



**LIGHTING FLOOR PLAN**  
NORTH SCALE: 1/8" = 1'-0"

**LIGHTING PLAN NOTES:**

- 1 PROVIDE (2) INTERMATIC #FD2H-X OR EQUAL 2-HOUR SPRING-WOUND MANUAL OVERRIDE TIMERS FOR CONTROL OF CLINIC HIGH-BAY AND TRACK LIGHTING. CONNECT TO CONTACTORS AS REQUIRED, SEE LIGHTING CONTROL DIAGRAM ON SHEET E5.
- 2 ROUTE CIRCUIT TO PANEL INDICATED VIA CLINIC TRACK LIGHTING CONTACTOR. SEE DETAIL, SHEET E5.
- 3 CONNECT TO EXHAUST FAN ON ROOF, SEE SHEET E3.
- 4 PROVIDE CON-TECH #LA23-R-B-REGIO 10A END-FEED CURRENT LIMITER FOR TRACK FEED AS INDICATED.
- 5 ROUTE CIRCUIT TO PANEL INDICATED VIA CLINIC HI-BAY LIGHTING CONTACTOR. SEE DETAIL, SHEET E5.
- 6 PROVIDE UNSWITCHED CONDUCTOR FOR EMERGENCY LIGHTS. CONNECT TO PANEL AHEAD OF ALL LIGHTING CONTROLS.
- 7 CONNECT TO EXHAUST FAN ON ROOF.
- 8 FEED TRACK DOWNSTREAM OF CURRENT LIMITER ON ADJACENT LENGTH OF TRACK.

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**CLIENT:**

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STEPHANIE KELLOGG

**PROFESSIONAL SEAL:**



SIGNATURE

DATE

**SUBMISSION**

**DATE**

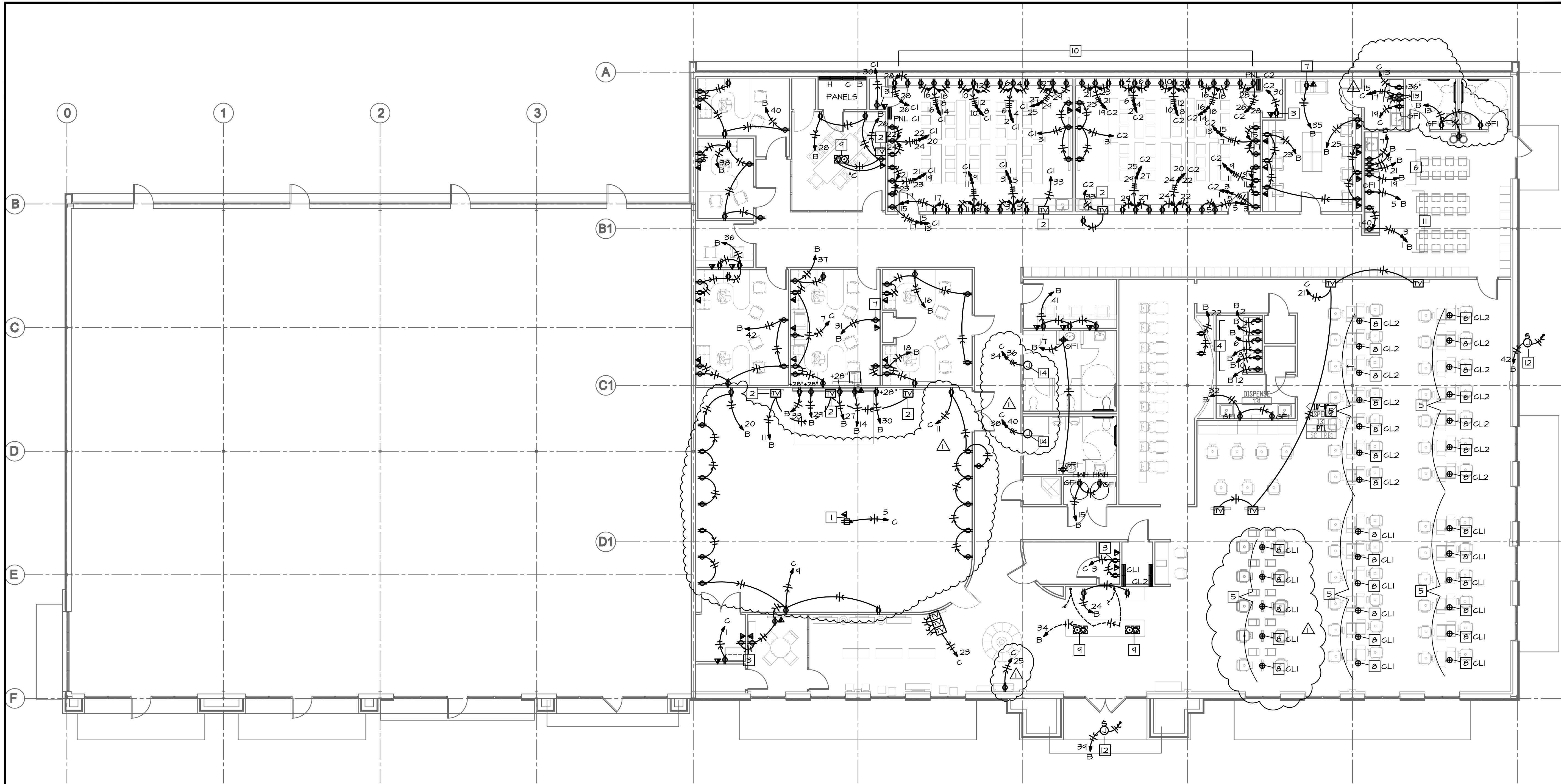
FINAL CONCEPT PLAN	5.14.08
CONSULTANT COORDINATION SET	6.17.08
PERMIT ISSUE	6.17.08
CONSTRUCTION SET	09.30.08
TRACK LTC REVISIONS	11.11.08
FINAL AS-BUILT PLANS	12.31.08

**PROJECT NO: 0803**

**SCALE:**

LIGHTING  
PLAN

E1



**ELECTRICAL PLAN NOTES:**

- 1 DEVICES MOUNTED IN CEILING FOR PROJECTOR.
- 2 PROVIDE CABLE AND RECEPTACLE FOR FLATSCREEN TELEVISION, COORDINATE MOUNTING HEIGHT WITH T.V. INSTALLER.
- 3 AV RACK FOR EQUIPMENT LOCATED IN CLOSET, COORDINATE EXACT POWER REQUIREMENT AND LOCATION WITH AV CONSULTANT.
- 4 OUTLETS FOR STACKED WASHER / GAS DRYER. VERIFY EXACT LOCATION & MOUNTING HEIGHT.
- 5 PROVIDE FLOORBOX AT LOCATION INDICATED FOR POWER FEED TO STYLING STATIONS. SANCUT & PATCH FLOOR AS REQUIRED FOR INSTALLATION OF UNDERFLOOR CONDUIT.
- 6 PROVIDE 4 DUPLEX OUTLETS, EACH WITH A DEDICATED CIRCUIT FOR 4 MICROWAVES. COORDINATE HEIGHTS WITH WALL SHELVES FOR MICROWAVES, REFERENCE 6/A6.2 FOR DETAILS.
- 7 PROVIDE POWER AND NETWORK CONNECTION FOR OWNER PROVIDED COPIER/PRINTER, VERIFY EQUIPMENT WITH OWNER.
- 8 PROVIDE (4) CIRCUITS AT EACH STYLING STATION. SPLIT-WIRE AND INSTALL FOURPLEX RECEPTACLE IN PRE-INSTALLED JUNCTION BOX IN STYLING STATION.
- 9 PROVIDE CONCEALED-SERVICE FLOORBOX WITH DUPLEX RECEPTACLE AND PROVISIONS FOR COMMUNICATIONS CABLING. VERIFY EXACT LOCATION & REQUIREMENTS.
- 10 ALL OUTLETS IN CORE CLASSROOM TO BE LOCATED BELOW COUNTER @ 24" O.C., @ ALL LOCATIONS OF 12" DEEP SS SHELVING, TYPICAL.
- 11 VERIFY LOCATIONS AND MOUNTING HIGH OF OUTLETS FOR VENDING MACHINES.
- 12 JUNCTION BOX WITH TOGGLE DISCONNECT FOR SIGNAGE. CONNECT TO SIGN AS REQUIRED. VERIFY EXACT LOCATION. ROUTE CIRCUIT TO PANEL INDICATED VIA 2 CIRCUIT 7-DAY PROGRAMMABLE TIMECLOCK LOCATED ADJACENT TO PANEL.
- 13 PROVIDE 2 DUPLEX OUTLETS, EACH WITH A DEDICATED CIRCUIT FOR 2 MICROWAVES. COORDINATE HEIGHTS WITH WALL SHELVES FOR MICROWAVES.
- 14 JUNCTION BOX FOR CONNECTION TO ELECTRIC HAND DRYER. VERIFY EXACT LOCATION & ELECTRICAL REQUIREMENTS.



**ELECTRICAL FLOOR PLAN**

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

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**PROFESSIONAL SEAL:**

12/31/2008



*Robert W. Curry*

SIGNATURE

DATE

**SUBMISSION**

**DATE**

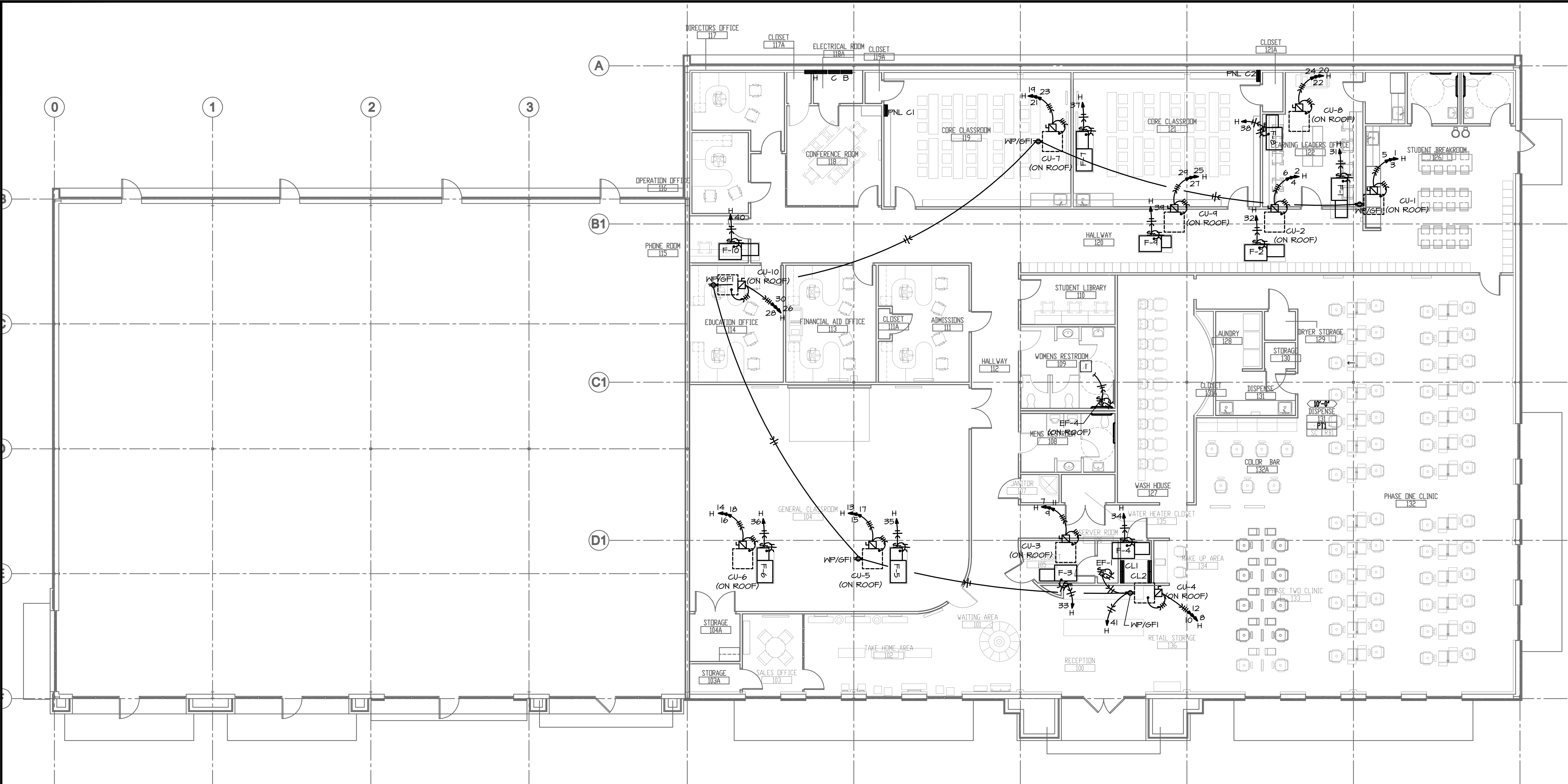
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**PROJECT NO: 0803**

**SCALE:**

**ELECTRICAL**  
**PLAN**

E2



**ELECTRICAL ROOF PLAN**  
NORTH SCALE: 1/8" = 1'-0"

**ELECTRICAL ROOF PLAN NOTES:**  
1 CONNECT TO CORRIDOR LIGHTS, SEE SHEET E1.

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SIGNATURE

DATE

SUBMISSION

DATE

FINAL CONCEPT PLAN

5.14.08

CONSULTANT COORDINATION SET

6.17.08

PERMIT ISSUE

6.17.08

CONSTRUCTION SET

09.30.08

TRACK LTC REVISIONS

11.11.08

FINAL AS-BUILT PLANS

12.31.08

PROJECT NO: 0803

SCALE:

ELECTRICAL  
ROOF PLAN

E3



PANEL: CL1		VOLTS/PHASE/WIRE: 120/208V/3Ø/4W						LOCATION: ELEC CLOSET						MOUNTING: SURFACE	
BUS: 225A		MAIN: MLO						IG: 10,000 RMS SYM. AMPS						FEEDER: SEE RISER DIAGRAM	
CKT NO	DESCRIPTION	BROK AMP	BROK POLE	WIRE SIZE	ØA	ØB	ØC	ØA	ØB	ØC	WIRE SIZE	BROK AMP	BROK POLE	DESCRIPTION	CKT NO
1	WORKSTATION	20	1	12	800			800			12	1	20	WORKSTATION	2
3	WORKSTATION	20	1	12		800		800			12	1	20	WORKSTATION	4
5	WORKSTATION	20	1	12			800		800		12	1	20	WORKSTATION	6
7	WORKSTATION	20	1	12	800			800			12	1	20	WORKSTATION	8
9	WORKSTATION	20	1	12		800			800		12	1	20	WORKSTATION	10
11	WORKSTATION	20	1	12			800			800	12	1	20	WORKSTATION	12
13	WORKSTATION	20	1	12	800			800			12	1	20	WORKSTATION	14
15	WORKSTATION	20	1	12		800			800		12	1	20	WORKSTATION	16
17	WORKSTATION	20	1	12			800		800		12	1	20	WORKSTATION	18
19	WORKSTATION	20	1	12	800			800			12	1	20	WORKSTATION	20
21	WORKSTATION	20	1	12		800			800		12	1	20	WORKSTATION	22
23	WORKSTATION	20	1	12			800			800	12	1	20	WORKSTATION	24
25	WORKSTATION	20	1	12	800			800			12	1	20	WORKSTATION	26
27	WORKSTATION	20	1	12		800			800		12	1	20	WORKSTATION	28
29	WORKSTATION	20	1	12			800			800	12	1	20	WORKSTATION	30
31	WORKSTATION	20	1	12	800			800			12	1	20	WORKSTATION	32
33	WORKSTATION	20	1	12		800			800		12	1	20	WORKSTATION	34
35	WORKSTATION	20	1	12			800			800	12	1	20	WORKSTATION	36
37	WORKSTATION	20	1	12	800			800			12	1	20	WORKSTATION	38
39	WORKSTATION	20	1	12		800			800		12	1	20	WORKSTATION	40
41	WORKSTATION	20	1	12			800			800	12	1	20	WORKSTATION	42
SECTION 2															
43	WORKSTATION	20	1	12	800			800			12	1	20	WORKSTATION	44
45	WORKSTATION	20	1	12		800			800		12	1	20	WORKSTATION	46
47	WORKSTATION	20	1	12			800			800	12	1	20	WORKSTATION	48
49	WORKSTATION	20	1	12	800			800			12	1	20	WORKSTATION	50
51	WORKSTATION	20	1	12		800			800		12	1	20	WORKSTATION	52
53	WORKSTATION	20	1	12			800			800	12	1	20	WORKSTATION	54
55	WORKSTATION	20	1	12	800			800			12	1	20	WORKSTATION	56
57	WORKSTATION	20	1	12		800			800		12	1	20	WORKSTATION	58
59	WORKSTATION	20	1	12			800			800	12	1	20	WORKSTATION	60
61	WORKSTATION	20	1	12	800			800			12	1	20	WORKSTATION	62
63	WORKSTATION	20	1	12		800			800		12	1	20	WORKSTATION	64
65	WORKSTATION	20	1	12			800			800	12	1	20	WORKSTATION	66
67	WORKSTATION	20	1	12	800			800			12	1	20	WORKSTATION	68
69	WORKSTATION	20	1	12		800			800		12	1	20	WORKSTATION	70
71	WORKSTATION	20	1	12			800			800	12	1	20	WORKSTATION	72
73	SPARE	20	1									1	20	SPARE	74
75	SPARE	20	1									1	20	SPARE	76
77	SPARE	20	1									1	20	SPARE	78
79	SPARE	20	1									1	20	SPARE	80
81	SPARE	20	1									1	20	SPARE	82
83	SPARE	20	1									1	20	SPARE	84
NOTES:					1600	1600	1600	1600	1600	1600				TOTAL VA	51600
					14200		14200		14200					AMPS @ 208 3Ø	154.68

