					11				12					
PANEL "LPBB" (EXISTING)				100/3	13				14	100/3				PANEL "LPAA" (EXISTING)
/ /					15				16	/ /				/ /
					17				18					
PANEL "LPS" (EXISTING)				150/3	19				20	100/3				PANEL "LPY" (EXISTING)
/ /					21				22	/ /				/ /
					23				24					
PANEL "PB1" (EXISTING)				225/3	25				26	100/3				PANEL "LPP" (EXISTING)
/ /					27				28	/ /				/ /
					29				30					
PANEL "MSLB"	13,305	#1/0	2"	150/3	31	13,305			32					
	13,615				33		13,615		34					
	12,585				35			12,585	36					
					37				38					
					39				40					
					41				42					
					43				44					
					45				46					
					47				48					
NOTE:						13,305	13,615	12,585	TOTAL VOLT AMPS					
						111	113	105	CONN. AMPS					

A. BUS (COPPER)
A. MLO
A. MAIN C/B
KAIC MIN.

Panel Schedule: "MSLB"

LOCATION: MASS SPECTROMETER LAB
TYPE: BOLT-ON
208 / 120 V, FLUSH, TOP, 3 XX XX PH, SURFACE BOTTOM 4 WIRE
PROVIDE IF CHECKED: XX GUTTER TAPS XX SUB-FEED LUGS XX NEUTRAL BUS
EQUIPMENT GROUND BUS

LOAD SERVED	LOAD VA	WIRE SIZE	COND SIZE	CKT BKR	CKT #	LOAD VA A	LOAD VA B	LOAD VA C	CKT #	CKT BKR	COND SIZE	WIRE SIZE	LOAD VA	LOAD SERVED
MF POWER SUPPLY	2,333	#8	3/4"	50/3	1	2,333			2	20/1				SPARE
	2,333				3		2,873		4	20/1	3/4"	#12	540	RCPS: EAST WALL
	2,333				5			2,873	6	20/1	3/4"	#12	540	RCPS: EAST WALL
DUPLEX PUMPS	2,400	#10	3/4"	30/2	7	2,760			8	20/1	3/4"	#12	360	RCPS: POWER POLE
	2,400				9		3,576		10	20/1	3/4"	#12	1,176	RCP: ROTARY PUMP
WATER CONDITIONER	2,070	#10	3/4"	30/2	11			3,246	12	20/1	3/4"	#12	1,176	RCP: ROTARY PUMP
	2,070				13	3,246			14	20/1	3/4"	#12	1,176	RCP: ROTARY PUMP
TEMPERATURE CONTROL	4,966	#6	1"	60/3	15		4,966		16	20/1				SPARE
	4,966				17			6,466	18	20/1	3/4"	#12	1,500	ACQ PROCESSOR
	4,966				19	4,966			20	20/1				SPARE
GC TABLE	2,200	#10	3/4"	30/1	21		2,200		22	20/1				SPARE
SPARE				20/1	23				24	20/1				SPARE
					25				26					
					27				28					
					29				30					
					31				32					
					33				34					
					35				36					
					37				38					
					39				40					
					41				42					
NOTE:						13,305	13,615	12,585	TOTAL VOLT AMPS					
						111	113	105	CONN. AMPS					