PANEL: H		VOLTS/PHASE/WIRE: 120/208V/3Ø/4W						LOCATION: ELEC CLOSET						MOUNTING: SURFACE	
BUS: 800A		MAIN: MLO						IG: 10,000 RMS SYM. AMPS						FEEDER: SEE RISER DIAGRAM	
CKT NO	DESCRIPTION	BROK AMP	BROK POLE	WIRE SIZE	ØA	ØB	ØC	ØA	ØB	ØC	WIRE SIZE	BROK AMP	BROK POLE	DESCRIPTION	CKT NO
1	CU-1	40	3	8	232Ø			232Ø			8	3	40	CU-2	2
3					232Ø				232Ø		8	3	40		4
5						232Ø				232Ø	8	3	40		6
7	CU-3	80	3	10	140Ø			140Ø			10	3	80	CU-4	8
9						140Ø				140Ø	10	3	80		10
11					140Ø				140Ø		10	3	80		12
13					1464			1464			10	3	25	CU-6	14
15	CU-5	25	3	10	1464			1464			10	3	25		16
17						1464				1464	10	3	25		18
19					232Ø			1464			10	3	25	CU-8	20
21	CU-7	40	3	8		232Ø			1464		10	3	25		22
23							232Ø			1464	10	3	25		24
25					140Ø			232Ø			8	3	40	CU-10	26
27	CU-9	80	3	10		140Ø			232Ø		10	3	40		28
29						140Ø			232Ø		10	3	40		30
31	F-1	25	1	10	1656			1656			10	1	25	F-2	32
33	F-3	20	1	12		864			864		12	1	20	F-4	34
35	F-5	20	1	12			864			864	12	1	20	F-6	36
37	F-7	25	1	10	1656			864			12	1	20	F-8	38
39	F-9	20	1	12		646			1656		10	1	25	F-10	40
41	ROOF RECEPTACLES	20	1	12			400				1	20		SPARE	42
SECTION 2															
43	PANEL G1	100	3	3	8800			11562			1	3	125	PANEL G	44
45					8000				11560		1	3	125		46
47						8000				11498	1	3	125		48
49	PANEL G2	100	3	3	8800			1416			1	3	125	PANEL B	50
51						8000			8016		1	3	125		52
53							8000			1328	1	3	125		54
55	PANEL CL1	200	3	3/0	14200						1	20		SPARE	56
57						14200					1	20		SPARE	58
59							14200				1	20		SPARE	60
61	PANEL CL2	200	3	3/0	14400						1	20		SPARE	62
63						14400					1	20		SPARE	64
65							14400				1	20		SPARE	66
67	BUSSED SPACE													BUSSED SPACE	68
69	BUSSED SPACE													BUSSED SPACE	70
71	BUSSED SPACE													BUSSED SPACE	72
73	BUSSED SPACE													BUSSED SPACE	74
75	BUSSED SPACE													BUSSED SPACE	76
77	BUSSED SPACE													BUSSED SPACE	78
79	BUSSED SPACE													BUSSED SPACE	80
81	BUSSED SPACE													BUSSED SPACE	82
83	BUSSED SPACE													BUSSED SPACE	84
NOTES:					64448	61046	61800	39212	52560	95072				TOTAL VA	281,148
					47120		49656		16812					AMPS @ 208 3Ø	748.71

PANEL: B		VOLTS/PHASE/WIRE: 120/208V/3Ø/4W						LOCATION: ELECTRICAL RM						MOUNTING: SURFACE	
BUS: 225A		MAIN: MLO						IG: 10,000 RMS SYM. AMPS						FEEDER: SEE RISER DIAGRAM	
CKT NO	DESCRIPTION	BROK AMP	BROK POLE	WIRE SIZE	ØA	ØB	ØC	ØA	ØB	ØC	WIRE SIZE	BROK AMP	BROK POLE	DESCRIPTION	CKT NO
1	VENDING MACHINE	20	1	12	250			1668			12	1	20	CLOTHES WASHER	2
3	VENDING MACHINE	20	1	12		250		660			12	1	20	GAS CLOTHES DRYER	4
5	REFRIGERATOR	20	1	12			1200		1668		12	1	20	CLOTHES WASHER	6
7	MICROWAVE	20	1	12	250			660			12	1	20	GAS CLOTHES DRYER	8
9	MICROWAVE	20	1	12		250			1668		12	1	20	CLOTHES WASHER	10
11	TV MONITORS	20	1	12			1680			660	12	1	20	GAS CLOTHES DRYER	12
13	GFI RR RECEP	20	1	12	360				400		12	1	20	CEILING PROJECTOR	14
15	HN CLOSET	20	1	12		360			400		12	1	20	OFFICE RECEP	16
17	GFI RR RECEP	20	1	12			360			400	12	1	20	OFFICE RECEP	18
19	MICROWAVE	20	1	12	250			1260			12	1	20	GEN. CLASRM RECEP	20
21	MICROWAVE	20	1	12		250			360		12	1	20	LAUNDRY RECEP	22
23	OFFICE RECEP	20	1	12			1080			360	12	1	20	RECEPTION RECEP	24
25	OFFICE RECEP	20	1	12	720			540			12	1	20	TV MONITORS	26
27	GEN. CLASRM RECEP	20	1	12		180			720		12	1	20	CONF. RM RECEP	28



ELECTRICAL SYMBOLS LIST	
CIRCUITING & NOTES	
48"	SPECIAL MOUNTING HEIGHT FOR ASSOCIATED DEVICE. (CENTERLINE OF DEVICE)
GF	GROUND FAULT INTERRUPTER DEVICE.
WP	WEATHERPROOF ENCLOSURE ON DEVICE.
IG	ISOLATED GROUND DEVICE.
[X]	ELECTRICAL FLOOR PLAN NOTE WITH DESIGNATION.
2 LP	CONDUIT CONCEALED WHERE POSSIBLE OR AS NOTED, ARROWS INDICATE HOME RUN TO PANEL. CIRCUIT NUMBERS INDICATED.
[W]	#12 WIRE IN CONDUIT, UNLESS NOTED OTHERWISE ON DRAWINGS OR SPECIFICATION.
[G]	GROUNDING CONDUCTOR, #12 WIRE UNLESS NOTED OTHERWISE ON DRAWINGS OR SPECIFICATION.
[R]	CONDUIT ROUTED UNDER SLAB.
LIGHTING	
[E]	EMERGENCY TWIN HEAD LIGHT FIXTURE.
[D]	EXIT LIGHT WITH DIRECTIONAL ARROWS INDICATED.
[F]	FLUORESCENT FIXTURE WITH TYPE DESIGNATION.
[N]	NIGHT LIGHT, CONNECT TO UNSWITCHED CIRCUIT.
[R]	CEILING OR RECESSED FIXTURE WITH TYPE DESIGNATION.
[M]	WALL MOUNTED FIXTURE WITH TYPE DESIGNATION.
POWER DEVICES	
[D]	DUPLEX RECEPTACLE, BOTTOM OF BOX AT 16" AFF, UNLESS NOTED OTHERWISE.
[F]	FOURPLEX RECEPTACLE, BOTTOM OF BOX AT 16" AFF, UNLESS NOTED OTHERWISE.
[H]	HEAVY DUTY OUTLET - NEMA CONFIGURATION SIZE PER EQUIPMENT MANUFACTURER'S RECOMMENDATION.
[P]	PANEL BOARD, TOP OF BOX 6'-0" AFF.
[J]	JUNCTION BOX.
[D]	NON-FUSED DISCONNECT SWITCH.
[F]	FUSED DISCONNECT SWITCH.
[M]	MOTOR WITH DESIGNATION.
CONTROLS	
S	SINGLE POLE WALL SWITCH, TOP OF BOX AT 48" AFF.
S3	THREE-WAY WALL SWITCH.
S4	FOUR-WAY WALL SWITCH.
S0	INFRARED OCCUPANCY SENSOR, HUBBELL #LHRSI-X
S00	WALL/CEILING MOUNT INFRARED OCCUPANCY SENSOR, WATT STOPPER #WPIR IV POWER PACK
S000	DIMMER SWITCH, (MULTIPLY X BY 100 TO DETERMINE THE SIZE OF DIMMER), DO NOT GANG DIMMERS. DIMMERS TO BE LUTRON "NOVA" SERIES.
S000	MANUAL MOTOR STARTER WITH OVERLOADS.
S000	DUAL TECHNOLOGY CEILING SENSOR, HUBBELL #0MNDT2000
S000	ULTRASONIC CEILING SENSOR, HUBBELL #0MNIUS2000
PROVIDE HUBBELL #UVPF UNIVERSAL POWER PACK FOR ALL CEILING MOUNTED OCCUPANCY SENSORS	
COMMUNICATIONS	
COMMUNICATIONS OUTLET WITH 3/4" CONDUIT STUBBED UP TO ABOVE ACCESSIBLE CEILING, BOTTOM OF BOX AT 16", UNLESS NOTED OTHERWISE. PROVIDE PULL STRING OR CABLING IF PART OF CONTRACT, COORDINATE W/ OWNER.	
DATA/TELEPHONE	
FIRE ALARM	
[SD]	CEILING MOUNTED SMOKE DETECTOR.
[F]	FIRE ALARM PULL STATION, TOP OF BOX AT 48" AFF.
[H]	FIRE ALARM HORN/STROBE COMBINATION SIGNAL, CENTERLINE 6'-8" AFF.
[V]	FIRE ALARM VISUAL STROBE, CENTERLINE 6'-8" AFF.
MISCELLANEOUS	
TELEVISION OUTLET - ONE TWO GANG BOX WITH 1" CONDUIT STUBBED UP TO ABOVE ACCESSIBLE CEILING (PROVIDE CABLE, VERIFY REQUIREMENTS), VERIFY EXACT MOUNTING HEIGHT	
[F]	COMBINATION POWER AND DATA FLOORBOX.
[F]	FLUSH SERVICE FLOORBOX FOR FEED TO SYLING STATION. CONNECT TO SPLIT-WIRED 4PLEX RECEPTACLES IN SYLING STATIONS AS REQUIRED.
[T]	LINE VOLTAGE THERMOSTAT PROVIDED BY MECHANICAL CONTRACTOR. ELECTRICAL CONTRACTOR TO PROVIDE AND INSTALL WIRING.
[SD]	DUCT MOUNTED SMOKE DETECTOR (PROVIDED BY HVAC CONTRACTOR)

## ELECTRICAL LIGHTING FIXTURE SCHEDULE

1 ALL FIXTURES AND LAMPS SHALL BE AS SPECIFIED. SUBSTITUTES NOT ALLOWED. LEAD TIME ON LIGHTING FIXTURES IS UP TO 8 WEEKS AFTER RELEASE OF ORDER. PRE-APPROVED LIGHTING SUBMITTALS AVAILABLE ON LINE AFTER AWARD OF CONTRACT. DOWN-LIGHTS WILL BE FURNISHED WITH HANGER BARS SHIPPED SEPARATELY. ALL TRACK SHALL BE MOUNTED TO STRUT FURNISHED BY THE CONTRACTOR.

2. LIGHT FIXTURES AND LAMPS ARE FURNISHED BY THE NATIONAL ACCOUNT VENDOR, PURCHASED BY THE CONTRACTOR, VERIFY W/ OWNER. ALL QUANTITIES OF FIXTURES ON QUOTATIONS ARE GUARANTEED.

CONTACT INFORMATION AS FOLLOWS:  
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YORBA LINDA, CA  
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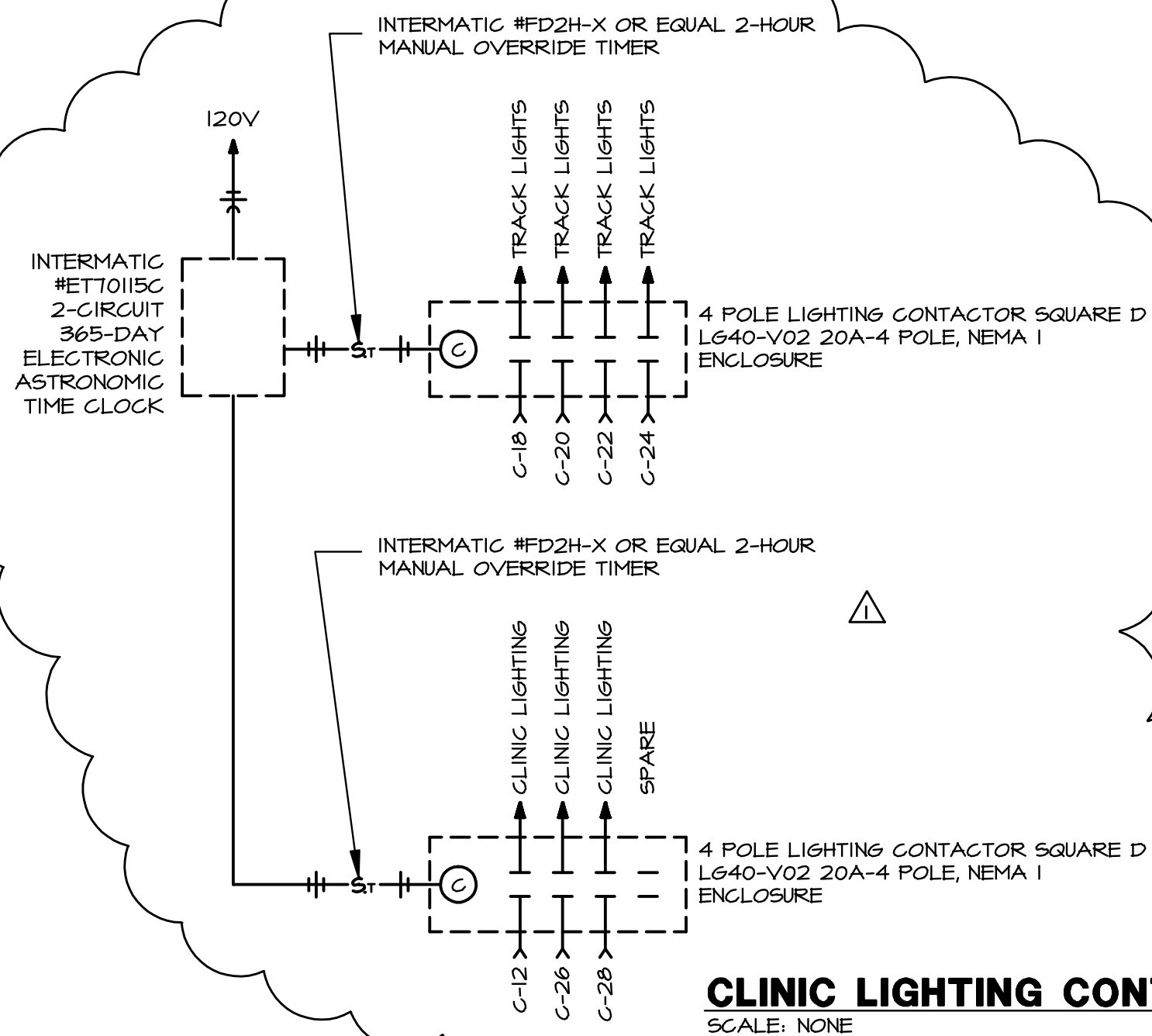
## ELECTRICAL LIGHTING FIXTURE SCHEDULE

(REV 08-06-08)

Symbol	Ref.	Height	Fixture Type	Manufacturer	Order Number	Lamps	Notes
	A	12'-0"	MH CAST CLOSED BACK GIMBAL TRACK FIXTURE - FURNISH WITH BLACK TRACK AND END-FEED CURRENT LIMITER	CON-TECH LIGHTING	# CTL8235S39MH6-B FIXTURE # L78-X-B TRACK # LA-23-R-B-REGX	GE #CMH39 T/U/830/G12 (20153)	ONE HEAD PER CHAIR IN CLINIC AREAS, PROVIDE CURRENT-LIMITERS AS INDICATED ON ELECTRICAL PLANS. MOUNT TO UNI-STRUT WITH THREAD ROD.
	A1	12'-0"	HALOGEN PAR 38 BLACK TRACK FIXTURE FURNISH WITH BLACK TRACK.	COOPER - HALO	# L1808-PAL #L1980MB # L653-MB TRACK	GE #100 PAR38/HIR/ SP-10-120V	6 TO 8 LIGHTS PER 12'-0" SECTION OF TRACK.VERIFY REQUIRED CONNECTIONS WITH MANUF.MOUNT TO UNI-STRUT WITH THREAD ROD.PROVIDE DIMMER SWITCH
	B	CEILING	7" COMPACT FLUOR HORIZONTAL DOWNLIGHT HAZE FINISH AND WHITE TRIM	COOPER - PORTFOLIO	# C7242E-7350H	(2)GE #F32/ TBX/SPX30	
	C	CEILING	3" LOW VOLTAGE ADJUSTABLE DOWNLIGHT CLEAR FINISH AND WHITE TRIM	COOPER - HALO	# H36LVTAT-3004WHC	GE #Q37 MR16/CG/FL	PROVIDE DIMMER SWITCH
	D1	CEILING	2X4 (2) LAMP RECESSED INDIRECT FLUORESCENT TROFFER	CORELITE - CLASS R2	# R2-W-L-2T5-1-S-24- UNV	(2) F54TSHO/ 830	
	D1F	CEILING	2X4 (2) LAMP RECESSED INDIRECT FLUORESCENT TROFFER WITH FLANGE KIT	CORELITE - CLASS R2	# R2-W-L-2T5-1-S-24- UNV	(2) F54TSHO/ 830	
	D6	CEILING	2X4 (3) LAMP RECESSED INDIRECT FLUORESCENT TROFFER	CORELITE - CLASS R2	# R2-W-L-3T5-1-S-24- UNV	(3) F54TSHO/ 830	
	D6F	CEILING	2X4 (3) LAMP RECESSED INDIRECT FLUORESCENT TROFFER WITH FLANGE KIT	CORELITE - CLASS R2	# R2-W-L-3T5-1-S-24- UNV	(3) F54TSHO/ 830	
	E	CEILING	1X4 WRAP SURFACE MOUNT WITH ACRYLIC LENSE FLUORESCENT	METALUX - W SERIES	# W-232A-UNV-EB81	(2) F32T8/ SPX30	
	F	10'-0"	LINEAR FLUORESCENT PENDANT MOUNTED DOWNLIGHT WITH PARABOLIC LOUVERS	FOCAL POINT - EVOLUTION 1	# FEVS-PL-2T8-UNV-S-CXX -TS	(2) F32T8/ SPX30	EXPOSED CEILING CONDITION. VERIFY CABLE SUSPENSION LENGTH "CXX"
	G	8'-3" 9'-0"	LINEAR FLUORESCENT PENDANT MOUNTED UPLIGHT	FOCAL POINT - EVOLUTION 1	# FEVS-CT-2T8-UNV-S-CXX -TS	(2) F32T8/ SPX30	T-BAR,HARD-LID,OR DROP CEILING CONDITION. VERIFY CABLE SUSPENSION LENGTH "CXX"
	H	7'-0"	VAPOR-TITE INCANDESCENT WALL/CEILING FIXTURE	COOPER - LUMARK	# ICVC1G	GE #60A/ RVL-120V	CEILING MOUNT FIXTURE TO BE MOUNTED ON WALL IN RESTROOMS. RECESS J-BOX.
	J1	12'-0"	16" METAL HALIDE HIGH-BAY WITH ELECTRONIC BALLAST	COOPER - LUMARK	# MDHB-PD16-M-100-E- PC3-277	GE #CMH100/ C/U/830/O	ACRYLIC REFLECTOR WITH HOOK, CORD AND PLUG. PROTECTED SOCKET. VERIFY VOLTAGE
	J2	16'-0"	16" METAL HALIDE HIGH-BAY WITH ELECTRONIC BALLAST	COOPER - LUMARK	# MDHB-PD16-M-150-E- PC3-277	GE #CMH150/ C/U/830/O	ACRYLIC REFLECTOR WITH HOOK, CORD AND PLUG. PROTECTED SOCKET. VERIFY VOLTAGE
	K1	7'-0" 8'-0"	7.5" INCANDESCENT DECORATIVE PENDANT	PRISMA - OPTALUM	# 073726-2780	GE #60A/ RVL-120V	FOR USE AT RECEPTION AND CONFERENCE ROOM PROVIDE DIMMER SWITCH
	L	-	WALL MOUNT FLUORESCENT FIXTURE. 18" ARMS	LUMENART - STILLETTO	# STL-4'-F54-RM-277 -18-PR	GE #F54W/ T5/830	WALL MOUNT FIXTURE, NICKLE FINISH. VERIFY HEIGHT WITH SIGNAGE.

## EMERGENCY LIGHTS

[E]	9'-0"	WALL MOUNT EMERGENCY LIGHT	COOPER - SURE LITES	# CCS-WH-215	INCLUDED	(2) 12W HALOGEN, 6V, 302 LUMEN SEALED BEAM LAMPS. WHITE FINISH.
X	-	WALL/CEILING MOUNTED EMERGENCY EXIT SIGN (5W MAX)	BEST LIGHTING	# EZXTE-U-1	INCLUDED	RED LED UNIVERSAL ARROWS AND MOUNTING.
X2	-	WALL/CEILING MOUNTED EMERGENCY EXIT SIGN W/ EXTERIOR HEAD (5W MAX)	BEST LIGHTING	# EZXTE-U-1-EM-RC #RH1-WP6V7 - REMOTE	INCLUDED	W/ REMOTE EMERGENCY LIGHT



CLINIC LIGHTING CONTROL DIAGRAM  
SCALE: NONE

## GENERAL NOTES:

- COORDINATE ALL WORK WITH OTHER TRADES AND EXISTING CONDITIONS AS REQUIRED TO PROPERLY INSTALL ALL SYSTEMS AS INTENDED, WITHIN THE CONFINES OF THE SPACES AVAILABLE, AND WITHOUT INTERFERENCES.
- WHERE CONDUIT IS SHOWN UNDERFLOOR, VERIFY IF FLOOR IS STRUCTURAL SLAB OR SLAB ON GRADE. IF STRUCTURAL SLAB, COREDRILL PENETRATION, AND ROUTE CONDUIT IN SPACE BELOW. IF SLAB ON GRADE, SANGUT EXISTING FLOOR SLAB AS REQUIRED FOR INSTALLATION OF UNDERFLOOR CONDUIT. NO STRUCTURAL ELEMENTS SHALL BE CORE DRILLED OR SANGUT. WHEN SANGUTTING, PATCH FLOOR TO MATCH EXISTING SURFACE AS REQUIRED.
- IT IS THE ELECTRICAL CONTRACTORS RESPONSIBILITY TO PROPERLY BALANCE ALL BRANCH CIRCUITS BETWEEN THE PHASES OF THE SYSTEM, REGARDLESS OF CIRCUITING INDICATED.
- ELECTRICAL CONTRACTOR SHALL REMOVE ALL EXISTING ELECTRICAL EQUIPMENT, FIXTURES, SYSTEMS, CONDUIT AND WIRE, ETC. NOT BEING REUSED. DO NOT JUST ABANDON.
- REFER TO ARCHITECTURAL DRAWINGS FOR EXACT LOCATION OF LIGHT FIXTURES AND DEVICES.
- REFER TO ELECTRICAL SPECIFICATIONS ELSEWHERE IN THESE DRAWINGS FOR FURTHER INFORMATION AND REQUIREMENTS. GENERAL CONDITIONS AND SUMMARY OF WORK ALSO DIRECTLY APPLY TO THIS WORK.
- MAINTAIN EXISTING EXTERIOR BLDG LIGHTING CIRCUITS AND CONTROLS. RECONNECT TO NEW PANELS AS NECESSARY.

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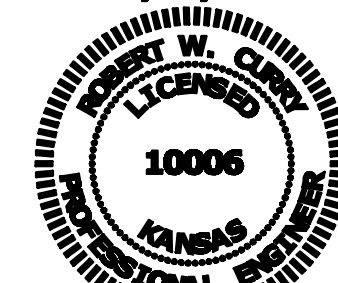
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## PROFESSIONAL SEAL:

12/31/2008



Robert W. Curry

SIGNATURE DATE

## SUBMISSION

## DATE

FINAL CONCEPT PLAN	5.14.08
CONSULTANT COORDINATION SET	6.17.08
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FINAL AS-BUILT PLANS	12.31.08

PROJECT NO: 0803

SCALE:

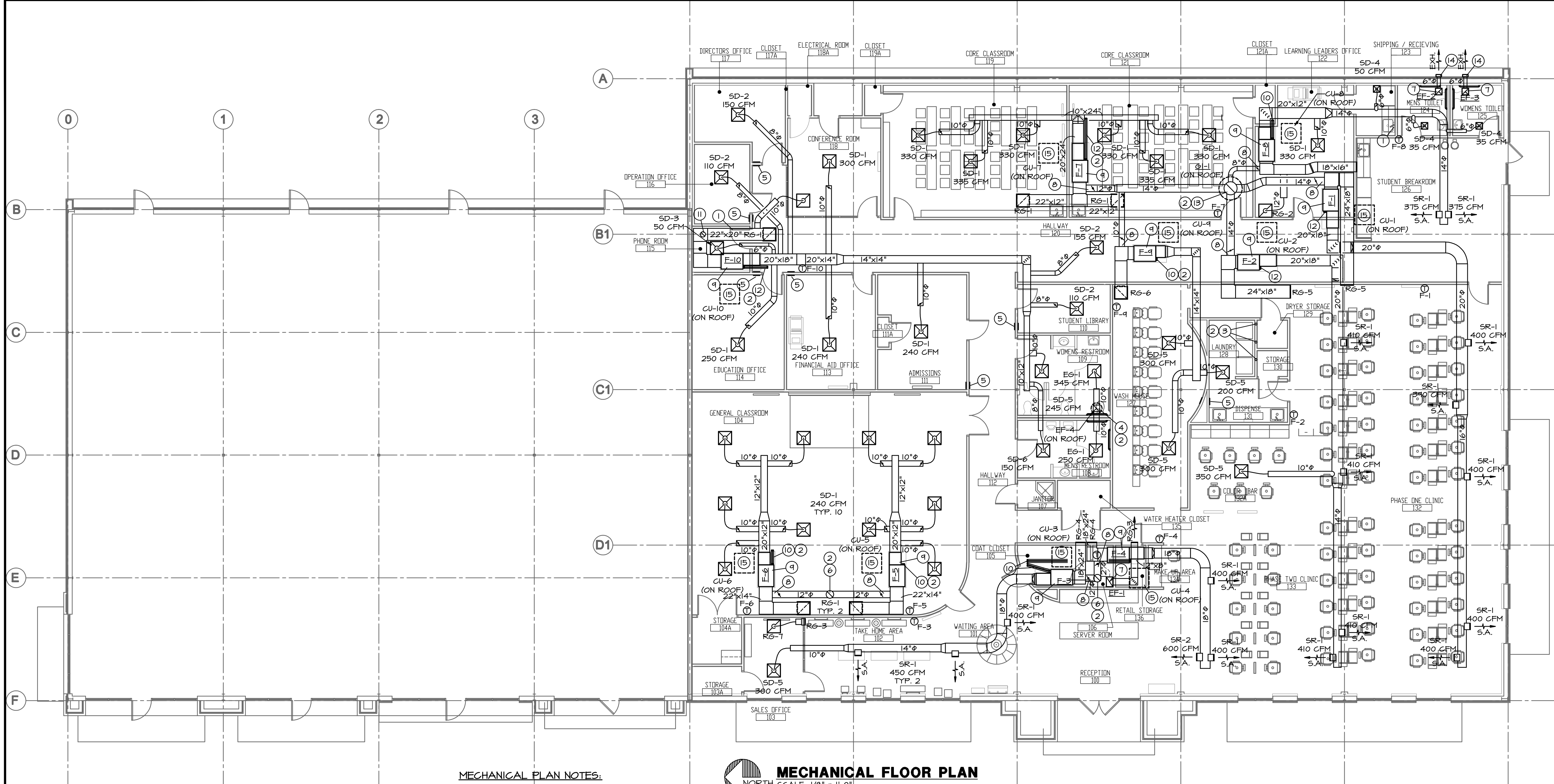
LIGHT FIXTURE  
SCHEDULE AND  
SYMBOL LIST

E5

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MECHANICAL PLAN NOTES:

- UNDERCUT DOOR AS REQUIRED FOR RETURN AIR PATH.
- ALL ROOFING WORK SHALL BE PERFORMED BY LANDLORD'S ROOFING CONTRACTOR (AT THIS CONTRACTOR'S EXPENSE) TO MAINTAIN EXISTING ROOF WARRANTY. VERIFY APPROVED ROOFING CONTRACTOR WITH LANDLORD PRIOR TO PERFORMING WORK.
- DRYER VENT. PROVIDE THREE (3) 4" DRYER EXHAUST DUCTS UP THROUGH ROOF FOR DRYERS. PROVIDE WEATHERHEAD. CONNECT TO DRYER WITH 4" FLEX DUCT AS REQUIRED. CUT EXISTING ROOF AND FLASH WEATHERHEAD INTO ROOF AS REQUIRED.
- 12"x12" EXHAUST DUCT UP THROUGH ROOF TO EF-4. CUT EXISTING ROOF AND FLASH CURB INTO ROOF AS REQUIRED.
- HIGH/LOW RETURN AIR GRILLES - OFFICE SIDE GRILLE LOCATED AT 12" AFF. CENTRAL AREA SIDE LOCATED AT 8" AFF. R6-3, SEE DIFFUSER SCHEDULE.
- 14"Ø OUTDOOR AIR DUCT UP THROUGH ROOF TO GOOSENECK OR WEATHERHEAD. CUT EXISTING ROOF AND FLASH INTO ROOF AS REQUIRED. VERIFY MINIMUM 10' CLEARANCE FROM ALL FLUES, VENTS, & EXHAUST DISCHARGES.
- SUPPORT UNIT FROM STRUCTURE AS REQUIRED.
- CONNECT OA DUCT TO RETURN DUCT WITH MANUAL BALANCING DAMPER.
- SUPPORT UNIT FROM STRUCTURE WITH VIBRATION ISOLATION AS REQUIRED. PROVIDE WATERPROOF DRAIN PAN UNDER FURNACE & EVAPORATOR COIL. REFER TO PLUMBING DRAWINGS FOR CONDENSATE AND DRAIN PAN PIPING.
- 2" PVC FLUE & 3" PVC COMBUSTION AIR PIPING UP THROUGH ROOF. PROVIDE MANUFACTURER'S TERMINATION KIT.
- 10"Ø OUTDOOR AIR DUCT UP THROUGH ROOF TO GOOSENECK OR WEATHERHEAD. CUT EXISTING ROOF AND FLASH INTO ROOF AS REQUIRED. VERIFY MINIMUM 10' CLEARANCE FROM ALL FLUES, VENTS, & EXHAUST DISCHARGES. CONNECT OA DUCT TO RETURN DUCT WITH MANUAL BALANCING DAMPER.
- 3" PVC FLUE & 3" PVC COMBUSTION AIR PIPING UP THROUGH ROOF. PROVIDE MANUFACTURER'S TERMINATION KIT.
- 20"Ø OUTDOOR AIR DUCT UP THROUGH ROOF TO INTAKE HOOD. CUT EXISTING ROOF AND FLASH CURB INTO ROOF AS REQUIRED. VERIFY MINIMUM 10' CLEARANCE FROM ALL FLUES, VENTS, & EXHAUST DISCHARGES.
- WALL CAP FOR EXHAUST FAN. SEAL EXTERIOR WALL PENETRATION WEATHERTIGHT.
- BOLT CONDENSING UNIT TO TWO 12"x4"x4" TREATED WOOD SUPPORTS MOUNTED PERPENDICULARLY TO THE SPAN OF THE LONG-SPAN DECKING & MOUNT ON WALKPAD AS DETAILED. CONNECT REFRIGERANT PIPING TO CONDENSING UNIT & COIL AS REQUIRED. PROVIDE REFRIGERANT PIPING FOR CONDENSING UNIT AS REQUIRED BY MANUFACTURER. INSTALL PIPING AS RECOMMENDED BY MANUFACTURER. SEE PLAN NOTE #2.



MECHANICAL FLOOR PLAN

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

MECHANICAL SYMBOLS

- NEW SUPPLY DIFFUSER
- NEW RETURN AIR GRILLE
- EXHAUST GRILLE / FAN
- THERMOSTAT, MOUNT AT 48" AFF
- DUCT-MOUNT SMOKE DETECTOR
- NEW DUCTWORK
- SIZE OF RECTANGULAR DUCT
- SIZE OF ROUND DUCT
- MANUAL VOLUME DAMPER
- MANUAL VOLUME DAMPER
- FLEXIBLE DUCTWORK
- FLEXIBLE CONNECTION TO FAN
- FLOOR PLAN NOTE DESIGNATION
- S.A. SUPPLY AIR
- R.A. RETURN AIR
- EXH. EXHAUST AIR
- ELBOW WITH TURNING VANES
- TRANSITION IN DUCT SIZE
- SPLITTER DAMPER WITH HORIZONTAL REGULATOR

MECHANICAL GENERAL NOTES:

- COORDINATE ALL WORK WITH OTHER TRADES AND EXISTING CONDITIONS AS REQUIRED TO PROPERLY INSTALL ALL SYSTEMS AS INTENDED, WITHIN THE CONFINES OF THE SPACES AVAILABLE, AND WITHOUT INTERFERENCES.
- THIS CONTRACTOR SHALL PERFORM ALL WORK INDICATED AND/OR AS REQUIRED FOR THE PROPER INSTALLATION AND OPERATION OF THE MECHANICAL SYSTEMS.
- REFER TO ARCHITECTURAL REFLECTED CEILING PLANS FOR EXACT LOCATIONS OF DIFFUSERS.
- INSTALL ALL DUCT, PIPE, ETC. AS HIGH AS POSSIBLE.
- DUCT SIZES SHOWN ARE ACTUAL SHEET METAL SIZES AND INCLUDE A 1/2 INCH ALLOWANCE FOR DUCT LINER WHERE APPLICABLE.
- PROVIDE FLEXIBLE CONNECTION BETWEEN DUCTWORK AND ROOFTOP UNITS, EXHAUST FANS, AND OTHER MOTORIZED EQUIPMENT.
- NO DUCT SHALL BE ROUTED OVER THE TOP OF ELECTRICAL PANELS.
- ALL MATERIALS EXPOSED WITHIN PLENUMS SHALL BE NONCOMBUSTIBLE OR SHALL HAVE A FLAME SPREAD INDEX OF NOT MORE THAN 25 AND A SMOKE-DEVELOPED INDEX OF NOT MORE THAN 50 WHEN TESTED IN ACCORDANCE WITH ASTM E 84.

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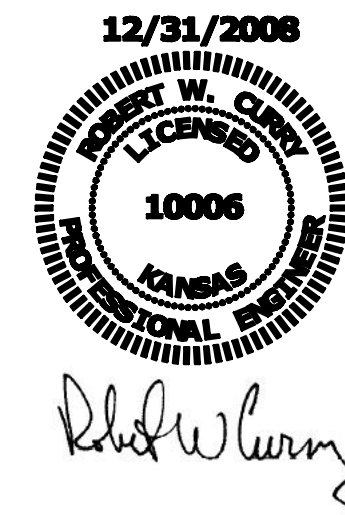
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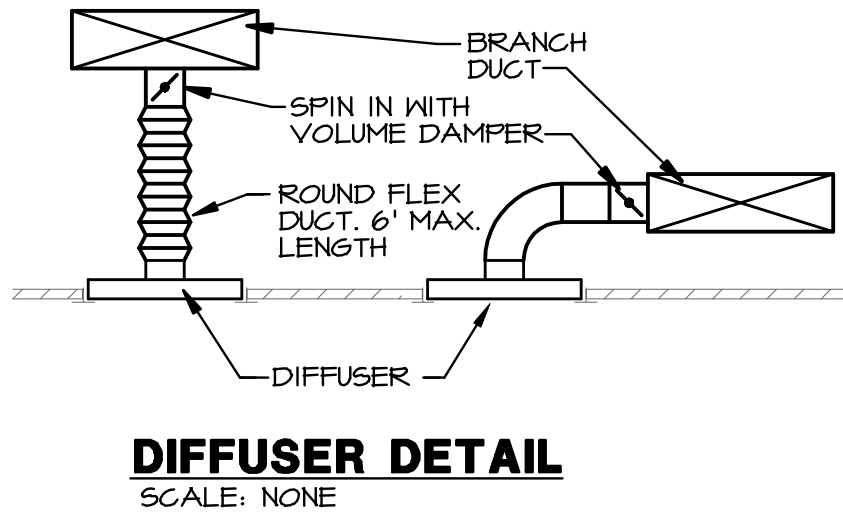
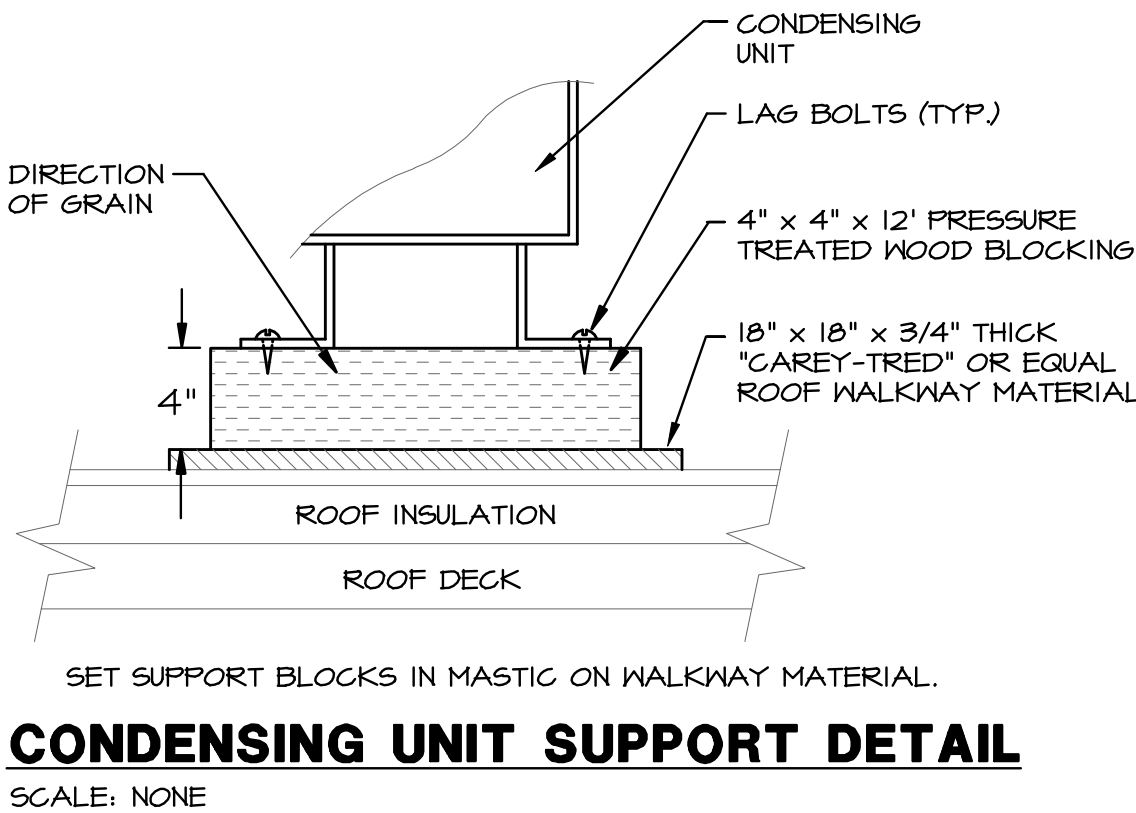
SCALE:

MECHANICAL  
PLAN

M1



OUTDOOR AIR CALCULATIONS						
UNIT	CLASS	SQ. FT.	PEOPLE/ SQ. FT.	CFM/ SQ. FT.	CFM/ PERSON	CFM
F-1,2,3,4	RETAIL	752		0.30000		226
	BEAUTY	2340	25/1000			
					25	1463
					TOTAL	1688
F-5,6	CLASSROOM *	1130	50/1000		20	565
					TOTAL	565
F-7	CLASSROOM *	741	50/1000		20	346
					TOTAL	346
F-8	OFFICE	330	7/1000		20	46
	BREAK	334	20/1000		15	102
	TOILETS	114				0
					TOTAL	148
F-9	BEAUTY	223	25/1000		25	134
	WORKROOM	166		0.50000		83
	STORAGE	38		0.15		6
					TOTAL	223
F-10	OFFICE	485	7/1000		20	68
	CORRIDORS	864		0.05		43
	CONFERENCE *	114	50/1000		20	60
	TOILETS	245				0
	LIBRARY	103	20/1000		15	31
					TOTAL	202
* - PEAK OCC. LESS THAN 3 HRS. PER ASHRAE (62-1984) -SECTION 6.13.4, AVERAGE OCCUPANCY MAY BE USED FOR CALCULATION OF OA REQUIREMENTS. * WHERE PEAK OCCUPANCIES OF LESS THAN THREE HOURS DURATION OCCUR, THE OUTDOOR AIR FLOW RATE MAY BE DETERMINED ON THE BASIS OF AVERAGE OCCUPANCY FOR THE BUILDINGS FOR THE DURATION OF OPERATION OF THE SYSTEM, PROVIDED THE AVERAGE OCCUPANCY USED IS NOT LESS THAN ONE-HALF THE MAXIMUM. *						



FURNACE SCHEDULE										
MARK	MFGR	MODEL NO.	CFM	EXT. STATIC P. IN. WG.	HEATING (GAS)		ELECTRICAL		OUTSIDE AIR (CFM)	REMARKS
					BTUH INPUT	BTUH OUTPUT	VOLT/Ø/HZ	HP		
F-1	TRANE	TUX120	1,990	0.5	120,000	96,000	115/1/60	3/4	470	-
F-2		↓	↓		↓	↓			↓	-
F-3		TUX080	1,600		80,000	74,000		1/3	375	-
F-4		↓	↓		↓	↓		↓	↓	-
F-5		TUX060	1,200		60,000	56,000		1/3	285	-
F-6		↓	↓		↓	↓		↓	↓	-
F-7		TUX120	1,990		120,000	96,000		3/4	400	-
F-8		TUX060	1,200		60,000	56,000		1/3	150	-
F-9		TUX040	800		40,000	38,000		1/5	230	-
F-10	↓	TUX120	1,990	↓	120,000	96,000	↓	3/4	205	-

- NOTES:
1. PROVIDE 1" THICK THROWAWAY TYPE FILTER WITH HOLDING FRAME FOR EACH UNIT.
  2. PROVIDE EACH UNIT WITH 7-DAY PROGRAMMABLE HEAT/COOL/AUTO CHANGEOVER THERMOSTAT.
  3. CONDENSING UNITS, COOLING COILS, AND FURNACES SHALL ALL BE OF THE SAME MANUFACTURER.

CONDENSING UNIT SCHEDULE									
MARK	MFGR	MODEL NO.	COOLING				ELECTRICAL		REMARKS
			TOTAL BTUH	SENS. BTUH	AMB.	EVAP. EAT DB/WB	VOLT/Ø/HZ	EVAP. COIL MODEL NO.	
CU-1	TRANE	4TTA3060	60,000	42,000	95	80/67	208/3/60	4TXCD061	
CU-2									
CU-3		4TTA3048	48,000	33,600				4TXCC049	
CU-4									
CU-5		4TTA3036	36,000	25,200				4TXCB036	
CU-6									
CU-7		4TTA3060	60,000	42,000				4TXCD061	
CU-8		4TTA3036	36,000	25,200				4TXCB036	
CU-9		4TTA3030	24,000	-				4TXCB025	
CU-10		4TTA3060	60,000	42,000				4TXCD061	

- NOTES:
1. PROVIDE TIME DELAY ON COMPRESSOR RE-START, CRANKCASE HEATER, AND COMPRESSOR LOCK-OUT WITH AMBIENT BELOW 55 °F.
  2. PROVIDE FUSED DISCONNECT FOR EACH UNIT.

EXHAUST FAN SCHEDULE									
MARK	MFGR	MODEL	CFM	EXTERNAL STATIC P. IN. WG.	RPM	ELECTRICAL		FAN TYPE	REMARKS
						VOLT/Ø/HZ	PWR		
EF-1	COOK	GC-520	300	0.25	1120	120/1/60	132W	CEILING EXH.	-
EF-2		GC-144	75		810		52W		-
EF-3									-
EF-4		100C15DH	595	0.375	1500		1/8	CENTR. ROOF	-

- NOTES:
1. PROVIDE CEILING GRILLE, BACKDRAFT DAMPER, WALL CAP, VARI-SPEED CONTROLLER, AND NON-FUSED DISCONNECT FOR EF-2 & EF-3.
  2. PROVIDE INSULATED 14" HIGH (AT LOWEST POINT) PREFABRICATED ROOF CURB, BACKDRAFT DAMPER, BIRD SCREEN, UNIT MOUNTED VARIABLE SPEED CONTROLLER, AND NON-FUSED DISCONNECT FOR EF-4.
  3. PROVIDE CEILING GRILLE, VARI-SPEED CONTROLLER, LINE-VOLTAGE COOLING ONLY THERMOSTAT, AND NON-FUSED DISCONNECT FOR EF-1.
  4. FANS SHALL NOT EXCEED SCHEDULED RPM.