200 A. BUS (COPPER)
– A. MLO
150 A. MAIN C/B
22 KAIC MIN.

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1. Floor or Wall Assembly – Min 4-1/2 in. thick reinforced lightweight or normal weight (100-150 pcf) concrete. Wall may also be constructed of any UL Classified Concrete Blocks*. Max diam of opening is 32 in.
2. Metallic Sleeve – (Optional) Nom 32 in. diam (or smaller) Schedule 40 (or heavier) steel sleeve cast or grouted into floor or wall assembly, flush with floor or wall surfaces or extending a max of 3 in. above floor or beyond both surfaces of wall.
3. Through-Penetrant – One metallic pipe, tube or conduit to be installed either concentrically or eccentrically within the firestop system. The annular space between penetrant and periphery of opening shall be min 0 in. (point contact) to max 1-7/8 in. Penetrant may be installed with continuous point contact. Penetrant to be rigidly supported on both sides of floor or wall assembly. The following types and sizes of metallic penetrants may be used:
   A. Steel Pipe – Nom 30 in. diam (or smaller) Schedule 10 (or heavier) steel pipe.
   B. Iron Pipe – Nom 30 in. diam (or smaller) cast or ductile iron pipe.
   C. Copper Pipe – Nom 6 in. diam (or smaller) Regular (or heavier) copper pipe.
   D. Copper Tubing – Nom 6 in. diam (or smaller) Type L (or heavier) copper tubing.
   E. Conduit – Nom 6 in. diam (or smaller) steel conduit.
   F. Conduit – Nom 4 in. diam (or smaller) steel electrical metallic tubing (EMT).
4. Firestop System – The firestop system shall consist of the following:
   A. Packing Material – Min 4 in. thickness of min 4 pcf mineral wool batt insulation firmly packed into opening as a permanent form. Packing material to be recessed from top surface of floor or sleeve or from both surfaces of wall or sleeve as required to accommodate the required thickness of fill material.
   B. Fill, Void or Cavity Material* – Sealant – Min 1/4 in. thickness of fill material applied within the annulus, flush with top surface of floor or sleeve or with both surfaces of wall or sleeve. At the point or continuous contact locations between penetrant and concrete or sleeve, a min 1/4 in. diam bead of fill material shall be applied at the concrete or sleeve/ pipe penetrant interface on the top surface of floor and on both surfaces of wall.
   HILTI CONSTRUCTION CHEMICALS, DIV OF
   HILTI INC – FS-One Sealant

*Bearing the UL Classification Mark

Filename = XHEZ.C-AJ-1226
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System No. C-AJ-1226
October 30, 2003
F Rating – 3 Hr
T Rating – 0 Hr
L Rating At Ambient – Less Than 1 CFM/Sq Ft
L Rating At 400 F – 4 CFM/Sq Ft

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1. Wall Assembly – The 1 or 2 hr fire-rated gypsum wallboard/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300 or U400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:
   A. Studs – Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. lumber spaced 16 in. OC. Steel studs to be min 2-1/2 in. wide and spaced max 24 in. OC. When steel studs are used and the diam of opening exceeds the width of stud cavity, the opening shall be framed on all sides using lengths of steel stud installed between the vertical studs and screw-attached to the steel studs at each end. The framed opening in the wall shall be 4 to 6 in. wider and 4 to 6 in. higher than the diam of the penetrating item such that, when the penetrating item is installed in the opening, a 2 to 3 in. clearance is present between the penetrating item and the framing on all four sides.
   B. Gypsum Board* – 5/8 in. thick, 4 ft wide with square or tapered edges. The gypsum board type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual U300 or U400 Series Design in the UL Fire Resistance Directory. Max diam of opening is 32-1/4 in. for steel stud walls. Max diam of opening is 14-1/2 in. for wood stud walls.
   The F Rating of the firestop system is equal to the fire rating of the wall assembly.
2. Through-Penetrants – One metallic pipe, conduit or tubing to be installed either concentrically or eccentrically within the firestop system. The annular space shall be min 0 in. to max 2-1/4 in. Pipe may be installed with continuous point contact. Pipe, conduit or tubing may be installed at an angle not greater than 45 degrees from perpendicular. Pipe, conduit or tubing to be rigidly supported on both sides of wall assembly. The following types and sizes of metallic pipes, conduits or tubing may be used:
   A. Steel Pipe – Nom 30 in diam (or smaller) Schedule 10 (or heavier) steel pipe.
   B. Iron Pipe – Nom 30 in. diam (or smaller) cast or ductile iron pipe.
   C. Conduit – Nom 4 in diam (or smaller) steel electrical metallic tubing or 6 in. diam steel conduit.
   D. Copper Tubing – Nom 6 in. diam (or smaller) Type L (or heavier) copper tubing.
   E. Copper Pipe – Nom 6 in. diam (or smaller) regular (or heavier) copper pipe.
3. Fill, Void or Cavity Material* – Sealant – Min 5/8 in. thickness of fill material applied within the annulus, flush with both surfaces of wall. At the point or continuous contact locations between pipe and wall, a min 1/2 in. diam bead of fill material shall be applied at the pipe wall interface on both surfaces of wall .
HILTI CONSTRUCTION CHEMICALS, DIV OF
HILTI INC – FS-One Sealant

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System No. W-L-1054
December 04, 2002
F Ratings – 1 and 2 Hr (See Items 1 and 3)
T Rating – 0 Hr
L Rating At Ambient – Less Than 1 CFM/Sq Ft
L Rating At 400 F – 4 CFM/Sq Ft

2 - Typical Firewall Penetrations
NOT TO SCALE