DIFFUSER SCHEDULE						
MARK	MFGR	MODEL	NECK SIZE	FACE SIZE	FINISH	REMARKS
SD-1	TITUS	TMS/3	10"Ø	24"x24"	WHITE	-
SD-2			8"Ø			-
SD-3			6"Ø			-
SD-4				12"x12"		W/ #TRM FRAME, W/ O.B. DAMPER AT NECK
SD-5			10"Ø	24"x24"		W/ #TRM FRAME, W/ O.B. DAMPER AT NECK
SD-6			8"Ø			W/ #TRM FRAME, W/ O.B. DAMPER AT NECK
SR-1		30IRS	12"x8"	-		W/ O.B. DAMPER
SR-2			14"x10"	-		W/ O.B. DAMPER
SR-3			12"x10"	-		W/ O.B. DAMPER
RG-1		PAR/3	22"x22"	24"x24"		-
RG-2			12"Ø			-
RG-3		350RL	12"x8"	-		-
RG-4			18"x24"	-		-
RG-5			24"x18"	-		-
RG-6		PAR/3	22"x22"	24"x24"		W/ #TRM FRAME
RG-7			10"Ø			W/ #TRM FRAME
EG-1		PAR/3	10"Ø	24"x24"		W/ #TRM FRAME, W/ O.B. DAMPER AT NECK

GRAVITY INTAKE HOOD SCHEDULE					
MARK	MFGR	MODEL NO.	THROAT SIZE	FREE AREA FT²	REMARKS
G1-1	COOK	PR-24	24-3/4"Ø	7.92	-

- NOTES:
1. PROVIDE 18" HIGH (AT LOWEST POINT) PRE-FABRICATED INSULATED ROOF CURB WITH SLOPE TO MATCH SLOPE OF ROOF FOR EACH UNIT.
  2. PROVIDE WITH BIRDSCREEN.

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PROJECT NO: 0803

SCALE:

MECHANICAL  
SCHEDULES & DETAILS

M2



# MECHANICAL SPECIFICATIONS

## I. GENERAL PROVISIONS:

- PROVIDE ALL LABOR, MATERIALS, EQUIPMENT, NECESSARY FOR THE COMPLETE INSTALLATION OF THE PLUMBING AND MECHANICAL SYSTEMS OUTLINED.
- OBTAIN ALL PERMITS, FEES, LICENSES, INSPECTIONS, AND CERTIFICATES OF COMPLIANCE OR APPROVAL AS REQUIRED BY THE AUTHORITIES.
- ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH ALL APPLICABLE LAWS, CODES AND REGULATIONS OF THE GOVERNMENTAL BODIES HAVING JURISDICTION OVER THE SITE.
- ALL TESTING REQUIRED BY AUTHORITIES SHALL BE CONSIDERED PART OF THIS WORK.
- DURING CONSTRUCTION, ALL FIXTURES, EQUIPMENT, PIPE, DUCT, ETC. SHALL BE COVERED, PLUGGED, OR CAPPED AS REQUIRED TO KEEP CLEAN AND UNDamAGED. ALL DamAGED ITEMS SHALL BE RESTORED TO ORIGINAL CONDITION OR REPLACED. ALL PROTECTIVE COVERING SHALL BE REMOVED BEFORE FINAL ACCEPTANCE.
- PROVIDE ALL NECESSARY CUTTING AND PATCHING OF WALLS, FLOORS, CEILINGs, AND ROOFs AS NECESSARY. PATCH AROUND ALL OPENINGs SHALL MATCH ADJACENT AREA. COORDINATE ALL ROOFING WORK WITH OWNER OR RESPONSIBLE PARTY, SO THAT THE EXISTING ROOFING WARRANTY WILL BE MAINTAINED.

## 2. OPERATION AND MAINTENANCE MANUALS:

- DURING THE COURSE OF CONSTRUCTION, COLLECT AND COMPILE OPERATING INSTRUCTIONS, WIRING DIAGRAMS, CATALOG CUTS, LUBRICATION AND PREVENTIVE MAINTENANCE INSTRUCTIONS, PARTS LISTS, ETC. FOR ALL EQUIPMENT FURNISHED UNDER THIS CONTRACT.
- ALL LITERATURE AND INSTRUCTIONS SHIPPED WITH THE EQUIPMENT SHALL BE SAVED FOR INCLUSION IN THE OPERATION AND MAINTENANCE MANUALS.

## 3. MANUFACTURERS:

- MANUFACTURERS, MODEL NUMBERS, ETC. INDICATED OR SCHEDULED ON THE DRAWINGS SHALL BE INTERPRETED AS HAVING ESTABLISHED A STANDARD OF QUALITY AND SHALL NOT BE CONSIDERED AS LIMITING COMPETITION. ARTICLES, FIXTURES, ETC. OF EQUAL QUALITY BY MANUFACTURERS SHALL BE ACCEPTABLE, SUBJECT TO STRUCTURAL AND ELECTRICAL CONSTRAINTS OF THE PROJECT DESIGN, UNLESS NOTED OTHERWISE.

## 4. MOTORS:

- PROVIDE THERMAL OVERLOAD PROTECTION FOR EACH MOTOR PROVIDED BY THIS WORK.
- TESTING, BALANCING, AND CLEANING:

- ALL PIPING SHALL BE TESTED FOR LEAKS BEFORE BEING CONCEALED IN WALL CONSTRUCTION OR COVERED WITH INSULATION.
- SEWER AND VENT PIPING SHALL BE HYDROSTATICALLY TESTED WITH NO LESS THAN 10 FEET OF HEAD FOR A PERIOD OF NOT LESS THAN 15 MINUTES, PER THE LOCAL PLUMBING CODE, WITH NO LEAKS.
- FIKE PROTECTION PIPING SHALL BE TESTED IN ACCORDANCE WITH THE REQUIREMENTS OF NFPA.

- DOMESTIC WATER PIPING SHALL BE HYDROSTATICALLY TESTED AT A PRESSURE OF NOT LESS THAN 1-1/2 TIMES THE OPERATING PRESSURE, BUT NOT LESS THAN 50 PSI, FOR A PERIOD OF NOT LESS THAN 2 HOURS, WITH NO LEAKS.
- NATURAL GAS PIPING SHALL BE PNEUMATICALLY TESTED AT A PRESSURE OF NOT LESS THAN 1-1/2 TIMES THE OPERATING PRESSURE, BUT NOT LESS THAN 50 PSI, FOR A PERIOD OF NOT LESS THAN 2 HOURS, WITH NO LEAKS.

- DUCTWORK AND PIPING SHALL BE BALANCED BY QUALIFIED BALANCING PERSONNEL, WHO HAVE PREVIOUS EXPERIENCE WITH BALANCING PROCEDURES AND ARE FAMILIAR WITH TESTING AND BALANCING PROCEDURES OF THE ASSOCIATED AIR BALANCE COUNCIL (AABC) OR NATIONAL ENVIRONMENTAL BALANCING BUREAU (NEBB).

- BALANCING SHALL INCLUDE THE BALANCING OF THE EQUIPMENT AND AIR DISTRIBUTION SYSTEMS TO PROVIDE DESIGN QUANTITIES INDICATED AND VERIFICATION OF PERFORMANCE OF ALL EQUIPMENT AND AUTOMATIC CONTROLS.

- WITH IN 30 DAYS OF THE COMPLETION OF THE TESTING AND BALANCING WORK, SUBMIT THE TEST AND BALANCING REPORT BEARING THE SIGNATURE OF THE TEST AND BALANCE ENGINEER. THE REPORTS SHALL BE CERTIFIED PROOF THAT THE SYSTEM HAVE BEEN TESTED, ADJUSTED, AND BALANCED IN ACCORDANCE WITH THE REFERENCED STANDARDS; ARE AN ACCURATE REPRESENTATION OF HOW THE SYSTEMS HAVE BEEN INSTALLED AND ARE OPERATING. REPORTS SHALL BE BOUND IN A VINYL BINDER AND THE BINDER LABELED.

- BEFORE DOMESTIC WATER PIPING IS PLACED IN SERVICE, ALL DOMESTIC WATER DISTRIBUTION SYSTEMS, INCLUDING THOSE FOR COLD WATER AND HOT WATER SYSTEMS, SHALL BE FLUSHED, STERILIZED AND CALORIMETERED WITH HEALTH DEPARTMENT REGULATIONS. THE SYSTEMS SHALL BE THOROUGHLY FLUSHED OF ALL DIRT AND FOREIGN MATTER, THEN FILLED WITH WATER TREATED WITH 50 PPM OF CALORINE. CARBON VALVES AND FAUCETS SHALL BE OPENED AND CONSTRUCTION SEVERAL TIMES TO ASSURE TREATMENT OF THE ENTIRE SYSTEM. THE TREATED WATER SHALL BE LEFT IN THE SYSTEM FOR 24 HOURS. AFTER THE SYSTEM SHALL BE FLUSHED, IF THE RESIDUAL CHLORINE IS NOT LESS THAN 10 PPM THE FLUSHING SHALL BE REPEATED. AFTER STERILIZATION, SAMPLES OF WATER IN THE SYSTEM SHALL BE APPROVED BY THE BOARD OF HEALTH.

## 6. PIPING:

- DOMESTIC COLD, HOT, AND HOT WATER REGICULATING (ABOVEGROUND).

- TYPE L HARD DRAWN COPPER TUBING, ASTM B-88.
- WROUGHT BRONZE SOLDERED FITTINGS.
- GATE VALVE, GRADE # 428 OR EQUAL.
- GLUE VALVE, GRADE # 428 OR EQUAL.
- BALL VALVE, GRADE #492 OR EQUAL.

- DOMESTIC COLD, AND HOT WATER (UNDERGROUND).

- TYPE K HARD OR SOFT DRAWN COPPER TUBING, ASTM B-88.
- WROUGHT BRONZE SOLDERED FITTINGS.

## C. SANITARY SEWER AND VENTS (UNDERGROUND).

- POLYVINYLCHLORIDE (PVC) DWN PIPE, SCHEDULE 40, SOLVENT JOINT (WHERE APPROVED BY LOCAL CODES).
- SERVICE HEIGHT, BELL-AND-SPIGOT, COATED CAST IRON, ASTM A-14.
- DWN, WROUGHT COPPER, ANSI B-16.24.
- NO-HUB CAST IRON, NEOPRENE GASKETS, STAINLESS STEEL CLAMPS.

## D. SANITARY SEWER, AND VENTS (ABOVEGROUND).

- SERVICE HEIGHT, BELL-AND-SPIGOT, COATED CAST IRON, ASTM A-14.
- DWN, WROUGHT COPPER, ANSI B-16.24.
- GALVANIZED STEEL PIPE, WITH MALLEABLE IRON, THREADED FITTINGS, DRAINAGE PATTERN FOR SEWERS.
- NO-HUB CAST IRON, NEOPRENE GASKETS, STAINLESS STEEL CLAMPS.
- POLYVINYLCHLORIDE (PVC) DWN PIPE, SCHEDULE 40, SOLVENT JOINT (WHERE APPROVED BY LOCAL CODES).

## E. CONDENSATE DRAINS & INDIRECT WASTE (UNDERGROUND).

- DWN, WROUGHT COPPER, ANSI B-16.24 (INSIDE BUILDING).
- POLYVINYLCHLORIDE (PVC) DWN PIPE, SCHEDULE 40, SOLVENT JOINT (EXTERIOR OF BUILDING).

## F. REFRIGERANT.

- ASTM B 280, TYPE ACR, HARD-DRAWN STRAIGHT LENGTHS, AND SOFT-ANNEALED COILS, SEAMLESS COPPER TUBING.
- WROUGHT COPPER, ANSI B16.22, STREAMLINED PATTERN, FITTINGS. BRAZED JOINTS, AND A 5/8, CLASSIFICATION BAW-1 (SILVER).
- TUBING SHALL BE FACTORY CLEANED, READY FOR INSTALLATION AND HAVE ENDS CAPPED TO PROTECT CLEANLINESS PRIOR TO SHIPPING.
- SIZE AND INSTALLATION OF PIPE SHALL BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

## 6. NATURAL GAS.

- BLACK STEEL PIPE, SCHEDULE 40, ASTM A-120.
- PIPE 2" AND SMALLER, 60 LB. WALL THICKNESS, ZESTON PREPARED PIPING FITTINGS.
- PIPE 2-1/2" AND LARGER, WELDED.
- FLUE VALVE, ROCKWELL NORSTROM FIGURE NO. 142 OR 145.

- ALL PIPE HANGERS AND SUPPORTS SHALL BE STANDARD PRODUCTS OF GRINNELL, FEE AND MASON, OR ELCEN. HANGER SPACING SHALL BE IN ACCORDANCE WITH MSS-59-61.

## J. SLEEVES

- PROVIDE, SET, AND PROPERLY LOCATE PIPE SLEEVES AS REQUIRED FOR THIS WORK. ALL SLEEVES SHALL BE OF SUFFICIENT SIZE TO PERMIT PIPE MOVEMENT DUE TO EXPANSION AND CONTRACTION AND TO ACCOMMODATE PIPE INSULATION.

- INTERIOR PARTITIONS: 16 GAUGE GALVANIZED STEEL, PACK BETWEEN PIPE AND SLEEVE WITH FIRE SAFING AND CAULK AT EACH END WITH FIRE RESISTANT SEALANT.

- ROOF: PROSET OR EQUAL, MANUFACTURED PVC SCHEDULE 40 PIPE SLEEVE WITH WATERPROOF SEAL. COORDINATE WITH ROOFING CONTRACTOR AND FLASH AS REQUIRED TO MAINTAIN ROOF WARRANTY.

- PLUMBING VENTS: FLASH ROOF VENT INTO ROOFING SYSTEM AS REQUIRED BY THE ROOFING CONTRACTOR TO MAINTAIN EXISTING ROOF WARRANTY.

- PROVIDE CHROME PLATED ESCUTCHEONS ON ALL PIPE ENTERING FINISHED AREAS.

## 7. INSULATION AND DUCT LINING:

- ALL INSULATIONS AND ACCESSORIES SHALL HAVE A FIRE HAZARD CLASSIFICATION WITH A FLAME SPREAD RATING OF NOT OVER 25, A FUEL CONTRIBUTION RATING OF NOT OVER 50, AND A SMOKE DEVELOPED RATING OF NOT OVER 50, IN ACCORDANCE WITH NFPA.

## B. PIPE INSULATION:

- PIPERGLASS INSULATION WITH FACTORY APPLIED VAPOR BARRIER, ASJ JACKET, FACTORY APPLIED PREPARED SEAL, LAMINATE LAP JOINT, NO STAPLES, ZESTON PREPARED PIPING FITTINGS.

- COVERS. INSTALLATION SHALL BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

- FLEXIBLE CLOSED CELL ELASTOMERIC THERMAL INSULATION, UNSLIT OR PRESLIT WITH PRESSURE SENSITIVE ADHESIVE SYSTEM FOR CLOSURE AND VAPOR SEALING, EQUAL TO ARMSTRONGS AP ARMAFLEX OR ARMAFLEX 2000.

- INSULATION SCHEDULES:

- DOMESTIC COLD WATER 1/2"
- DOMESTIC HOT WATER 1/2"
- HOT WATER REGICULATING 1/2"
- CONDENSATE DRAINS INSIDE BUILDING 1/2"
- REFRIGERANT SUCTION 1/2"

## C. DUCTWORK:

- DUCT LINING: 2 LB/CY, THICKNESS AS SCHEDULED, AIR STREAM SIDE COATED, INSTALL PER SHACNA STANDARDS.

- DUCT LINING SCHEDULE:

- DUCT LINING SUPPLY DUCT 1/2"
- RETURN AIR DUCT 1/2"

- DUCT COVERING: 3/4 LB/CY, FIBERGLASS BLANKET WITH FACTORY APPLIED VAPOR BARRIER AND FACING, THICKNESS AS SCHEDULED, INSTALLATION IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.

- DUCT COVERING SCHEDULE:

- ROUND SUPPLY DUCT 2"
- OUTDOOR AIR DUCT 2"

## A. PLUMBING:

- PROVIDE AN AIR CHAMBER NOT LESS THAN 24" LONG AND ONE PIPE SIZE LARGER THAN THE PIPE SIZE CONNECTED TO THE FIXTURE, BUT NOT LESS THAN 3/4", FOR EACH PLUMBING FIXTURE SUPPLY.

- ALL EXPOSED PIPE SHALL BE CHROME PLATED BRASS PIPE, NO FERROUS PIPE.

- PROVIDE CLEANKUTS AT EACH CHANGE OF DIRECTION AND AT 100 FOOT INTERVALS IN STRAIGHT RUNS.

- PROVIDE ACCESS PANELS FOR ALL CONCEALED VALVES AND TRAPS.

## E. CLEANKUTS:

- VINYL TILE FLOOR: JK SMITH #4440, OR EQUAL.
- QUARRY TILE FLOOR: JK SMITH #4200, OR EQUAL.
- GRANITE TILE FLOOR: JK SMITH #4020-Y, OR EQUAL.
- UNFINISHED FLOOR: JK SMITH #4020, OR EQUAL.
- MALL: JK SMITH #4472, OR EQUAL; 24" ABOVE THE FLOOR.

## F. ALL SENER PIPING LOCATED INSIDE THE BUILDING SHALL BE INSTALLED WITH THE FOLLOWING SLOPES.

- INSTALL 2-1/2" AND SMALLER PIPE AT 1/4" PER FOOT FALL.
- INSTALL 3" AND LARGER PIPE AT 1/8" PER FOOT FALL.

- PROVIDE DIELECTRIC UNIONS WITH APPROPRIATE END CONNECTIONS TO MATCH THE PIPE SYSTEM IN WHICH INSTALLED (SCREWED, SOLDERED, OR FLAMED). PROVIDE DIELECTRIC UNIONS ON ALL PIPING CONNECTIONS TO HOT WATER HEATERS AND EXPANSION TANKS.

## G. DUCTWORK:

- ALL DUCTWORK, UNLESS OTHERWISE INDICATED, SHALL BE FABRICATED FROM GALVANIZED SHEET STEEL, COMPLYING WITH ASTM A 575, LOCKFORMING QUALITY, WITH A 60 ZINC COATING IN ACCORDANCE WITH ASTM A 525, AND MILL PHOSPHATIZED FOR EXPOSED LOCATIONS.

- WHERE DUCTWORK IS INDICATED TO VIEW IN OCCUPIED SPACES, PROVIDE MATERIALS WHICH ARE FREE FROM VISUAL INTERFERENCE INCLUDING PITTING, SEAM MARKS, ROLLER MARKS, STAINS AND DISCOLORATIONS, AND OTHER IMPERFECTIONS, INCLUDING THOSE WHICH WOULD IMPAIR PAINTING.

- DUCTWORK, METAL GAUSES, REINFORCING, ETC. SHALL BE CONSTRUCTED IN ACCORDANCE WITH SHACNA "HVAC DUCT CONSTRUCTION STANDARDS", LATEST EDITION FOR A 2 INCH WATER GAUGE STATIC PRESSURE.

## 1) RECTANGULAR DUCT:

- ELBOWS, UNLESS SPECIFIED OTHERWISE SHALL BE CONSTRUCTED WITH CENTERLINE RADIUS OF NOT LESS THAN 15 DUCT WIDTH OR SQUARE ELBOW WITH DOUBLE WALL STREAMLINE VANES.

- RETURN AIR ACQUSTICAL ELBOWS AND SOUND BOOTS SHALL BE A SQUARE ELBOW WITH NO TURNING VANES.

- SLOPES FOR TRANSITIONS OR OTHER CHANGES IN DIMENSIONS SHALL BE MINIMUM 1 TO 8.

- ROUND AND OVAL SPIRAL SEAM DUCT.

- PROVIDE RADIUS TYPE FITTINGS FABRICATED OF MULTIPLE SECTIONS WITH MAXIMUM 15 DEGREE CHANGE OF DIRECTION PER SECTION. UNLESS SPECIFICALLY DETAILED OTHERWISE, USE 45 DEGREE LATERALS FOR BRANCH TAKEOFF CONNECTIONS. WHERE 40 DEGREE BRANCHES ARE INDICATED PROVIDE CONICAL, TYPE TEES.

- SLOPES FOR TRANSITIONS OR OTHER CHANGES IN DIMENSIONS SHALL BE MINIMUM 1 TO 8.

- AS AN OPTION, PROVIDE FACTORY-FABRICATED DUCT AND FITTINGS, IN LIEU OF SHOP-FABRICATED DUCT AND FITTINGS.

- ELBOWS, ONE PIECE CONSTRUCTION FOR 10 DEGREES AND 45 DEGREE ELBOW 14" AND SMALLER. PROVIDE MULTIPLE SCORE CONSTRUCTION FOR LARGER DIAMETERS WITH STANDING SEAM CIRCUMFERENTIAL JOINT.

- DIVIDED FLOK FITTINGS: 40 DEGREE TEES, CONSTRUCTED WITH SADDLE TAP SPOT WELDED AND BONDED TO DUCT FITTING BODY.

- ROUND LONGITUDINAL SEAM DUCT. USE FOR RIGID METAL DUCT ON LEAVING SIDE OF DUCT IN CONCEALED LOCATIONS FOR EXTENSION TO FLEX FOR DIFFUSERS, UNLESS OTHERWISE INDICATED.

- SEAL ALL CONCEALED DUCTWORK JOINTS WITH NON-HARDENING, NON-MORRATING MASTIC SEALANT, AS RECOMMENDED FOR SEALING SEAMS AND JOINTS IN DUCTWORK. OIL BASE CALKING AND GLAZING COMPOUNDS SHALL NOT BE ACCEPTABLE.

- DUCT SIZES SHOWN ON THE DRAWINGS ARE SHEETMETAL SIZES, ALLOWANCE FOR DUCT LINER HAS BEEN MADE WHERE APPLICABLE.

## F. INSTALLATION OF METAL DUCTWORK:

- GENERAL: ASSEMBLE AND INSTALL DUCTWORK IN ACCORDANCE WITH RECOGNIZED INDUSTRY PRACTICES WHICH WILL ACHIEVE AIR-TIGHT SYSTEMS (MAXIMUM 5% LEAKAGE), WITH NO OBJECTIONABLE NOISE AND CAPABLE OF PERFORMING INDICATED SERVICE. INSTALL EACH RUN WITH MINIMUM NUMBER OF JOINTS. ALIGN DUCTWORK ACCURATELY WITH INTERNAL SURFACES SHOOT. SUPPORT DUCTS REGULARLY WITH SUITABLE STRAPS, HANGERS AND ANCHORS IN ACCORDANCE WITH SHACNA "HVAC DUCT CONSTRUCTION STANDARDS", LATEST EDITION. DUCT HANGERS SHALL BE IN ACCORDANCE WITH HEALTH DEPARTMENT REGULATIONS.

- AUXILIARY STEEL: PROVIDE AUXILIARY STEEL AS REQUIRED TO ADEQUATELY SUPPORT DUCTWORK.

- ROUTING: LOCATE DUCTWORK RUNS, EXCEPT AS OTHERWISE INDICATED, VERTICALLY AND HORIZONTALLY AND AVOID DIAGONAL RUNS WHEREVER POSSIBLE. LOCATE RUNS AS INDICATED BY DIAGRAMS, DETAILS AND NOTATIONS OR, IF NOT OTHERWISE INDICATED, RUN DUCTWORK IN SHORTEST ROUTE WHICH DOES NOT OBSTRUCT UTILITY SPACE OR BLOCK ACCESS FOR SERVING BUILDING AND ITS EQUIPMENT. HOLD DUCTS CLEAR OF WALLS, PARTITIONS, CEILING, FLOORS, COLUMNS, AND OTHER STRUCTURAL AND PERMANENT ENCLOSURE ELEMENTS OF BUILDING. WHEREVER POSSIBLE IN FINISHED AND OCCUPIED SPACES, CONCEAL DUCTWORK FROM VIEW BY LOCATING IN MECHANICAL SHAFTS, HOLLOW WALL CONSTRUCTION OR ABOVE SUSPENDED CEILINGs. DO NOT EXPOSE HORIZONTAL RUNS IN SOLID PARTITIONS, EXCEPT AS SPECIFICALLY SHOWN. COORDINATE LAYOUT WITH SCHEDULED CEILING AND LIGHTING LAYOUTS AND SIMILAR FINISHED WORK.

- DO NOT ROUTE DUCTWORK THROUGH ELECTRICAL EQUIPMENT SPACES AND ENCLOSURES, UNLESS INDICATED OTHERWISE.

## 5) PENETRATIONS:

- WHERE DUCTS PASS THROUGH INTERIOR PARTITIONS OR EXTERIOR WALLS, AND ARE EXPOSED TO VIEW, CONCEAL PASSAGE BETWEEN OPENING AND DUCT WITH INSULATION, AND SEAL WITH METAL FLANGES OF SAME SIZE AS DUCT. OVERLAP OPENING ON SIDES BY AT LEAST 1-1/2". FASTEN TO DUCT AND WALL.

- WHERE DUCTS PASS THROUGH FIRE-RATED FLOORS, WALLS, OR PARTITIONS, PROVIDE FIRESTOPPING BETWEEN DUCT AND WALL.

- COORDINATION: COORDINATE DUCT INSTALLATIONS WITH INSTALLATION OF ACCESSORIES, DAMPERS, COIL FRAMES, EQUIPMENT, CONTROLS, AND OTHER ASSOCIATED WORK OF THE DUCTWORK SYSTEM.

- INSTALLATION: INSTALL METAL DUCTWORK IN ACCORDANCE WITH SHACNA "HVAC DUCT CONSTRUCTION STANDARDS", LATEST EDITION.

## 6. EQUIPMENT CONNECTIONS:

- CONNECT METAL DUCTWORK TO EQUIPMENT AS INDICATED, PROVIDE FLEXIBLE CONNECTION FOR EACH DUCTWORK CONNECTION TO EQUIPMENT MOUNTED ON VIBRATION ISOLATORS, AND/OR EQUIPMENT CONTAINING ROTATING MACHINERY. PROVIDE ACCESS DOORS AS REQUIRED.

## 10. FLEXIBLE DUCT:

- TECHNAFLEX SERIES MK, OR EQUAL.
- FACTORY APPLIED INSULATION AND VAPOR BARRIER, 1-1/2" THICK.
- MAXIMUM LENGTH OF 6'-0".

## 14. FLUE:

- FLUE FOR GAS FIRED CONDENSING WATER HEATER & FURNACES SHALL BE AS RECOMMENDED BY THE HEATER/FURNACE MANUFACTURER. FLUES SHALL BE SCHEDULE 40, CPVC PIPE.

- PROVIDE MANUFACTURER'S STANDARD ACCESSORY ITEMS INCLUDING BIRD PROOF TOP, STORM COLLAR, ROOF THRILLE, ETC. AS REQUIRED FOR A COMPLETE INSTALLATION. ROOF TOP THRIBLES THROUGH THE BUILDING ROOF SHALL BE SUITABLE FOR USE WITH THE ROOF PROVIDED.

## 15. EXHAUST FANS:

- CENTRIFUGAL TYPE FAN WITH CHARACTERISTICS AND CAPACITY AS SCHEDULED, ELECTRICALLY POWERED, SUITABLE FOR MOUNTING ON ROOF CURB DIRECT OR BELT DRIVEN, HEAVY GAUGE SPRUN-ALUMINUM WEATHERPROOF HOUSINGS OF THE HOODED DOME OR UPPLAST TYPE. PROVIDE PERMANENT SPLIT-CAPACITOR TYPE MOTOR FOR DIRECT DRIVEN FANS, AND CAPACITOR-START, INDUCTION-RUN TYPE MOTOR FOR BELT DRIVEN FANS.

- CENTRIFUGAL CEILING EXHAUSTERS SHALL BE ELECTRICALLY POWERED CENTRIFUGAL TYPE FAN SUITABLE FOR MOUNTING IN THE CEILING WITH A PERFORATED OFF-WHITE METAL GRILLE WITH A THUMBSCREEN ATTACHMENT FOR EASY ACCESS TO FAN HOUSING. UNIT SHALL CONSIST OF A GALVANIZED STEEL HOUSING LINED WITH ACOUSTICAL INSULATION AND SHALL INCLUDE AN INTEGRAL BACKDRAFT DAMPER ON FAN DISCHARGE. MOTOR SHALL BE A PERMANENT SPLIT-CAPACITOR TYPE MOTOR, PERMANENTLY LUBRICATED WITH THERMAL OVERLOAD PROTECTION. PROVIDE DISCONNECT SWITCH ON OTHER MEANS OF DISCONNECT AT MOTOR IN FAN HOUSING.

## 15. FURNACE AND CONDENSING UNIT:

### A. CONDENSING FURNACES:

- GAS FIRED FURNACE SHALL BE FACTORY ASSEMBLED, PRE-WIRED UNIT CONSISTING OF SHEETMETAL GAS FIRED FAN, GAS FIRED HEAT EXCHANGER, AND CONTROLS. CAPACITY SHALL BE AS SCHEDULED.

- THE PRIMARY HEAT EXCHANGER SHALL BE ALUMINIZED STEEL CONSTRUCTION WITH A STAINLESS STEEL SECONDARY HEAT EXCHANGER.

- THE FURNACE SHALL BE OF THE CONDENSING TYPE, UTILIZING A SEALED COMBUSTION CHAMBER. UNIT SHALL INCLUDE FINED CAST IRON HEAT EXCHANGER, REMOVED RESERVOIR, OPERATING CONTROLS, ETC. CAPACITY AND ELECTRICAL CHARACTERISTICS SHALL BE AS SCHEDULED.

- THE UNIT SHALL BE EQUIPPED WITH THE MANUFACTURER'S STANDARD CONTROLS INCLUDING 24 VOLT CONTROL TRANSFORMER, AUTOMATIC SPARK IGNITION, AUTOMATIC GAS VALVE TRAIL, HIGH TEMPERATURE LIMIT SWITCH, AND FAN THERM DELAY RELAY.

- RETURN AIR INLET ON UNIT SHALL BE PROVIDED WITH A 1" THROUWAY TYPE FILTER AND SLIDE IN FRAME, MOUNTED ON THE UNIT.

- FAN SHALL BE A DIRECT DRIVE MULTI-SPEED BLOWER, RESILIENTLY MOUNTED IN THE CASING. MOTOR SHALL BE PROVIDED WITH AUTOMATIC THERMAL OVERLOAD PROTECTION.

- FURNACE SHALL BE AS-A APPROVED.

- CONDENSING UNIT SHALL BE FACTORY ASSEMBLED AND TESTED AIR-COOLED CONDENSING UNIT, CONSISTING OF COMPRESSOR, CONDENSING COIL, FAN MOTOR, REFRIGERANT RESERVOIR, OPERATING CONTROLS, ETC. CAPACITY AND ELECTRICAL CHARACTERISTICS SHALL BE AS SCHEDULED.

- COMPRESSOR: HERMETICALLY SEALED WITH BUILT-IN OVERLOADS AND VIBRATION ISOLATION. COMPRESSOR HOUSING SHALL HAVE THERMAL AND CURRENT SENSITIVE OVERLOAD DEVICES. INTERNAL HIGH-PRESSURE PROTECTION, HIGH AND LOW PRESSURE CUTOFF SWITCHES, START CAPACITOR AND RELAY, 2-POLE CIRCUIT BREAKER, CRANKCASE HEATER, AND TEMPERATURE ACTUATED SWITCH AND THERM TO PREVENT COMPRESSOR RATIO CYCLE.

- COIL SHALL BE COPPER TUBING WITH ALUMINUM FINS, COMPLETE WITH LIQUID ACCUMULATOR AND LIQUID SUBCOOLER. UNIT SHALL INCLUDE FILTER DRYER, SIGHT GLASS, COMPRESSOR SERVICE VALVE, LIQUID LINE SERVICE VALVE, AND REFRIGERANT PIPING EXTENDED TO EXTERIOR OF CASING.

## M. CONTROL WIRING:

- ELECTRICAL WIRING AND WIRING CONNECTIONS REQUIRED FOR THE INSTALLATION OF THE TEMPERATURE CONTROL SYSTEM SHALL BE PROVIDED BY THIS CONTRACTOR, UNLESS SPECIFICALLY SHOWN ON THE ELECTRICAL DRAWINGS OR SPECIFICATIONS.

- INSTALL CONTROL WIRING, WITHOUT SPLICES BETWEEN TERMINAL POINTS, COLOR CODED. INSTALL IN NEAT HORIZONTAL-LIKE MANNER, SECURELY FASTENED. INSTALL IN ACCORDANCE WITH NATIONAL ELECTRICAL CODE AND THE ELECTRICAL SPECIFICATIONS.

- INSTALL CIRCUITS OVER 25 VOLT WITH COLOR CODED NUMBER 12 WIRE.

- INSTALL CIRCUITS UNDER 25 VOLT WITH COLOR CODED NUMBER 16 WIRE WITH 0.281 INCH HIGH TEMPERATURE 105 DEGREES F PLASTIC INSULATION ON EACH CONDUCTOR AND PLASTIC SHEATH OVER ALL.

- INSTALL ELECTRONIC CIRCUITS WITH COLOR CODED NUMBER 22 WIRE WITH 0.028 INCH POLYETHYLENE INSULATION ON EACH CONDUCTOR WITH PLASTIC JACKETED COPPER SHIELD OVER ALL.

- INSTALL LOW VOLTAGE CIRCUITS, LOCATED IN CONCRETE SLABS AND MASONRY WALLS, OR EXPOSED IN OCCUPIED AREAS, IN ELECTRIC CONDUIT.

- ALL WIRING IN AREAS USED AS AIR PLenums SHALL BE IN ELECTRIC CONDUIT EXCEPT THAT LOW VOLTAGE WIRING MAY BE TIE-ON COATED, ALUMINUM ADHESIVE CABLES. COORDINATE ALL SPECIFICALLY APPROVED FOR INSTALLATION IN AIR PLenums, WHERE ACCEPTABLE BY LOCAL CODES.

- ALL WIRING IN AREAS NOT USED FOR AIR MOVEMENT SHALL BE IN ELECTRIC METALLIC TUBING. EXCEPT LOW VOLTAGE WIRING MAY BE IN APPROVED SIGNAL CABLE WHERE ACCEPTED BY LOCAL CODES.

## ELECTRICAL SPECIFICATIONS

- PROVIDE ALL LABOR, MATERIALS, EQUIPMENT, NECESSARY FOR THE COMPLETE INSTALLATION OF THE ELECTRICAL SYSTEMS OUTLINED.

- OBTAIN ALL PERMITS, FEES, LICENSES, INSPECTIONS, AND CERTIFICATES OF COMPLIANCE OR APPROVAL AS REQUIRED BY THE AUTHORITIES.

- ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE LATEST APPROVED EDITION OF THE NATIONAL ELECTRIC CODE (NEC) AND ALL APPLICABLE LAWS, CODES AND REGULATIONS OF THE GOVERNMENTAL BODIES HAVING JURISDICTION OVER THE SITE.

- ALL TESTING REQUIRED BY AUTHORITIES SHALL BE CONSIDERED PART OF THIS WORK.

- DURING CONSTRUCTION, ALL FIXTURES, EQUIPMENT, CONDUIT, ETC. SHALL BE COVERED, PLUGGED, OR CAPPED AS REQUIRED TO KEEP CLEAN AND UNDamAGED. ALL DamAGED ITEMS SHALL BE RESTORED TO ORIGINAL CONDITION OR REPLACED. ALL PROTECTIVE COVERING SHALL BE REMOVED BEFORE FINAL ACCEPTANCE.

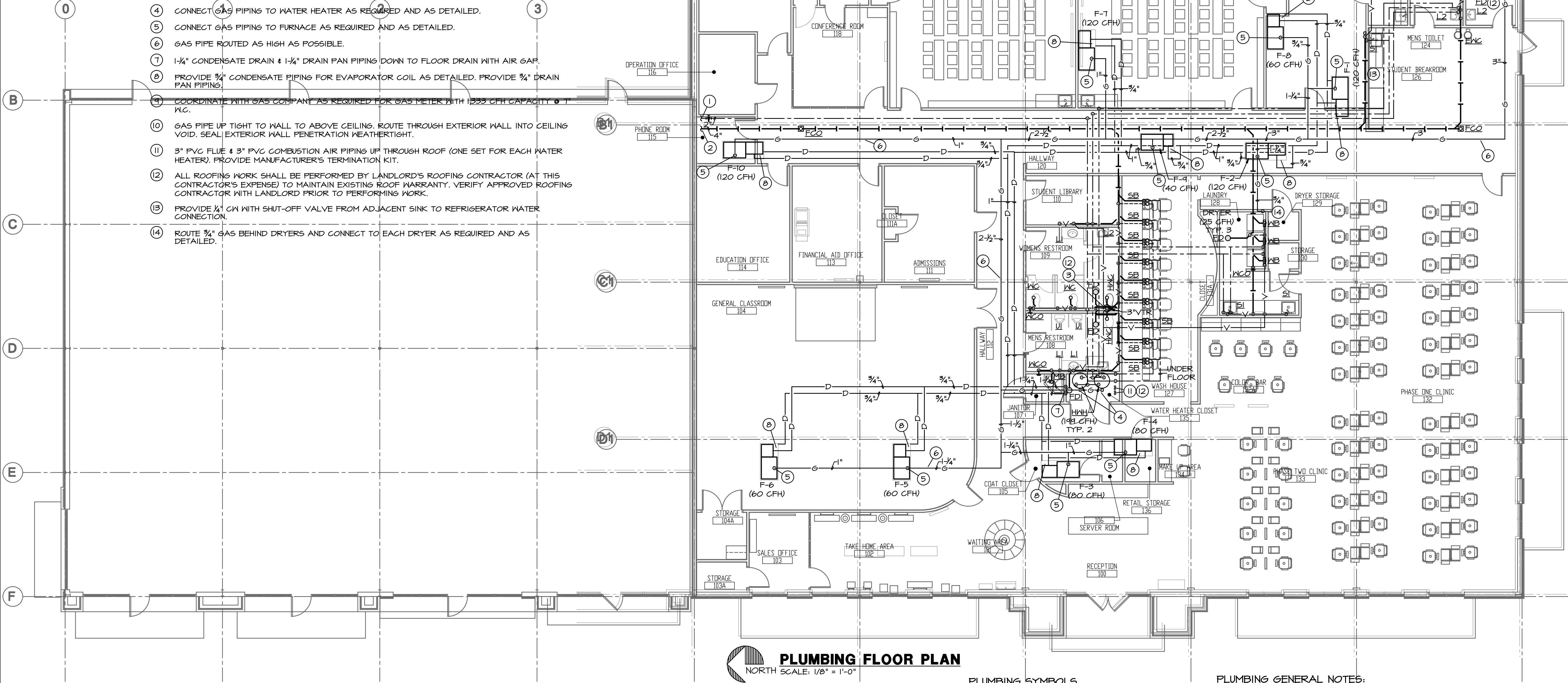
- PROVIDE ALL NECESSARY CUTTING AND PATCHING OF WALLS, FLOORS, CEILINGs, AND ROOFs AS NECESSARY. PATCH AROUND ALL OPENINGs SHALL MATCH ADJACENT AREA. COORDINATE ALL ROOFING WORK WITH OWNER OR RESPONSIBLE PARTY, SO THAT THE EXISTING ROOFING WARRANTY WILL BE MAINTAINED.

- CONTRACTOR SHALL GUARANTEE ALL WORK AND MATERIALS AGAINST DEFECTS FOR A PER



PLUMBING PLAN NOTES:

- CONNECT 2" CW TO EXISTING 2" CW PIPING AS REQUIRED. PROVIDE SHUT-OFF VALVE. VERIFY EXACT LOCATION PRIOR TO INSTALLATION OF ANY PIPING.
- CONNECT 4" WASTE TO EXISTING 4" SANITARY SEWER AS REQUIRED. VERIFY EXACT LOCATION, ELEVATION, & DIRECTION OF FLOW PRIOR TO INSTALLATION OF ANY PIPING. IF PIPE DEPTH IS INSUFFICIENT FOR THE CONNECTION OF THE NEW WASTE PIPING, CONTACT ENGINEER FOR DIRECTION.
- CUT EXISTING ROOF AND FLASH VTR INTO ROOF AS REQUIRED. VERIFY MINIMUM 10' CLEARANCE FROM ALL OUTDOOR AIR INTAKES.
- CONNECT GAS PIPING TO WATER HEATER AS REQUIRED AND AS DETAILED.
- CONNECT GAS PIPING TO FURNACE AS REQUIRED AND AS DETAILED.
- GAS PIPE ROUTED AS HIGH AS POSSIBLE.
- 1-1/4" CONDENSATE DRAIN & 1-1/4" DRAIN PAN PIPING DOWN TO FLOOR DRAIN WITH AIR GAP.
- PROVIDE 3/4" CONDENSATE PIPING FOR EVAPORATOR COIL AS DETAILED. PROVIDE 3/4" DRAIN PAN PIPING.
- COORDINATE WITH GAS COMPANY AS REQUIRED FOR GAS METER WITH 1333 CFH CAPACITY & 7" W.C.
- GAS PIPE UP TIGHT TO WALL TO ABOVE CEILING. ROUTE THROUGH EXTERIOR WALL INTO CEILING VOID. SEAL EXTERIOR WALL PENETRATION WEATHERTIGHT.
- 3" PVC FLUE & 3" PVC COMBUSTION AIR PIPING UP THROUGH ROOF (ONE SET FOR EACH WATER HEATER). PROVIDE MANUFACTURER'S TERMINATION KIT.
- ALL ROOFING WORK SHALL BE PERFORMED BY LANDLORD'S ROOFING CONTRACTOR (AT THIS CONTRACTOR'S EXPENSE) TO MAINTAIN EXISTING ROOF WARRANTY. VERIFY APPROVED ROOFING CONTRACTOR WITH LANDLORD PRIOR TO PERFORMING WORK.
- PROVIDE 1/2" CW WITH SHUT-OFF VALVE FROM ADJACENT SINK TO REFRIGERATOR WATER CONNECTION.
- ROUTE 3/4" GAS BEHIND DRYERS AND CONNECT TO EACH DRYER AS REQUIRED AND AS DETAILED.



**PLUMBING FLOOR PLAN**  
NORTH SCALE: 1/8" = 1'-0"

FIRE PROTECTION NOTES:

- THE EXISTING SPACE IS PROTECTED WITH AN EXISTING WET PIPE SPRINKLER SYSTEM. RELOCATE AND PROVIDE ADDITIONAL SPRINKLER HEADS AND PIPING AS REQUIRED FOR THE NEW CONSTRUCTION. SPRINKLER HEADS IN FINISHED CEILINGS SHALL BE SEMI-RECESSED CHROME PLATED PENDANT TYPE. SPRINKLER HEADS IN ROOMS WITHOUT CEILINGS SHALL BE UPRIGHT BRASS TYPE HEADS.
- SPRINKLER WORK SHALL BE PERFORMED BY A SPRINKLER CONTRACTOR PRE-APPROVED BY THE LANDLORD.
- REFER TO THE ARCHITECTURAL DRAWINGS FOR NEW WALL CONSTRUCTION.
- SPRINKLER PIPING SHALL MATCH EXISTING.
- SPRINKLER SYSTEM (SHOP DRAWINGS) SHALL BE APPROVED BY THE LOCAL FIRE AUTHORITY AND LANDLORD'S INSURANCE CARRIER PRIOR TO START OF WORK.

PLUMBING SYMBOLS

- SOIL AND WASTE PIPING BELOW GRADE
- SOIL AND WASTE PIPING ABOVE GRADE
- SANITARY VENT PIPING ABOVE GRADE
- SANITARY VENT PIPING BELOW GRADE
- DOMESTIC COLD WATER PIPING
- DOMESTIC HOT WATER PIPING
- DOMESTIC HOT WATER RECIRC PIPING
- EQUIPMENT DRAIN LINE
- GAS PIPING
- PIPING TURNING DOWN
- PIPING TURNING UP
- TEE TOP CONNECTION
- UNION
- BACKFLOW PREVENTER
- FLOOR CLEAN OUT
- W.C.O. WALL CLEAN OUT
- F.D. FLOOR DRAIN
- VALVE
- CHECK VALVE
- MATCH MARKS ON PLUMBING RISER DIAGRAM

PLUMBING GENERAL NOTES:

- INSTALL ALL PIPE, ETC. AS HIGH AS POSSIBLE.
- COORDINATE ALL WORK WITH OTHER TRADES AND EXISTING CONDITIONS AS REQUIRED TO PROPERLY INSTALL ALL SYSTEMS AS INTENDED, WITHIN THE CONFINES OF THE SPACES AVAILABLE, AND WITHOUT INTERFERENCES.
- REFER TO ARCHITECTURAL DRAWINGS FOR EXACT LOCATIONS AND MOUNTING HEIGHTS OF FIXTURES.
- REFER TO ARCHITECTURAL & STRUCTURAL DRAWINGS FOR REQUIREMENTS FOR SUPPORTING PIPING, EQUIPMENT, ETC. FROM THE STRUCTURE. PROVIDE ADDITIONAL STEEL AS REQUIRED TO PROPERLY SUPPORT SYSTEMS FROM THE STRUCTURE.
- SANICUT EXISTING FLOOR AS REQUIRED FOR INSTALLATION OF UNDERFLOOR PIPING. PATCH FLOOR TO MATCH EXISTING.
- PROVIDE 1" SCHEDULE 40 PVC CONDENSATE DRAIN PIPE FOR EACH ROOFTOP UNIT LAID DIRECTLY ON ROOF TO NEAREST ROOF DRAIN. PROVIDE WATER TRAP AND CLEAN OUTS AS DETAILED. SECURE PVC PIPE TO DRAIN WITH NYLON STRAP.
- NO PIPING SHALL BE ROUTED OVER THE TOP OF ELECTRICAL PANELS.
- ALL MATERIALS EXPOSED WITHIN PLenums SHALL BE NONCOMBUSTIBLE OR SHALL HAVE A FLAME SPREAD INDEX OF NOT MORE THAN 25 AND A SMOKE-DEVELOPED INDEX OF NOT MORE THAN 50 WHEN TESTED IN ACCORDANCE WITH ASTM E 84.

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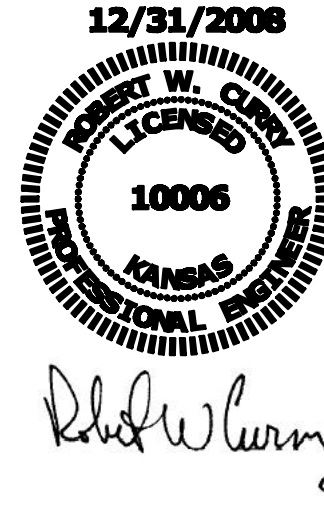
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PROFESSIONAL SEAL:



SIGNATURE DATE

SUBMISSION	DATE
FINAL CONCEPT PLAN	5.14.08
CONSULTANT COORDINATION SET	6.17.08
PERMIT ISSUE	6.17.08
CONSTRUCTION SET	09.30.08
TRACK LTG REVISIONS	11.11.08
FINAL AS-BUILT PLANS	12.31.08

PROJECT NO: 0803

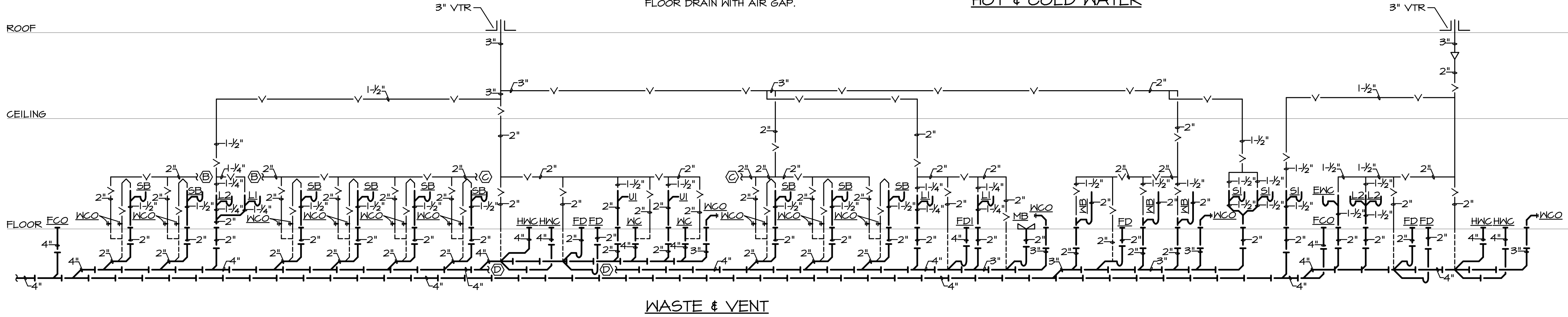
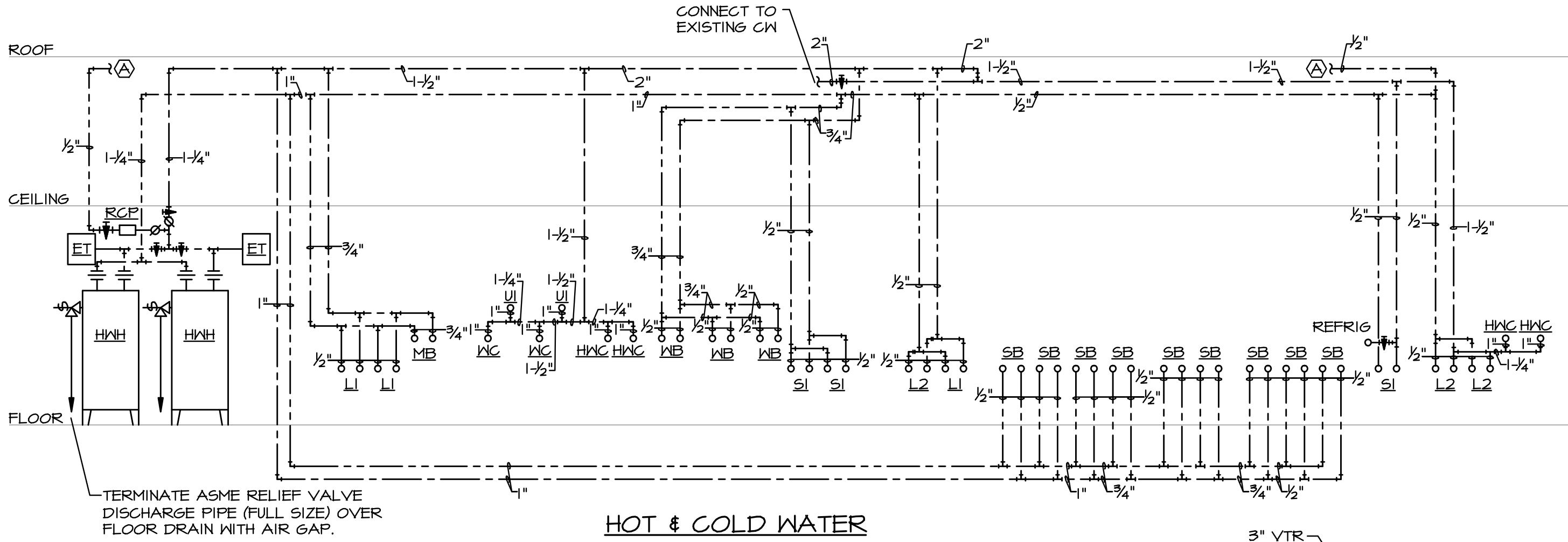
SCALE:

PLUMBING  
PLAN

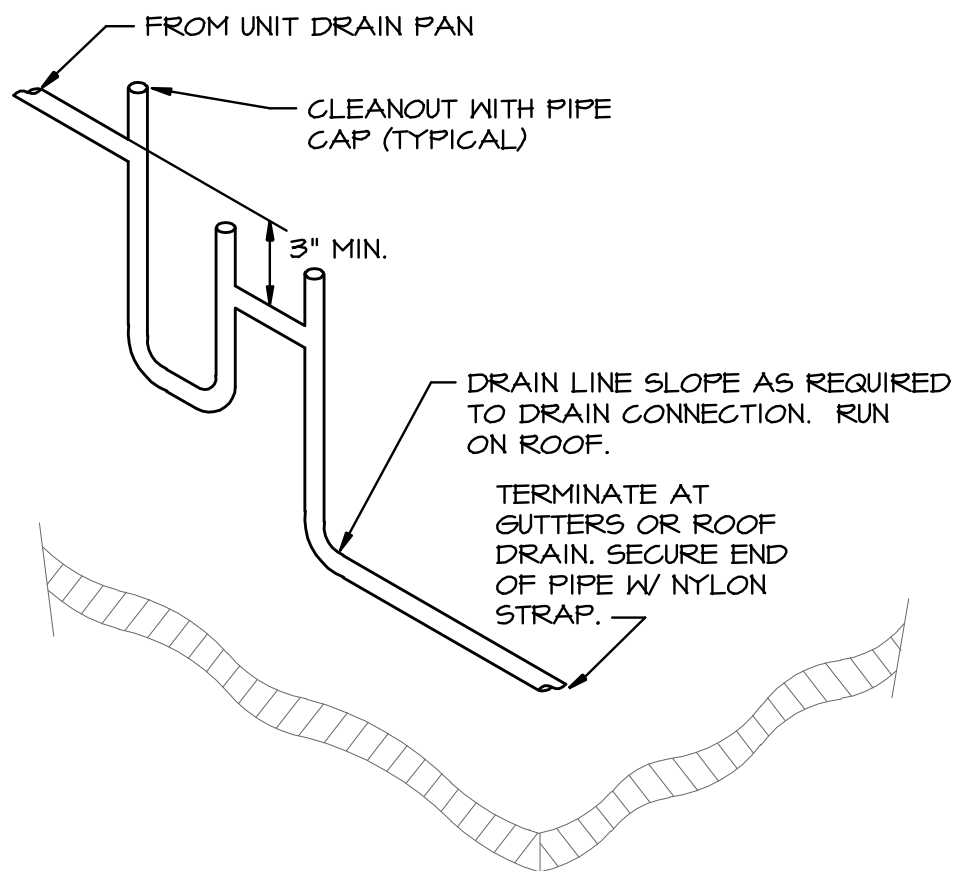
P1

PLUMBING FIXTURE BRANCH PIPING SCHEDULE				
FIXTURE	WASTE	VENT	CW	HW
WATER CLOSET (FLUSH VALVE)	4"	2"	1"	- -
URINAL	2"	1 1/2"	1"	- -
LAVATORY	1-1/4"	1-1/4"	1/2"	1/2"
SINK	1-1/2"	1-1/2"	1/2"	1/2"
FLOOR DRAIN	2"	2"	- -	- -
WASHER BOX	2"	1-1/2"	1/2"	1/2"
ELECTRIC WATER COOLER (HI-LO)	1-1/2"	1-1/2"	1/2"	- -
MOP BASIN	2"	2"	3/4"	3/4"

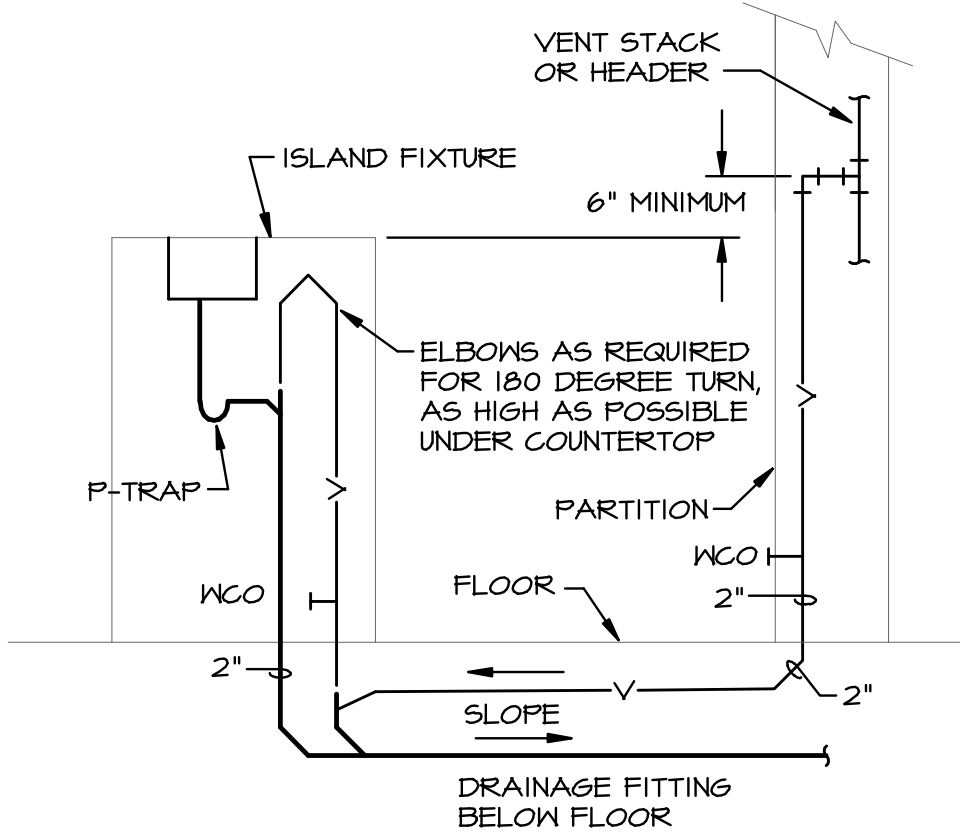
NOTE: INDIVIDUAL VENTS FOR FIXTURES ON PLANS AND RISER DIAGRAM HAVE BEEN INCREASED WHERE HORIZONTAL VENT LENGTH IS IN EXCESS OF THE MAXIMUM DISTANCE INDICATED BY THE CODE.



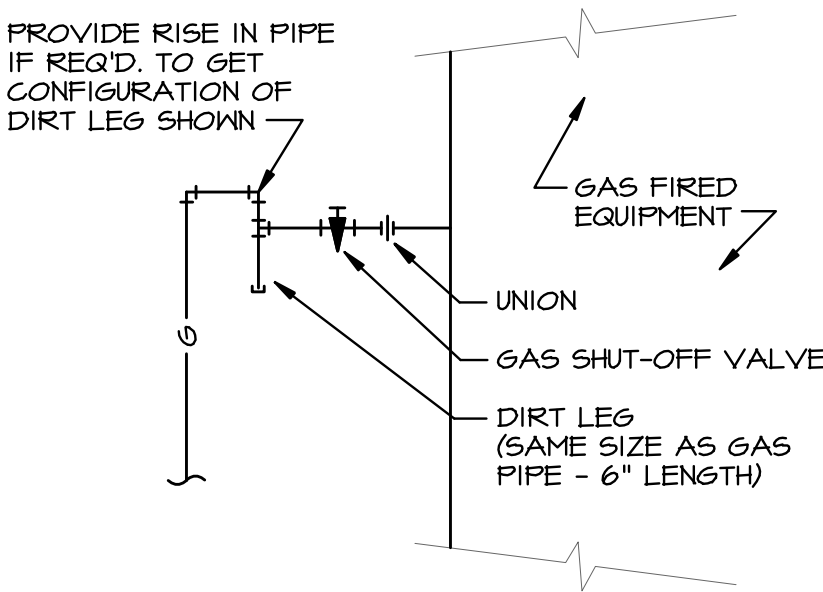
PLUMBING RISER DIAGRAMS  
SCALE: NONE



CONDENSATE DRAIN DETAIL  
SCALE: NONE



ISLAND SINK VENT DETAIL  
SCALE: NONE



GAS CONNECTION DETAIL  
SCALE: NONE

- PLUMBING FIXTURE SCHEDULE:
- HWK WATER CLOSET (HANDICAPPED): REFER TO SHEET A101A FOR SPECIFICATION.
  - WC WATER CLOSET: REFER TO SHEET A101A FOR SPECIFICATION.
  - U URINAL, WALL HUNG: REFER TO SHEET A101A FOR SPECIFICATION.
  - L1 HANDICAP LAVATORY, COUNTERTOP: REFER TO SHEET A101A FOR SPECIFICATION. PROVIDE CHROME PLATED P-TRAP (MOUNTED PARALLEL WITH WALL), CHROME PLATED ANGLE STOPS AND RISERS, INSULATE EXPOSED DRAIN, WATER SUPPLIES, AND VALVES WITH PROWRAP SEAMLESS MOLDED CLOSED CELL VINYL INSULATION.
  - L2 HANDICAP LAVATORY, WALL HUNG: REFER TO SHEET A101A FOR SPECIFICATION. PROVIDE CHROME PLATED P-TRAP (MOUNTED PARALLEL WITH WALL), CHROME PLATED ANGLE STOPS AND RISERS, INSULATE EXPOSED DRAIN, WATER SUPPLIES, AND VALVES WITH PROWRAP SEAMLESS MOLDED CLOSED CELL VINYL INSULATION.
  - SB SHAMPOO BASIN: OWNER FURNISHED SINK, DRAIN, FAUCET WITH VACUUM BREAKER AND HOSE (NO VALVE ON END OF HOSE); PROVIDE PVC P-TRAP, CHROME PLATED ANGLE STOPS AND RISERS, AND INSTALL FIXTURE AND ACCESSORIES. PROVIDE AND INSTALL HAIR TRAP AS REQUIRED AND IF REQUIRED BY CODE AND LOCAL AUTHORITIES. (HAIR TRAP SHALL BE EQUAL TO JR SMITH #8750T)
  - SI SINK: REFER TO SHEET A101A FOR SPECIFICATION. PROVIDE CHROME PLATED CAST BRASS P-TRAP WITH CLEANOUT, CHROME PLATED ANGLE STOPS AND RISERS.
  - WB WASHER BOX: GUY GRAY #B-150, WASHER BOX WITH 1-1/2" DRAIN OUTLET AND TAILPIECE, AND 1/2" HOSE BIBBS.
  - MB MOP BASIN: REFER TO SHEET A101A FOR SPECIFICATION.
  - ED FLOOR DRAIN: REFER TO SHEET A101A FOR SPECIFICATION.
  - EDI FLOOR DRAIN: JR SMITH, #2005-F37, CAST IRON FLOOR DRAIN WITH RECESSED CAST IRON STRAINER.
  - HWH HOT WATER HEATER (2 REQUIRED): A.O. SMITH, #BTH-191, GAS FIRED, CONDENSING TYPE, 100 GALLON STORAGE, 191 MBTUH INPUT, 227 GPH RECOVERY AT 100°F RISE, MAIN & PILOT AUTOMATIC GAS VALVES, 120 VOLT, TEMPERATURE AND PRESSURE RELIEF VALVE.
  - EI HOT WATER EXPANSION TANK: AMTROL, #ST-12, 4.4 GALLON EXPANSION TANK WITH DIAPHRAGM.
  - RCP HOT WATER RECIRCULATING PUMP: BELL & GOSSETT, #SERIES 100, 3 GPM @ 7 FT. HEAD, 1/12 HP, 120 VOLT, WITH AQUASTAT.

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PROJECT NO: 0803

SCALE:

PLUMBING RISERS,  
SCHEDULES & DETAILS

P2